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Australasian Faculty of
Occupational and Environmental Medicine

COVID-19: Guidance on Workplace Risk Management[1]

The COVID-19 pandemic is an evolving situation and the advice for health and aged care workers about putting in place control measures, including using personal protective equipment (PPE) is continually being reviewed as the situation changes.

In Australia, the advice provided in this document should be read in conjunction with the advice provided by the Department of Health's Infection Control Expert Group (ICEG) and with the relevant Australian local state and territory health departments' websites which provide the latest locally relevant recommendations.

In Aotearoa New Zealand, health professionals should refer to the Aotearoa New Zealand Ministry of Health's website.

This document should be read in conjunction with the following guidance issued by the Australian and Aotearoa New Zealand Governments regarding personal protective equipment) (PPE):

- Australia:
  - National Health and Medical Research Council Guidance for Prevention and Control of Infection in Health Care
  - The Australian Health Protection Principal Committee (AHPPC) Statement on the use of personal protective equipment in hospitals during COVID-19 Outbreak
  - Communicable Diseases Network Australia's (CDNA's) COVID-19 Series of National Guidelines (SoNG)
  - The Australian Infection Control Expert Group, Guidance on the use of personal protective equipment (PPE) in hospitals during the COVID-19 outbreak
  - Department of Health, Personal protective equipment (PPE) for the health workforce during COVID-19
  - Department of Health, Coronavirus (COVID-19) – Recommended minimum requirements for the use of masks or respirators by health and residential care workers in areas with significant community transmission
- Aotearoa New Zealand:
  - Ministry of Health, Personal protective equipment use in health care and disability care settings
  - Ministry of Health, COVID-19: Personal protective equipment for non-health workers
  - Ministry of Health, Frequently asked questions about PPE and COVID-19

Purpose

The Australasian Faculty of Occupational and Environmental Medicine (AFOEM) of the Royal Australasian College of Physicians (RACP), recognises the health threats posed by COVID-19 to the Australian and Aotearoa New Zealand populations.

The purpose of this document is to provide guidance on how to implement the principles of infection prevention and control with respect to the SARS-CoV-2 virus, using the hierarchy of controls, a commonly understood framework for managing workplace health and safety risks. This will assist workplaces to manage the risk of COVID-19 on similar terms as for any other workplace hazard.

[1] *Note:All hyperlinks in this document are current as of 14 October 2020*

There is existing advice[2] on infection control measures where the risk of transmission is likely to be very high, such as in hospital wards where COVID-19 patients are being treated and/or where community transmission is high. Most public health and infectious diseases advice is directed at infection control and prevention of spread of infection in the community, aged care and health care settings rather than specifically at the protection of workers who may be exposed to COVID-19. The guidance in this document is applicable to both health and age care settings, including work areas away from direct patient care and also to other types of workplaces.

Application of specific controls as well as the need for and type of PPE required will depend on local circumstances at the time, including levels of community transmission, disease prevalence and local public health directives.

Background: the hierarchy of controls and COVID-19

The rapid spread of COVID-19, the inability to immediately identify infected people, the potential for spread by asymptomatic and presymptomatic individuals, and the deaths of otherwise healthy individuals has resulted in widespread fear and anxiety worldwide, amid at times devastating social and economic disruption. At the same time, it has been shown that COVID-19 prevention measures, such as ceasing overseas travel, working from home, physical distancing, cough etiquette and hand hygiene, are highly effective in reducing its spread and prevalence, even without the use of PPE.

However, it is essential to note that:

- For as long at the SARS-CoV-2 virus remains present in the population, **any** non-compliance with these infection control measures may still lead to COVID-19 outbreaks, which will demand an immediate and intensive public health infection control response.
- As the **least effective** control measure for preventing the SARS-CoV-2 virus from spreading, PPE should **only** be used when it is **not** possible to comply with the aforementioned measures or in response to other Chief Health Officer directives such as carrying a mask in the event that physical distancing requirements cannot be met.

In situations where workers are **least** able to comply with the **most** effective control measures, the use of PPE may be required. This especially applies if there is a high level of community transmission. In such circumstances, those who are most likely to be exposed to the SARS-CoV-2 virus are workers in the health, aged care and emergency services sectors who need to manage patients with suspected or confirmed infection.

The spread of COVID-19 among health care and aged care workers caring for people with suspected or confirmed COVID-19 infections, demonstrates the need for the most appropriate PPE to be selected to maximise the level of protection of workers. This not only protects these workers, but conserves the workforce who may otherwise have to undergo isolation from being in contact with infected health or aged care workers.

While hospital workers and other parts of the health sector, such as primary care, are likely to be the major users of PPE, consideration also should be given to other HCWs such as:

- dentists, and medical specialists such as respiratory physicians, ear, nose and throat surgeons, ophthalmologists and physiotherapists and other allied health professionals who routinely have close contact with potentially infected patients, and who often are involved in aerosol generating activities.
- Nurses and other health workers who undertake home visits to the elderly and people with a disability, requiring close personal contact.
- Health care workers located in detention or correctional facilities, where there may be particular challenged in enacting the hierarchy of controls.

How to apply this document

<u>Standard precautions for infection prevention and control</u>

Physical distancing, hand hygiene, cough etiquette, physical barriers/shields, the use of PPE to avoid exposure to blood, body fluids and secretions, and an effective environmental cleaning regimen remain the standard precautions for infection prevention and control.

[2] Please refer to the resources listed on the first page of this guidance document

Use of PPE

Health and aged care workers managing suspected or confirmed cases of COVID-19 may be working in indoor conditions which are crowded and inadequately ventilated, thus facilitiating the airborne and contact spread of SARS-CoV-2. Under such circumstances, PPE is required to protect the health of these workers and also to prevent the spread of infection by asymptomatic or presymptomatic cases.

Ascertaining **when** PPE should be used, and **what** PPE is required, requires a risk management approach that **reflects the task(s) being undertaken**, based on:

- As far as possible in the **first** instance, implementing the hierarchy of workplace hazard controls for all workplace tasks with specific reference to COVID-19 (Table 1).
- Assessing the **residual** risk for each task **after** the hierarchy of controls has been implemented.
- Then assessing **what** PPE to use (if any), in order to control the residual risk for each task (Table 2).

In addition, the higher level of risk posed by Aerosol Generating Procedures (AGPs) means that the PPE for such tasks will require further assessment, based on the frequency and duration of each AGP under consideration (Table 3).

Surgical masks are effective in preventing the spread of droplets by individuals with active COVID-19 infection, and should be worn by all staff briefly entering rooms or wards with known cases, along with the suite of other PPE (gowns, gloves and eye protection).

Where other than brief exposures to known or suspected COVID-19 cases are likely, particularly in inadequately ventilated or crowded rooms, staff should be provided with P2/N95 respirators together with other PPE as above.

Properly sized and fitted P2/N95 respirators are designed to filter the air and protect the wearer from inhalation of infected droplets or aerosols. The selection of the correct size and shape mask to suit the wearer's face and ensure an adequate seal is known as **fit testing.** This usually only needs to be performed annually or more frequently if the type of P2/N95 respirator is changed. This is detailed in Australian and Aotearoa New Zealand Standard AS/NZS 1715:2009.

Fit checking, or seal testing, is required each time a P2/N95 respirator is donned to ensure that there is a good seal around the edges of the respirator each time it is used.

Training in the use of PPE

It is vitally important that fit testing of P2/N95 respirators is undertaken by a suitably qualified person. Training is also required in donning, doffing of all PPE as well as fit checking respirators before each use.

Health care workers have a long history of wearing PPE to protect themselves from being contaminated with bodily fluids from infected patients who may have a range of different infections. However, contact precautions alone may be inadequate for preventing transmission of infections like SARS-CoV-2, which can form aerosols under certain conditions. In addition, workers need to be reminded that the risk of acquiring or spreading SARS-CoV-2 in a workplace extends beyond the immediate vicinity of patients being treated for COVID-19, such as in office areas, toilets, meal rooms or other shared work spaces.

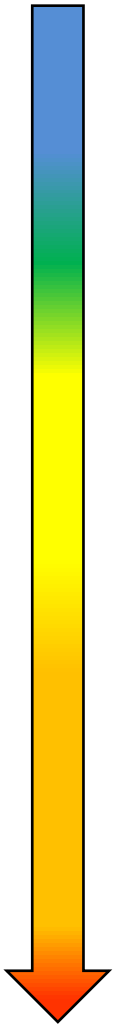
All workers need training which stresses the importance of not contaminating themselves, the environment, or fellow workers by inadvertently touching their PPE while wearing it, or on or after its removal.

Where there are problems with respirator fit or other pre-existing health conditions which may affect the proper wearing of a respirator, such as asthma or other respiratory condition, the worker should be medically evaluated. If a respirator is required, it is important for the workers to be aware of the potential hazards associated with PPE use and strategies to manage these.

Table 1: Application of the Hierarchy of Controls to controlling COVID-19

This table provides examples of measures for consideration for controlling COVID-19 hazards, and the preferred order.

Most Effective



Least Effective

	Example actions
Remove the potential for exposure to the the SARS-CoV-2 virus**)**	• Workers with any symptoms to get tested for COVID-19 and remain at home awaiting the result. • Screen staff daily at the workplace (fever, symptoms) and send home and for testing if unwell. • Remove vulnerable HCWs (as defined per the AFOEM or Australian Department of Health website) from high risk areas (e.g. dedicated COVID-19 wards, EDs, and ICUs to lower risk areas (e.g. non-COVID-19 general medical or surgical wards). • Triage patients with respiratory symptoms and/or travel or contact history to dedicated assessment areas. • Screen, restrict and manage visitors with respiratory symptoms. • Do not perform non-essential higher risk procedures.
Substitution (**Replace processes that create exposure to** the SARS-CoV-2 virus	• Use teleconferencing / telehealth / virtual consultations and meetings. • Use non-aerosolising techniques, equipment, and cleaning techniques where possible.
Engineering (**Isolate** people from the the SARS-CoV-2 virus	• Install perspex cashier spray guards and distancing spacers, create queue lines with spacing markers. • Use airborne infectious isolation/negative pressure rooms (where available) per the relevant procedures. • Exhaust room air via HEPA filters with frequent air turnover using fresh air rather than recycled air. • Use closed system ventilators and suction, where possible. • Where possible, move monitoring equipment outside patient rooms; otherwise, it should be specifically dedicated as such and remain in patient rooms. • Aggregate (cohort) known cases in wards away from non-COVID-19 patients. • Provide covers/booths over patients during transportation (where possible).
Administrative (**Change** how people work)	• Implement **non**-engineering physical distancing measures (e.g. card-only payment). • Regular hand hygiene with soap and water and/or hand sanitiser. • Institute elevator, work break and routine training separation protocols. • Encourage staff risk reduction behaviours when at home or in the community (e.g. social distancing, hand hygiene). • Develop a sick employee policy and staff education on self-care and recognising early symptoms. • Staff education on requirements for isolation following unprotected contact, know who to contact. • Institute measures to prevent bringing the virus home (e.g. change and contain work clothes before leaving the workplace). • Ensure staff are current on all immunisations (especially influenza). • When higher-risk tasks are being undertaken, restrict number of workers in the room. • Disinfecting protocols for cleaning in clinical and non-clinical shared areas, focusing on high use/high-touch surfaces. • Policies on transfer of infectious patients.
PPE (Table 2) (**Protect** people where there is exposure to the SARS-CoV-2 virus **)**	• Develop a respiratory protection program covering all aspects of selection, use, testing, checking and medical evaluation. • Easy access to soap and water and obtain required PPE. • Identify high and low risk tasks: select and **use the most appropriate PPE for the identified level of risk (Table 2).** • Train in appropriate and effective PPE use, fit testing and checking depending on PPE type, cleaning and disposal. • Stop at intervals to check PPE is being worn properly (e.g. use a spotter or buddy). • Identify and manage any hazards assocated with using PPE (Table 3)

Table 2: COVID-19 PPE Risk Management Matrix

This table identifies the extent to which different tasks require different PPE. This means implementing the hierarchy of controls (Table 1) in order to ascertain whether PPE is in fact required, and if so, acertaining what PPE to use based on this risk assessment matrix**.** In settings with a high risk of transmission, such as health and aged care settings, a precautionary approach to PPE is appropriate in addition to the minimum requirements outlined here.

The COVID-19 pandemic is an evolving situation and the advice for health care workers about using personal protective equipment (PPE) is continually being reviewed as the situation changes. In Australia, health professionals should refer to the advice provided by the Australian Department of Health and the relevant Australian local state and territory health departments' websites. In Aotearoa New Zealand, health professionals should refer to the Aotearoa New Zealand Ministry of Health's website.

Risk Level Definition	Scenario	PPE Required Notes 1, 2, 3
Extreme likelihood of COVID-19 transmission or exposure	Health Care Workers (HCW) who **are** performing aerosol generating procedures (AGPs) on COVID-19 patients, including resuscitation or for patients with aerosol generating behaviours, such as persistent coughing or shouting by patients who find instructions hard to follow Note 4	See Table 3. AGPs have been risk stratified with differentiated PPE requirements, based on frequency and duration of use.
High likelihood of COVID-19 transmission or exposure	HCW Note 1 engaged in aged care, hospital emergency departments and COVID-19 wards, who **are not** performing aerosol generating procedures on COVID-19 patients Note 4	• Long-sleeved fluid resistant gown (aprons are a suitable alternative if the risk of splash is low e.g. specimen collection) • Respiratory protection: healthcare workers are at higher risk of COVID-19 infection and should use surgical masks when at work, or N95/P2 respirators when in contact with high risk patients, when working in known sites of significant community transmission. See Table 3 • Eye protection: face shield, wrap-around safety glasses or goggles • Disposable non-sterile gloves when in contact with patient (use hand hygiene before donning and after removing gloves)
Medium likelihood of COVID-19 transmission or exposure	HCW engaged in primary care tasks (including dental practices and similar) that **do** entail face-to-face contact with the general public.	Apron or gown, surgical mask, protective eyewear, gloves (suspected cases only)
	Workers engaged in cleaning duties at health facilities and cluster locations	Apron or gown, surgical mask, protective eyewear, household gloves
Low likelihood of COVID-19 transmission or exposure	Non-HCW engaged in industries that **do** entail less than 1.5 / 2.0 metre Note 5 contact with the general public, such as hair salons and public transport	Workers may need to wear face masks and gloves, based on the frequency and duration of their general public exposures within 1.5 / 2.0 metres Note 5
Insignificant likelihood of COVID-19 transmission or exposure	People working from home, or in workplaces that **do not** entail less than 1.5 / 2.0 metre Note 5 contact with the general public	PPE usually not required.

Note 1: In circumstances where there is significant community transmission occurring, surgical masks, as a minimum, should be provided to all patient-facing staff in hospitals and aged care settings as outlined in the RACP Statement on use of PPE dated 21 August 2020: https://www.racp.edu.au/news-and-events/media-releases/racp-statement-on-use-of-ppe

Note 2: In all scenarios, PPE use remains subject to compliance with all other workplace COVID-19 transmission prevention protocols and Government directives. These may include: mandatory face mask use in situations of high community transmission; mandatory N95/P2 respirators for HCWs in settings with high numbers of suspected or confirmed COVID-19 positive patients in uncontrolled settings where persons with suspect or confirmed COVID-19 are treated; settings where there is a need for frequent PPE changes or there is risk of unplanned aerosol generating procedures (AGPs) or aerosol generating behaviours

Note 3: Non-reuseable PPE **must not** be sanitised or otherwise reused. Procedures for sanitising reusable PPE **must** be identified, staff trained in their use, and procedures followed.

Note 4: Donning and doffing PPE may result in signifcantly slower response times in emergency situations, and extend the time required to perform an otherwise quick procedure. This issue requires active consideration of productivity expectations, capability and staffing levels.

Note 5: Social distancing requirement is 1.5 metres in Australia and 2.0 metres in Aotearoa New Zealand.

Table 3: COVID-19 PPE Risk Management Matrix: Aerosol Generating Procedures (AGPs)

This table reflects the extent to which different AGPs require different PPE. This means implementing the hierarchy of controls (Table 1) in order to ascertain whether AGP PPE is in fact required, and if so, acertaining what AGP PPE should be used.

Extreme Risk Level Frequency	Activities [Note 1]	PPE Training/ Required	Possible PPE depending on task – all options listed
Regular	Regular close exposure to suspected / confirmed cases including AGPs and suspected / confirmed patients with aerosol generating behaviours. *(eg: care of ventilated patients, actively preferentially performing intermittent high-risk tasks, such as COVID intubation and response team, COVID assessment teams, resuscitation teams)*	P2/N95 respirator fit / seal testing and fit check training Other PPE training and practice	• P2/N95 respirator [Notes 1, 2] Powered Air Purifying Respirators (PAPR) may be considered for improved comfort and visibility, for HCWs who are required to remain in the infected patient's room for an extended period to perform multiple procedures, e.g. more than one hour) • Eye protection: face shield, wrap-around safety glasses or goggles [Note 1] • Long-sleeved fluid resistant gown [Note 1] (aprons are a suitable alternative if the risk of splash is low e.g. specimen collection) [Note 1] • Disposable non-sterile gloves when in contact with patient [Note 1]
Intermittent	Intermittent close exposure to AGP in suspected / confirmed cases *(eg: ENT, gastroenterological, respiratory, dental, endoscopies, neurosurgery)*	P2/N95 respirator fit / seal training Other PPE training and practice	• P2/N95 respirator [Notes 1, 2] • Eye protection: face shield, wrap-around safety glasses or goggles [Note 1] • Long-sleeved fluid resistant gown [Note 1] (aprons are a suitable alternative if the risk of splash is low e.g. specimen collection) [Note 1] • Disposable non-sterile gloves when in contact with patient [Note 1]

Note 1: Non-reuseable PPE **must not** be sanitised or otherwise reused. Procedures for sanitising reusable PPE **must** be identified, staff trained, and procedures followed.

Note 2: Workers who use P2/N95 respirators **must** undergo fit testing before first use and confirm they fit / seal properly (fit check) each time they are used.

Note 3: PPE exposed to body fluids from an infected person or other infectious materials during use should be considered contaminated and promptly removed, using the relevant PPE donning and doffing procedures [3]

[3] Aotearoa New Zealand Ministry of Health's *PPE: How to put it on and remove it safely* poster.

Hazards associated with the use of PPE for COVID-19

As with all PPE, there can be hazards associated with using PPE to protect against COVID-19. Therefore managers, supervisors and workers should specifically consider the following:

- **Biological.** The PPE being used is intended to either protect the wearer while caring for COVID-19 patients or for protecting at-risk patients from acquiring COVID-19. PPE exposed to body fluids from an infected person or other infectious materials during use should be considered contaminated and promptly removed, using the relevant PPE donning and doffing procedures.[4]
- **Physical:** The most likely physical hazard in the COVID-19 setting will be heat stress (in particular PAPR), for which steps must be taken to ensure adequate temperature control and PPE wearer hydration. If this cannot be achieved, limits should be applied as to how long this type of PPE can be worn.
- **Chemical:** The increased need for handwashing by *all* hospital personnel (not just those wearing PPE), may increase the risk of irritant contact hand dermatitis, especially for personnel using latex gloves. The risk of facial skin irritation is also increased with the more widespread use of N95/P2 or other close-fitting respirators.

  Early identification and prevention of such cases is essential, as those with recurrent episodes of irritant contact hand dermatitis or facial skin irritation may require *permanent* removal from such duties. Personnel with hand dermatitis should therefore be removed from *all* duties that entail handwashing (i.e. not just those entailing PPE) for treatment, and they should not resume such duties until all treatment is completed.
- **Ergonomic:** Gloves can reduce manual dexterity (thereby making fine movements more difficult); goggles and face shields can impair vision (thereby increasing the risk of slips/trips/falls among other hazards), and gowns can impair movement (which may create more back injuries, such as while turning patients), and can catch on objects (thereby creating sharps and spill hazards). Performing tasks while wearing PPE is therefore likely to be harder and take longer to perform than otherwise; this will be exacerbated by the increased number of people who are using PPE.
- **Human factors:** Human factors considerations with respect to PPE include:
  - The need to allow additional time for / frequency of food, fluid and toilet breaks.
  - Increased fatigue caused by limitations on the ability to sit, increased weight, impaired movement and need for greater concentration on fine motor and other tasks. This may require rest breaks additional to those required for food, fluids and toileting.
- **Psychosocial:** Psychosocial hazards posed by PPE use include:
  - Accidents and incidents involving PPE failures, which can result in increased risk of infection and may result in acute stress events.
  - Increasing staff fatigue, noting that they may be treating COVID-19 patients for at least several months, resulting in more treatment errors, interpersonal relationship issues, and greater potential for burnout, especially in situations where many staff are either infected or in quarantine due to being close contacts.
  - Increased communication problems and reduced staff interaction *additional* to those inherent to the current social distancing guidelines, especially for people who live alone, or do not feel well-supported by their co-workers.

Particular attention is drawn to the AFOEM's initiative on the health benefits of good work and its associated resources. This initiative is based on compelling Australasian and international evidence that good work is beneficial to people's health and wellbeing and that long-term work absence, work disability and unemployment generally have a negative impact on health and wellbeing. Using suitable PPE and minimising the above potential adverse impacts of that PPE is an important contributor to good work.

[4] Aotearoa New Zealand Ministry of Health's *PPE: How to put it on and remove it safely* poster

In addition, PPE use at a workplace is not only likely to be significantly increased by the greater number of people using it, but also by the aforementioned hazards increasing the amount of PPE being used by each individual. These factors should be considered in managing PPE stocks.

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