Fit testing of particulate filter respirators in respiratory protection programs

Implementation guidance

Purpose

The Fit testing of particulate filter respirators (PFRs), (P2/N95) in respiratory protection programs, Implementation guidance has been developed to provide guidance and recommendations for decision-makers and healthcare workers (HCWs) in Queensland. The purpose of the document is to support the safe and practical implementation of fit testing as part of respiratory protection programs.

The document aims to:

- Acknowledge the primacy of health, safety, and wellbeing of all workers at work, and all other people who might be affected by the work (i.e. our patients, visitors, and community).
- Highlight the practical considerations for implementation of large-scale fit testing programs.
- Provide guidance on prioritisation following a risk assessment to support optimal allocation of effort and resources.
- Provide guidance on some of the complex issues and risks associated with risk based respiratory protection programs.

The guideline will assist the Queensland Healthcare system to embed respiratory protection practices in a business-as-usual approach. The COVID-19 pandemic resulted in increased awareness and responses to respiratory protection programs that is applicable to other infectious diseases. Use of a PFR is applicable to prevent the inhalation of all respiratory hazards e.g. aerosol transmissible infectious agents, chemical agents, droplet and aerosol transmissible particles like dusts, microfibres, etc.

Scope

This guidance document provides information for all Queensland Health Hospital and Health Service (HHS) employees and all organisations and individuals acting as its agents (including visiting Medical Officers and other partners, contractors, consultants, students and volunteers) and all Queensland licensed private health facilities.

The information in this guidance document may also be applied by other health and care organisations and services such as primary care and residential care. It is intended to inform local policies and procedures and to support local decision-making using a risk management framework.

Guidance on general risk and incident management is presented in Queensland Health's <u>Health, safety and wellbeing risk management standard</u> QH-IMP 401-3:2020 and the supporting <u>Health, safety and wellbeing risk management guideline</u> QH-GDL-401-3-1:2021.

Relevant legislation, standards, and guidance

This guidance document should be read in conjunction with the following:

Work Health and Safety Act 2011 (Qld)	Provides a framework to protect the health, safety and welfare of all workers at work and of all other people who might be affected by the work". Workers and other persons at the workplace (including patients, visitors etc.) must also take reasonable care for their own health and safety; and care that their conducts, acts or omissions does not adversely affect the health and safety of others.
Work Health and Safety Regulation 2011 (Qld)	Division 5, Section 44 (3) of the Regulation describes how to prevent or minimise risk at the workplace and includes provisions specifically regarding PPE suitability, size, fit, maintenance, hygiene, and use.
Australian Standards /New Zealand Standards	AS/NZS 1715:2009 - Selection, use and maintenance of respiratory protective equipment. AS/NZS 1716:2012 - Respiratory protective devices. AS/NZS 4381:2015 - Single- use face masks for use in healthcare. AS/NZS 2243.3 – Safety in Laboratories.
International Standards	ISO 16975-1 Respiratory protective devices, Selection use and maintenance - Part 1 establishing and implementing a respiratory protective device program First Edition 2016- 06 ISO 16975-3 Respiratory protective devices, selection use and maintenance- Part 3 Fit testing procedures First Edition 2017-09
<u>Australian Guidelines for the</u> <u>Prevention & Control of Infection</u> <u>in Healthcare</u> (2019)	The benefits of wearing a correctly fitted P2 respirator when an airborne transmissible agent is known or suspected clearly outweighs any undesirable effects. This practice would require the provision of P2 respirators and fit testing of respirators to the healthcare staff.
<u>National Safety and Quality</u> <u>Health Service Standards</u> : Standard 3 - Preventing and Controlling Infections	Standard 3 requires that leaders of health service organisations develop, implement, and monitor systems to prevent, manage and control infections.

<u>Health, safety and wellbeing risk</u> <u>management</u> <u>Standard</u> , QH-IMP-401-3: 2020 and	This Queensland Health Standard establishes the requirements for managing work health and safety (WHS) hazards and risks.
<u>Health, safety and wellbeing risk</u> <u>management guideline,</u> QH-GDL-401-3- 1:2021	The associated guideline provides detailed information on how this standard can be met.
<u>COVID-19 Infection Prevention and</u> <u>Control Manual For acute and non-acute</u> <u>healthcare settings Version 1.0 31 October</u> <u>2022</u>	Queensland Health's overarching guidance for infection prevention and control of COVID-19 in healthcare settings.
<u>Minimising the risk of infectious respiratory</u> <u>disease transmission in the context of</u> <u>COVID-19: the hierarchy of controls</u>	This Australian Government Department of Health document (September 2022) outlines how to use the hierarchy of controls to manage the risk of COVID-19 transmission.
<u>Guidance on the use of personal</u> <u>protective equipment (PPE) for health</u> <u>care workers in the context of COVID-19</u>	This guidance, produced by the Infection Control Expert Group of the Australian Health Principal Protection Committee (October 2022), includes general considerations on the use of masks and respirators and recommendations for their use in the context of COVID-19.

Background

Respiratory protection is required for those organisms that are usually transmitted via the droplet or airborne route, or when airborne particles have been artificially created, such as during aerosol generating procedures, hazardous drug handling and chemical hazards. Refer to https://www.cdc.gov/niosh/topics/healthcare/chemical.html for further information.

When considering the hierarchy of controls (Figure 1 provides a graphical representation) in mitigating workplace risks, the use of personal protective equipment (PPE) is the lowest level of control and the least effective. However, where it is not possible to eliminate the risk of exposure to infectious agents in healthcare, the use of PPE for respiratory protection should be considered as an essential element of defense in the hierarchy of infection prevention measures; refer to Figure 1. In addition, controls from other levels in the hierarchy should be used concurrently to reduce and control the risk to employees, patients and others.

Where respiratory protective equipment is required, Australian Standard/New Zealand Standard 1715:2009 Selection, use and maintenance of respiratory protective equipment (AS/NZS 1715:2009) requires that a respiratory protection program be established. It is important to recognise that fit testing is only one component of a respiratory protection program. The section on "<u>Elements of a respiratory protection program</u>" elaborates on this. Development and implementation of a broad Respiratory Protection Procedure within local

HHS Safety Management Systems will support delivery of an effective respiratory protection program.

For further information on the hierarchy of controls in the context of respiratory disease transmission refer to the Australian Government Department of Health <u>Minimising the risk</u> of infectious respiratory disease transmission in the context of COVID-19: the hierarchy of <u>controls</u>. The diagram at figure 1 illustrates how fit testing augments respiratory protection and expands levels of control by:

- ensuring the Respiratory Protective Equipment (RPE) ie. P2/N95 respirators, worn is suitable by design, and ensures adequate respirator seal,
- enabling instruction and training on correct use.



Figure 1. Hierarchy of controls. Source: How to manage work health and safety risks, Code of Practice, 2021 Workplace Health and safety Queensland

Risk assessment and management

Processes must be in place to recognise and manage the risk of HCW exposure to respiratory pathogens and other respiratory hazards in alignment to local risk management practices. Where respiratory protection is required then a respiratory protective program must be implemented.

The risk management plan should include

- 1. Identification of risk which respiratory pathogens may be in the workplace.
- 2. Assess the risk which HCWs are exposed to the risk, and in which situations.
- 3. Treat the risk utilise measures within the hierarchy of control.
- 4. Document and report following local procedures.

5. Monitor and review – changes in levels of exposure risk may drive an escalation or de-escalation of risk treatments. Periodic review is suggested annually and at other times when the risk of exposure change.

Example risk treatments

Elimination: Vaccination, HCW exclusion from work if unwell, health screening, review work practices by reducing number of HCWs entering isolation rooms.

Substitution: Physical distancing, work from home, telehealth, hospital in the home, patient assessment at point of entry to facility, to determine requirement for transmission-based precautions.

Engineering: HVAC assessment of air change factors, negative pressure isolation rooms, single room with ensuite, air purifiers/cleaners.

Administrative: Mandatory vaccinations, standard/contact/droplet precautions, standard precautions, hand hygiene compliance, cleaning and disinfection, information (signs/posters/FAQs).

PPE: appropriate level of PPE to assessed risk, fit testing and checking PFRs.

Hospital and Health Service responsibilities

Hospital and Health Services (HHSs) are responsible for implementing the elements of a respiratory protection program in accordance with AS/NZS 1715:2009 and any local Respiratory Protection Procedure. HHSs are required to prioritise HCW access to fit testing based on assessed levels of risk using a risk assessment and management approach.

Employers are responsible for providing a safe work environment as per the *Work Health and Safety Act (2011).* The Work health and safety regulator, Workplace Health and Safety Queensland (WHSQ) may take enforcement action where tight-fitting respirators are provided to workers without instruction training and correct use and fit testing being undertaken (1).

As per the <u>Health, safety and wellbeing consultation Guideline</u>, responsible officers within Accountable Areas must ensure that consultation is undertaken on all aspects of a respiratory protection program development and delivery.

Elements of a respiratory protection program

Respiratory protection programs include several elements that are designed to protect workers from workplace respiratory hazards including airborne infectious agents, dust, and other particles.

A respiratory protection program includes the following components according to AS/NZS 1715:2009 - Selection, use and maintenance of respiratory protective equipment (2):

- Appointment of a program administrator
- <u>Selection of respiratory protection equipment</u>

- Medical screening of users
- <u>Training</u>
- Issue of respiratory protection equipment
- Fitting of equipment
- Wearing of respiratory protection equipment
- Maintenance of respiratory protection equipment (not relevant to P2/N95)
- Disposal of equipment (not relevant to P2/N95)
- <u>Record keeping</u>
- Program evaluation

The focus of this document is fit testing (fitting of RPE); however, guidance is also provided on some of the other elements of a respiratory protection program. Elements touched on in this guidance document are <u>underlined</u> in the above list. For further guidance on the elements of a respiratory protection program refer to AS/NZS 1715:2009 - Selection, use and maintenance of respiratory protective equipment and ISO 16975-3 Respiratory protective devices, selection, use and maintenance – Part 3. Fit testing procedures, First Edition 2017-09.

Program administrator and other required roles

Respiratory Protection Program Administrator

An individual must be assigned the responsibility to lead the respiratory protection program (RPP) for the HHS. The program administrator should be a work health and safety professional or have an understanding of the key principles of respiratory protection and of workplace hazards and risks. This administrator will require the support of work health and safety, infection control, infectious diseases, patient flow and other relevant skillsets in order to design and administer an effective RPP.

Key functions of the role (not intended to be exhaustive)

- Development of procedures for all elements of the respiratory protection program, including fit testing and training.
- Establishment of model of training for those performing fit testing; for example, trainthe-trainer model

Fit testing provider and trainer

Fit testing should be undertaken by a competent person. Refer to ISO 16975-3 Section 5 and Annex A, Competent fit-test operator. AS/NZS1715:2009 and to Section 2.3 of <u>NSW Clinical</u> <u>Excellence Commission Respiratory Protection Program</u> for further guidance.

Selection of PFRs

Only PFRs (disposable and non-disposable) that meet the requirements of AS/NZS 1716:2012 or the equivalent international standard (3) and are included in the Australian Register of Therapeutic Goods (ARTG) (4) should be used in healthcare settings and considered in respiratory protection programs.

It is also important to ensure that the PFRs used in the fit testing programs are those which will continue to be available to HCWs at the point of use. Each HCW is to be fit tested to a pass result for two or more devices, to enable alternatives in case of supply shortages. Some disposable respirators are not adequately fluid-resistant to be used when high-velocity splashes of blood or body fluid are likely. These respirators can be used in combination with a full-face shield to provide splash protection.

Training

The training required as part of a respiratory protection program is:

- Training in carrying out fit testing (for the fit testers)
- Training in the appropriate use of respiratory protection equipment, including:
 - When to use
 - How to put on and take off safely (donning and doffing)
 - How to perform a fit check
 - How to dispose of single use equipment
 - How to reprocess reusable equipment
 - Assessment of competency

Fit testing

Timing of fit testing

In accordance with AS/NZS 1715:2009 (2) and the <u>Australian Guidelines for the Prevention and</u> <u>Control of Infection in Healthcare (5)</u>, fit testing of PFRs must be undertaken:

- at the commencement of employment and annually for those who will be working in environments where significant risk of exposure to infectious agents transmitted via the airborne route, and/or other respiratory hazards has been identified and assessed.
 - clinical areas where staff are expected to wear a PFR for the management of pathogens transmitted by the air borne route for example respiratory, infectious diseases, emergency, TB services, intensive care and medical imaging.
 - Other clinical and non-clinical areas as identified through a local risk assessment by workplace health and safety and infection prevention and control staff.
- when there is a significant change in the wearer's facial characteristics that could alter the facial seal of the respirator (e.g. significant change in body weight, facial surgery, or growth in facial hair).
- when a new brand or model of PFR is required to be used.
- at regular intervals in accordance with relevant standards i.e. AS NZS 1715:2009 recommends annual fit testing.

Identification of staff for whom fit testing is required

HCWs identified as performing activities requiring respiratory protection and/or working in areas with a significant risk of exposure to diseases transmitted via the airborne route; handling other respiratory hazards such as hazardous drugs or other hazardous materials

must be identified. These HCW must be fit tested and trained in the appropriate use of respiratory protective equipment.

Monitor and review of the requirement of HCWs to access PFR fit testing is to be documented using a risk management framework, escalating and de-escalating requirements related to identified roles, (example: where staff are redeployed to risk areas). Risk assessments however, may indicate a HCW is no longer required to use a PFR and therefore fit testing will not be required to be repeated.

Activities requiring respiratory protection in healthcare:

Routine care of, or contact with, patients with infections considered to be transmitted via the airborne route, for example COVID-19, tuberculosis, measles, or chickenpox. HCWs performing aerosol generating procedures (AGPs) in patients with infections that are transmitted by the droplet route (including COVID-19).

- Some common AGPs are below:
 - instrumentation or surgical procedures on the respiratory tract e.g. intubation, bronchoscopy, tracheostomy, disconnection of closed ventilator circuit, ear, nose, and throat, maxillofacial/transsphenoidal or thoracic surgery involving the lung,
 - o non-invasive ventilation, induced sputum collection, high-flow nasal oxygen,
 - handling other respiratory hazards such as hazardous drugs or other hazardous materials,

High risk areas include:

- Emergency Departments
- Adult, Paediatric and Neonatal Intensive Care Units (ICUs)
- Wards with negative pressure rooms or respiratory isolation rooms
- Bronchoscopy Units
- Operating rooms or procedural rooms where bronchoscopy or other aerosol generating procedures are performed.
- Dentistry AGP procedures that use any of the following devices: high speed hand pieces, surgical hand pieces, ultrasonic and sonic devices, air polishing devices, and lasers. Triplex where air and water are used together can be considered aerosol generating.
- Any other work area / clinical /environmental circumstances identified as high risk for worker exposure based on local risk assessment.

High risk workers are defined as:

- Healthcare workers such as clinicians who work in high-risk areas, e.g. nurses, midwives, doctors, physiotherapists, speech pathologists, radiographers, administrative officers.
- Emergency and first responders e.g. Medical Emergency Team and any other staff identified as being at high risk of exposure due to the nature of the role.
- Ancillary staff, e.g. cleaners, who are required to enter a negative pressure room.

Other workers should be fit tested based on a risk assessment of the likelihood of caring for patients or having to enter the room of a patient with a known or suspected high morbidity/mortality airborne or respiratory infection (See Appendix 3 Example Risk Assessment).

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

- 1. prior to working in a high-risk area,
- 2. when there is a significant change in the wearer's facial characteristics that could alter the facial seal of the respirator (e.g. facial surgery or significant change in body weight),

Priority Category's	Category	Priority Areas
1	Staff providing direct care to patients in airborne precautions or are required to assist in care, including AGPs Disease requiring airborne precautions e.g., Tuberculosis, Measles, Varicella, COVID-19 or emerging pathogens and any other diseases for which public health guidelines recommend airborne precautions	Anaesthetics Resuscitation / Intubation teams Critical care Infectious diseases Respiratory Other areas as identified by local risk assessment
2	Other patient care areas Maintenance and other staff who may be exposed to inhalation of dangerous particulates and gases in the course of their work	Any other area / situation identified as high risk for airborne transmissible disease exposure Compound Pharmacy Oncology haematology

3. when failing to demonstrate a proper fit check at annual competency assessment.

Type of fit testing to be undertaken

Quantitative (objective) fit test

A quantitative fit test gives objective numerical results using specialised particle counting equipment (such as a PortaCount[™] Plus machine). It measures how much air leaks into the wearer's breathing zone. It does not rely on the subject's response to a test agent. A quantitative fit test result is superior to a qualitative fit test result because of the objective nature of the test. Quantitative fit testing should be used over qualitative fit testing where a risk assessment indicates the worker will be exposed the airborne pathogens in the healthcare environment regularly and or for extended durations. Quantitative testing should be used in preference, however qualitative testing is acceptable in circumstances addressing availability and access.

Qualitative (subjective) fit test

A qualitative fit test is a facial fit testing giving pass or fail results and relies on the wearer's subjective response to an aerosolised test agent. A flavoured test agent such as saccharin or Bittrex[™] (a bitter tasting substance) is used at a level at which the user will be able to sense its presence within the respirator by taste, smell or the urge to cough if the fit is not adequate.

In deciding whether to use qualitative fit testing an assessment should be made of the risk of the subject being unable to detect the test agent due to unanticipated illness (e.g. loss of taste/smell is a symptom of COVID-19). The risks of cross-infection associated with reuse and reprocessing of the testing hood should also be assessed.

Record-keeping

A record of all fit testing conducted by Queensland Health must be kept and stored in a secure database that is accessible to authorised persons only. Data must be provided to (or maintained directly in, where applicable), the centralised Queensland Health Fit Test Register (FiTR) as the official source of fit test data. The minimum data set (MDS) fields are prescribed within the FiTR Work Instructions and will be routinely reviewed in consultation with the Statewide Fit Test Reference Group to maintain currency.

In addition, workplaces should maintain a record (e.g. in Riskman) of any instances where staff have continued to work in situations where P2/N95 respirators were required but where the respirators were not available or a fit test was not undertaken or successful. The reporting of these instances should be monitored to ascertain compliance with relevant standards and legislation and to better monitor staff safety in working in environments where risk of exposure to significant known or notable and unusual infectious agents exists.

Communication of results of fit testing

HCWs and their line manager should be advised of the size and brand of respirators that were successfully fitted and be provided with the relevant documentation for future reference. HCWs should be advised of criteria for further fit testing (recommended annually or sooner if there is a significant change in facial features). Workplaces should implement

methods for collection of aggregate fit test results in order to inform procurement. Staff should be advised that their fit testing results will be used for this purpose.

Considerations on common fit testing implementation issues

Facial hair

An adequate seal may be difficult to achieve for people with facial hair. The effectiveness of a tight-fitting facepiece, such as half-face or full-face respirators that use straps, relies on an effective seal with the wearer's face. If the respirator does not fit properly, the wearer will not get the expected level of protection. Facial hair that lies along the sealing surface of a tight-fitting respirator prevents an effective seal. Therefore, it is a requirement that there is no hair growth between the skin and the facepiece sealing surface in order to achieve a fit. Staff must be advised that this requirement continues for use of respirators in practice, not only for the fit testing process.

AS/NZS 1715:2009 (Appendix B) provides guidance in relation to beards, moustaches, sideburns, stubble growth and long hair. See also the Centres for Disease Control (CDC) guide on *Facial Hairstyles and Filtering Facepiece Respirators* (6) Other factors that may interfere with facial seal include jewellery, facial makeup, and creams.

Staff unable to comply with respiratory protection requirements

The requirement for use of PPE and to remove facial hair as necessary is a lawful direction in accordance with AS/NZS 1715:2009. Employees can seek an exemption from a lawful direction for certain prescribed reasons (such as medical, cultural and religious reasons). Where a circumstance of non-compliance arises, the following broad steps are recommended in reaching a resolution:

- Consult with the HCW
- Exploring different options (such as another work location, remote or flexible work)
- Potential to take leave.

Please discuss local issues regarding any staff that decline to remove their facial hair with your local Human Resources department, and consult the Queensland Health position statement: *Facial hair and ensuring the adequate performance of respiratory protective equipment.*

Failing fit test

HCWs who fail a fit test with a certain respirator must be tested with a second and if required subsequent respirator(s) to ensure the correct brand and size is determined in relation to facial features and ability to maintain a facial seal.

Where repeated fit test has failed, the HCW must be referred to the Fit Testing Program Administrator in consultation with their Line manager for re-evaluation and development of a plan. Fit testing for a powered air-purifying respirator (PAPR) may also be considered. This

should only be considered after failing fit test with disposable respirators, due to the risk of contamination during removal of PAPR. Careful attention must be paid to correct fitting and removal processes, as well as cleaning and disinfection. Refer to Queensland Health *Guideline for CleanSpace HALO Powered Air Purifying Respirator* (PAPR). Fit testing can be repeated if a new PFR of different specifications becomes available.

Medical evaluation

There is the potential for PFRs to cause physical and psychological stress on users. Where an individual HCW identifies as having a condition which may be impacted by the use of a PFR, they should be assessed to determine whether it is safe for them use to a PFR.

Physiological considerations include whether they have any cardiac or respiratory conditions especially for prolonged use or heavy work. Psychological considerations include claustrophobia, anxiety or isolation. Information and training and therapeutic psychological interventions can be given to help users overcome these concerns.

Risk assessment for staged implementation of fit testing

When healthcare demand is extreme, full and immediate implementation of fit testing for every healthcare worker assessed as requiring a PFR may add strain on human resources and supply of PFRs. Refer to Appendix 6 of the <u>COVID-19 Infection Prevention and Control</u> <u>Manual For acute and non-acute healthcare settings</u>, for guidance regarding Low, Moderate and High PPE escalation specific to PFR recommendation.

Healthcare organisations should perform and document a timely risk assessment to determine whether full implementation of fit testing is reasonably practicable. A risk stratified approach, with prioritised fit testing directed towards the locally identified highest risk situations, done in consultation with HCWs, is an appropriate way to manage limited resources and the required implementation of RPE controls. Consultation with unions should be undertaken on the application of risk assessments that determine staged fit testing implementation.

Fit testing must occur in line with the AS/ NZS 175:2009 once there is capacity.

Decisions regarding staged implementation of fit testing should:

- Be focussed on practical risk reduction
- Prioritise those staff who are assessed as at being of greatest risk of exposure
- Address both physical and psychological safety
- Provide for transitional measures for staff who are working in high-risk environments, but who have not yet been able to be fit tested, subject to operational requirements.

In identifying those HCWs at highest risk of infection from airborne transmission, factors that may increase the risk of transmission can be considered. These factors include:

• process factors:

- cumulative exposure to the patient and infectious agent i.e. prolonged or repeated contact
- multiple infected patients in an enclosed space
- encounters with patients before their risk can be assessed (e.g. in emergency departments, particularly prior to triage)
- care settings that are less controlled (e.g. pre-hospital environment, in-home care or outreach services)

Patient factors:

- aerosol-generating behaviours likely (such as coughing, shouting, screaming, increased work of breathing)
- inability to cooperate/cognitive impairment, inability to tolerate a surgical mask, challenging behaviours
- exposure during period of high infectivity

Environmental factors:

- suboptimal ventilation
- unexpected air movements (opening doors, fans, foot traffic)
- enclosed space

Fit testing of agency staff, contractors, and students

Students

Even in the absence of widespread community transmission of COVID-19, and in the absence of a mandate for mask-wearing, wearing of fit-tested respirators continues to remain a requirement for students attending clinical placements in Queensland Health facilities where there is a high risk of exposure to an airborne infectious agent and where heightened personal protective protocols are in effect* requiring the use of a PFR.

The requirement to use a PFR relates to the risk of infection with an airborne transmitted disease. Some students already routinely wear appropriately fit tested respirators while on clinical placement, due to the locations they are attending and the patients they are seeing. This is not a COVID-specific requirement. The health system will require education providers to continue to ensure their students are appropriately fit tested prior to commencing placement where it is required. Education providers should make arrangements to support timely fit testing of their student cohorts (or individual students, as the case may be) where it is required and for the foreseeable future.

Records of students fit testing results are to be made available to Queensland Health as required and are to contain the following details:

- Name of student identification number.
- Date of fit test.
- Medical screening /evaluation of physical and psychological capacity to use RPE.
- Make/brand, model, and size of RPE successfully fitted.

Students who do not produce records of fit testing results may not be able to proceed with placement.

An HHS may decide to fit test a student in certain circumstances (e.g. where the student has a fit test result for a PFR that is not available).

An HHS may decide to deploy a student to another area not requiring the use of a PFR and a fit test.

Agency staff and Contractors

Under Standing Offer Arrangement (SOA) HSQ84282 Nursing and Midwifery Services (10.4.2), guidance on the responsibility of the supplier (agency) to ensure fit testing is stated as follows:

The Supplier warrants that they understand their obligations under all applicable workplace relations, occupational health and safety and workers' compensation laws and regulations. The Supplier undertakes to comply with all relevant legislation and assumes the relevant obligations as an employer of the Candidate, and to be responsible for all payroll, superannuation, taxation, workers compensation and **relevant occupational health and safety requirements**.

Contractors, including principal contractors, must comply with minimum Personal Protective Equipment (PPE) requirements as detailed in this document. Contractors must ensure their workers are fit tested and trained in the correct use, maintenance and storage of PPE; and providing evidence as required. An example where Queensland Health may provide fit testing to contractors may be when a contractor has been engaged through an HR process to fill an existing FTE position (e.g. hired through an agency).

Recommendations

Workplaces should develop systems to:

- Clearly identify priority risk category healthcare workers to be enrolled in a fit test program utilising the PPE escalation and de-escalation guidance of Low, Moderate, High within <u>COVID-19 Infection Prevention and Control Manual for acute and nonacute healthcare settings.</u>
- 2. Continue to ensure that training on the use of PFRs reinforces the requirement for the wearer to perform a <u>fit check</u> every time a PFR is fitted.
- 3. Wherever available and reasonably practicable, quantitative fit testing should be used in preference to qualitative testing.

- 4. Where a successful fit test is unable to be achieved, take measures to ensure alternative management either through reallocation of duties, or development of an alternative, personalised PPE plan.
- 5. Establish processes to be followed when a staff member requires respiratory protection and no PFR for which they have been fit tested is available, noting that AS/NZS 1715:2009 provides guidance on this matter.
- 6. Maintain a database of fit testing outcome data, including name, date, payroll number, and result of testing and of instances where staff have continued to perform duties in situations where the wearing of a PFR and compliance of fit testing was required by relevant legislation, standards and guidance.
- 7. Ensure that an educational program for fitting and removal of PFRs is provided, that focuses on the location and method for safe donning and doffing of PFRs to prevent the risk of transmission of healthcare associated infection (self-contamination). Required frequency of refresher training should also be considered.
- 8. Consultation with relevant staff and Health and Safety Representatives (HSRs) within the organisation should occur when implementing arrangements to comply with legislation, standards and guidance for fit testing PFRs.

Consultation in the development of this Implementation Guidance

This guidance was developed in consultation with:

- Health and Safety Unit, Human Resources Branch, Corporate Services Division
- The Queensland Health Statewide Infection Clinical Network
- Communicable Diseases Branch, Queensland Public Health and Scientific Services
- Office of the Chief Nurse and Midwifery Officer, Clinical Excellence Queensland
- Clinical Placements Program Management Team, Workforce Strategy Branch, Clinical Planning and Service Strategy Division
- Queensland Health Work Health and Safety Managers' Forum (statewide)
- Queensland Health Executive Directors of People and Culture (statewide)
- Healthcare Union/Industrial partners
- Workforce Relations and Policy Unit, Human Resources Branch, Corporate Services Division

Definitions

Term	Definition / Explanation / Details	Source
Fit check	A simple check to ensure the respirator fits each time it is worn. Fit checks ensure the respirator is sealed over the bridge of the nose and mouth and that there are no gaps between the respirator and face. Fit checking must be performed each time a respirator is used, regardless of whether previous fit testing has been performed.	AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment
Fit factor	Numeric value of the fit of a particular tight- fitting respiratory interface to a specific individual	ISO16975-3

Fit test	A validated method of matching a PFR to an individual. There are two categories of fit test: qualitative and quantitative. A qualitative fit test gives pass or fail results and relies on a subject's response to a test agent. A quantitative fit test gives numerical results and does not rely on the subject's response to a test agent.	AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment
Healthcare worker/s (HCW/s)	Health care workers means all workers (including non- clinical) who work in the facilities or services in scope for this guidance.	Queensland Health
P2/N95 PFR	P2 and N95 masks are designed to help reduce respiratory exposure to airborne contaminants. They are used when there is a high probability of transmission from particles or droplets in the air. P2 and N95 masks must have a good facial fit to be effective.	Safe Work Australia
Powered air- purifying respirator (PAPR)	A device incorporating a half facepiece, full facepiece or head covering which provides the wearer with air filtered through a powered filtering unit, comprising a filter or filters and an electrically operated blowing unit	AS1715:2009 Selection, use and maintenance of respiratory protective equipment

Review

This guidance will be reviewed as new information becomes available.

Version control	Date	Prepared by	Comments
V0.1 – V0.09	Sep 2020- Feb 2021	Fit testing working group and then PPE Working Group of the CRG.	New document
V0.10	11/03/21	Dr Alex Markwell on behalf of PPE Working group	Incorporating further feedback and updated national guidelines
V1.0	March 2021	PPE Working Group	Review
V1.1 – 2.0	November 2021- January 2022	PPE Working Group	Major editorial changes – changes to headings and flow of document, duplication removed. Strengthened recommendation for quantitative fit testing. Addition of Appendix 1 Work instruction for fit testing incorporating eHealth Maskhelper tool. Appendix 1 based on THHS Standard Operating Procedure Quantitative RPE Fit Testing

V2.1	November 2022	Health and Safety Unit, HRB, CSD	Review and revision. Realignment to revised supporting documentation.
V2.2	January 2023	Health and Safety Unit, HRB, CSD	Revision following consultation
V2.3	March2023	Health and Safety Unit, HRB, CSD	Revision following consultation

Approval and implementation

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Contact area

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 Queensland Health. COVID-19 Infection Prevention and Control Manual for acute and non-acute healthcare settings. <u>https://www.health.qld.gov.au/</u> <u>data/assets/pdf_file/0038/939656/qh-covid-19-</u><u>Infection-control-guidelines.pdf</u>.

Additional resources

- <u>Respiratory Protection Against Airborne Infectious Diseases Clinical Guideline</u> South Australia Health Clinical Guideline No.: CG099
- <u>Respiratory Protection Program</u> NSW Health Clinical Excellence Commission
- <u>Victorian Respiratory Protection Program guidelines</u> State of Victoria, Australia, Department of Health and Human Services
- <u>Guidance on the use of personal protective equipment (PPE) for health care workers in</u> <u>the context of COVID-19</u>. Infection Control Expert Group.

Appendix 1. Fit test work instruction – PortaCount (Quantitative testing)

A fit test is a validated method that determines the respirator that provides an adequate match between the wearer's facial characteristics and the seal of a close-fitting respirator. The most commonly used respirator in Queensland Health hospitals are disposable particulate filter respirators (PFRs, also known as P2 or N95 respirators). Currently Queensland Health Hospitals and Health Services conduct fit testing with PortaCount Respirator Fit Test machines using FitPro ultra fit test software measuring the concentration of microscopic particles in the ambient air and the concentration of those particles that leak into a PFR during the fit test. The ratio of these two concentrations is called the fit factor.

The test is done while a person is wearing a PFR attached to a testing unit and carrying out a number of physical movements. A fit test does not replace the need to conduct a fit check every time a PFR is used. The results indicate the effectiveness of the seal of a specific model of PFR against the face. While each physical movement done during the test gives a fit factor result, the overall fit factor from the combined scores is used to determine if the respirator provides the level of protection required.

The test must be conducted with additional items normally worn by the HCW examples are prescription glasses, face shield/eye protection, hear wear and any prophylactic skin protection.

After donning the respirator without assistance, the HCW will wear the PFR for a period of 5 minutes acclimitisation, to ensure no further adjustments are required for comfort and ensure accuracy of a fit check. The Portacount machine is turned on to ensure that air flows away from the HCW. During the 5-minute acclimitisation, the Portacount machine purges ambient particles in the respirator, and assists the HCW to test their breathing comfort

The tester will then conduct four physical movements over 2.5 minutes assisting the HCW with verbal instructions: Reference: <u>OSHA protocol Appendix A</u> to 1910.134—fit testing procedures

- bending over (50 seconds),
- talking (30 seconds),
- turning head from side to side (30 seconds),
- moving head up and down (39 seconds).

This sequence is repeated for each PFR tested A fit test will be conducted against a minimum of two PFR to enable individual HCW access to tested PFR.

Access to fit testing is linked to the risk assessment of the worker potential exposure to recognised and unrecognised sources of airborne and aerosolised infectious agents in the workplace, prioritising those staff who are assessed as at being of greatest risk of exposure.

Resources and requirements

Quantitative respirator fit testing requires a competent fit tester as required by AS/NZ1715, to prepare and administer a fit test using available Queensland Health procured RPE. Testing should occur in a standardised approach utilising to limit biases caused by fit testers or personnel being fit tested.

Results & Pass Levels

N95/P2 half face RPE, disposable and reusable must achieve a minimum Fit Factor Rating of 100 to be deemed a pass. Full face reusable RPE (including close-fitting facepiece PAPR) must achieve a minimum FFR of 500 to be deemed a pass. Fit Factors are provided at the end of each exercise; however, it is the Overall Fit Factor that determines a pass or fail. Individual fit factors allow early termination of a fit test when a test is destined for failure i.e. an individual exercise fit factor \leq 45 is unlikely to pass overall especially when there is no or limited recovery on the subsequent exercise.

Equipment

- Respirator Fit Testing Machine Quantitative fit testing machine
- Fit Testing Attachments (reusable PFR and PAPRs) Test RPE (reusable PFR)
- Computer (preferably laptop)
- Portable device (Research fit tests only)
- Particulate Generator

Reagents and Consumables

- Reagent grade Isopropyl Alcohol
- NaCl tablets 100mg
- Sample probes (disposables)
- Disinfectant Wipes
- Test PFR (disposables)
- Antiseptic Hand rub Labels (research fit tests only

Identified risks

• Isopropyl Alcohol Class 3 Flammable Liquid, Packaging Group II (SDS available on <u>ChemAlert</u>)

Infection Control

- Exposure of Fit Tester to symptomatic or asymptomatic ill personnel
- Exposure of personnel submitting for fit testing by previously tested personnel
- Exposure of personnel submitting for fit testing by symptomatic or asymptomatic Fit Tester

Non-standardised fit testing

- Fit testers failing personnel if an individual has failed one exercise but passed overall.
- Fit testers applying a higher pass mark based on personnel location of work, higher perceived risks, and subsequent protection.

RPE Fit Testing Preparation

Follow all manufacturers guidance and requirements for the use of a Fit testing machine. Should these instructions vary from the guidance offered in this section, the fit testing machine manufacturer's instructions should prevail.

The Fit testing machine must be within the calibration date (12 months) as specified by the manufacturer) and used in an area where a suitable atmosphere for fit testing can be established.

When used to create a suitable atmosphere, the particulate generator must have the reservoir filled and one whole (not crushed) 100mg salt (NaCl) tablet added. Start the particulate generator approximately five (5) minutes prior to completing the daily check to build the number of particulates up in the atmosphere

Ensure that the alcohol cartridge reservoir is filled (to the indicator line approximately halfway up the reservoir) with reagent grade isopropyl alcohol and that the wick internal to the cartridge has had time to absorb the alcohol if starting from a dry wick and reservoir.

Remove the cap from the fit testing machine and insert the alcohol cartridge being careful not to use excessive force as the locating tab is prone to failure.

Turn on the fit testing machine and ensure that it is connected to a network enabled Queensland Health computer. Ensure that the sampling tubes are connected to the appropriate inlets (colour coded blue – blue, clear – clear).

Turn on the Queensland Health computer and open the fit testing software (e.g. FitPro).

Connect the fit testing machine in the fit testing software and commence the daily checks. Follow the on-screen instructions for the daily checks ensuring that N95 is selected when testing P2/N95 RPE. Once the daily checks are complete the fit testing machine is ready to commence sampling.

Fit testing consumable management

- 1. Review consumables and order as necessary.
 - a. Isopropyl Alcohol and salt tablets are ordered through vendor or pharmacy.
- 2. Fit Testing machine consumables (sampling tube and sample probes) are ordered through the OEM (original equipment manufacturer) supplier.
- 3. Sterilise the fit testing equipment through central sterilisation.
- 4. Sampling tube on a weekly basis (minimum).
- 5. Internal filter cages on a monthly basis (minimum).

Quality controls and acceptance criteria

Fit Testing machine Annual Calibration (contact vendor) and daily checks.

Record keeping and Reporting

Record and report respirator fit testing in accordance with local HHS requirements.

Appendix 2. Procedure for incorporating Maskhelper into fit testing

The Maskhelper project has been designed with the idea of bringing about efficiency, particularly waste reduction, as well as uniformity and standardisation of quantitative fit testing underpinned by artificial intelligence (AI)- based facial recognition system.

Using AI-based facial recognition, Maskhelper provides an increased chance of initial choice of a respirator that will be able to achieve a successful fit test. As at 23 November 2021 Maskhelper's accuracy is at 66% compared with 39% for an experienced fit tester. Further, if the first chosen mask is correct there is an increased predictability with the second and subsequent choices for an individual. Use of Maskhelper saves time for both the fit tester and the individual being fitted, gives an alternative in the event of supply chain difficulties, and prevents wastage of respirators.

Maskhelper work instruction

This work instruction provides information for fit testing programs to incorporate the use of the eHealth Maskhelper tool into the fit testing process as a first step triaging tool to make best use of the limited resources for fit testing.

The work instruction covers all fit testing for all particulate filter respirators that require a close fitting facepiece and subsequent seal with the user's face.

This work instruction is based on Townsville Hospital and Health Service's Standard Operating Procedure Quantitative RPE Fit Testing, and the work of the team at Townsville Hospital and Health Service is acknowledged.

- 1. Fit-Tester Logs into the local eHealth Maskhelper tool at <u>Maskhelper</u> (health.qld.gov.au)
- 2. Fit-Tester provides "Terms of Participation" that includes pop up link for consent form (PICF).
- 3. Fit tester selects "Add on behalf of" button the top right of the eHealth Maskhelper tool. This enables the searching of Queensland Health personnel via the "fit-test on behalf of" field which is linked to DSS and anonymised to researchers.
- 4. Enter the reference ID number for the HCW based on numerical order of HCWs for that day (01-99) for that site. e.g., TUH-22032021-01, TUH-22032021-02 and so on.
- 5. Record the HCW's research ID# on a self-adhesive label and apply to participants name badge or clothing. This is to ensure that no participant identifiable information is photographed.
- 6. Fit-Tester takes a frontal photo of the HCW (that includes reference ID label)
- 7. The eHealth Maskhelper tool will analyse the frontal photo and select up to two RPE based on the HCW's facial characteristics

- 8. Fit tester must clean hands prior to handling RPE, fit test attachments or sample ports.
- 9. Fit tester selects the recommended PFR and instructs the HCW to don the PFR to perform a Fit Check for each PFR.
 - a. If the Fit Check obviously fails, do not proceed to quantitative fit testing record comments such as likely fail point(s)
 - b. If the Fit Check passes proceed to quantitative fit testing
- 10. Insert the sample port into the selected RPE using the provided tool, ensure that the port is positioned approximately halfway between the HCW's mouth and nose.
- 11. Connect the sampling tube to the RPE sampling port or attachment and request the HCW to don the PFR.
- 12. Allow the participant to fit the PFR as they normally would, observe the placement of the RPE on the face the positioning of the straps and the method of adjusting the nose piece. Depending on local policy and workflow, take this opportunity to educate the HCW on correct fitting and removal, and performing a fit check.
- 13. Commence the fit test, instruct the HCW to follow the Modified OSHSA protocol.
- 14. If a fail is likely and issue(s) have been identified with RPE fitting, take this time to adjust and review improvement/regression.
- 15. If a fail occurs, select alternative RPE
- 16. Once the HCW passes with an overall fit factor of 100 or greater complete the fit test certificate and provide to the HCW (either in hard or electronic copy).
- 17. Complete research data including HCW feedback and submit.
- 18. Complete FiTR record and local record (e.g., Learning Management System / LOL) so that the HCW has access to their fit testing record. Record all exercise Fit Factor and Overall Fit Factor Ratings record comments such as adjusted fit bottom strap below ear, adjusted placement on nose, etc.
- 19. Once the recommended masks have been completed ensure that all Fit Factors, Overall Fit Factor Ratings, and comments have been completed before submitting eHealth Maskhelper tool.
- 20. If none of the recommended masks achieve a satisfactory fit, choose further masks from the drop- down menu on the eHealth tool to complete further testing and record Fit Factors, Overall Fit Factors, and comments.

Post - fit testing

- 21. Disinfect the fit testing equipment including the sampling tube, any reusable respirators, reusable respirator attachments, rainbow passage, mirror, and hard surfaces around the fit testing machine using disinfection wipes.
- 22. Place the portable device on charge ready for the next HCW.

Appendix 3: Example risk assessment

Hospital and Health Service:		
Location:	Ward / Area:	
Officers involved in risk assessment:		
Approving officer:		
Ward/work area:		
Medical	Nursing	
Allied Health	Support Services	
Administration	Other	
Description of risk assessment:		
Describe the potential exposure to recognised and unrecognised sources of airborne and aerosolised infectious agents, chemical hazards (neoplastic agents, cleaning products, etc.) in your area:		
Take into consideration:		
Exposure time	Frequency of exposure	
Likelihood of exposure	Situation/activity risking exposure	
Key risk exposures – identify likelihood		
Management of patients with tuberculosis	Management of patients with COVID-19	
Management of patients with measles / chickenpox	Other airborne infectious agent/airborne hazard	
List the current control measures in place, and those to be implemented, including:		
Vaccination compliance	Appropriate guidance for IP&C precautions, including PPE	
Adequate supply of PFRs	Adequate range of PFRs	
Supply and control of alternative respirators e.g., PAPRs	Relevant HCWs compliant with fit test requirements	

Access to fit testing	Fit checking embedded into education and practice
Other (refer to Figure 1: Hierarchy of control measures)	