



## Infection Control Expert Group

# Guidance on the use of personal protective equipment (PPE) for health care workers in the context of COVID-19

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## Background

This document provides guidance on the use of personal protective equipment (PPE) for health care workers<sup>1</sup> during the COVID-19 pandemic. The recommendations in this document were developed with advice from the National COVID-19 Clinical Evidence Taskforce Infection Prevention and Control Panel (IPC Panel). The recommendations in this document are consensus recommendations based on the combined expertise and experience of IPC Panel and ICEG members and reflect emerging evidence concerning all potential modes of viral transmission and the increased transmissibility of SARS-CoV-2 variants of concern.

The guidance contained in this document outlines the minimum national standard for PPE for health care workers in the context of COVID-19.

Given the variability across and within health care settings, decisions around the use of PPE may require a nuanced and flexible approach, guided by evidence, contextual factors, and consideration of health care worker preferences. This guidance is not meant to be exhaustive but instead aims to supplement more detailed guidance available at a state, territory and institutional level.

PPE is a critical part of infection prevention and control. However, PPE should be considered the last line of defence within a broader '[hierarchy of controls](#)' framework, which includes minimisation of risk through the implementation of administrative and engineering controls and other interventions in combination with appropriate PPE.

These consensus recommendations will be revised as new research evidence and information emerges. This guidance should be read in conjunction with the [Australian Guidelines for the Prevention and Control of Infection in Healthcare \(2021\)](#), whilst acknowledging the unique circumstance of COVID-19 and requirements for additional PPE in some circumstances.

## Scope

This document provides guidance on the use of PPE by health care workers who work in a health care setting. This may include in hospitals, non-inpatient settings, managed quarantine, residential care facilities, COVID-19 testing clinics, in-home care and other environments where clinical care is provided.

For additional guidance on infection prevention and control during the COVID-19 pandemic, see the [Department of Health website](#).

For current COVID-19 case definitions and testing criteria, see the [Communicable Diseases Network Australia National Guidelines for Public Health Units](#).

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<sup>1</sup> Health care worker (HCW): a person who works in a health care setting, whether paid or unpaid, clinical or non-clinical, permanent or casual (includes visiting, sessional and agency), full-time or part-time, in the facilities or services in scope for this guidance. The terms HCW and staff are interchangeable.

## Summary of key recommendations

P2/N95 respirators and surgical face masks:

1. All healthcare workers should follow standard and transmission-based precautions as described in the [Australian Guidelines for the Prevention and Control of Infection in Healthcare \(2021\)](#).
2. Healthcare workers who wear P2/N95 respirators should complete fit testing before first use, and perform a fit (seal) check properly each time they are used. In situations where fit testing has not yet been carried out, and a P2/N95 respirator is recommended for use, a fit-checked P2/N95 respirator is preferred to a surgical mask.
3. All healthcare workers providing direct patient care or working within the patient/client/resident zone<sup>2</sup> for individuals with suspected or confirmed COVID-19 should have access to P2/N95 respirators.
4. For healthcare workers providing direct patient care or working within the patient/client /resident zone for individuals with suspected or confirmed COVID-19, the choice between P2/N95 respirator or surgical mask should be based on an assessment of risk of transmission.
5. Assessment of risk of transmission of COVID-19 to healthcare workers should include consideration of:
  - the individual patient/client/resident's pre-existing likelihood of COVID-19,
  - patient/client/resident factors,
  - physical location of care.

### Likely high-risk of SARS-CoV-2 transmission

6. Healthcare workers providing direct care or working within the patient/client/resident zone for individuals where assessment suggests a high-risk of transmission, should use P2/N95 respirators rather than face masks, along with the other PPE required.

### Likely low-risk of SARS-CoV-2 transmission

7. Healthcare workers providing direct patient care or working within the patient/client/resident zone for individuals where assessment suggests a low risk of transmission, should use PPE in accordance with existing guidance for Standard, Contact and Droplet Precautions as specified in the [Australian Guidelines for the Prevention and Control of Infection in Healthcare \(2021\)](#).

### Eye Protection:

1. All healthcare workers should follow standard and transmission-based precautions as described in the [Australian Guidelines for the Prevention and Control of Infection in Healthcare \(2021\)](#).
2. Confirmed COVID-19 - Healthcare workers who are providing direct care or working within the patient/client/resident zone with individuals diagnosed with COVID-19 should wear eye protection as part of a set of personal protective equipment.
3. Suspected COVID-19 - Healthcare workers who are providing direct care or working within the patient/client/resident zone with individuals who have symptoms consistent with COVID-19 should wear eye protection as part of a set of personal protective equipment.
4. Asymptomatic individuals with epidemiological risk factors for COVID-19 - Healthcare workers should wear eye protection if they are providing direct care or working within the patient/client/resident zone with individuals for whom there are reasons to suspect increased risk of COVID-19 due to:
  - Close contact with a person with confirmed COVID-19 in the previous 14 days; OR
  - Attendance at a currently designated COVID-19 exposure risk location in the previous 14 days; OR
  - Return from international travel (excluding green zone countries) in the previous 14 days; OR
  - Residence in, or travel through, a geographically localised area with elevated risk of community transmission in the previous 14 days.

<sup>2</sup> For example, being within the same room as a resident in a residential care facility or an individual in quarantine in a managed quarantine facility.

## Risk assessment to inform use of PPE

Risk assessment to inform the use of PPE should be conducted within a standardised risk management framework and the level of protection from higher order controls already in place at an organisational and state and territory level. The following factors should be considered:

- a) Patient/client/resident pre-existing likelihood of COVID-19
  - Known COVID-19 status
  - Symptoms consistent with COVID-19
  - Current prevalence and transmission of COVID-19 in the population and whether there are unlinked cases of COVID-19 in the community
  - The presence of epidemiological risk factors for COVID-19, such as:
    - Close contact, or secondary close contact, with a person with confirmed COVID-19 in the previous 14 days
    - Return from international travel in the previous 14 days, particularly from countries with high prevalence of COVID-19, but excluding green zone countries
    - Attendance at a currently designated COVID-19 exposure risk site in the previous 14 days
    - Residence in, or travel through, a geographically localised area with elevated prevalence or community transmission of COVID-19 in the previous 14 days.
- b) Patient/client/resident factors
  - Potential for behaviours that increase the risk of SARS-CoV-2 transmission (e.g. patients/clients/residents with cognitive impairment, are unable to cooperate, or exhibit challenging behaviours, coughing or increased work of breathing)
  - Ability/appropriateness of the patient/client/resident to wear a surgical mask.
- c) Nature of the care episode
  - Duration and proximity of contact between healthcare worker and individual
  - Types of care that may increase the risk of SARS-CoV-2 transmission (e.g. cough inducing, respiratory treatments/procedures).
- d) Physical location
  - The presence of multiple individuals with suspected/confirmed COVID-19 in an enclosed space
  - Whether the environment has low levels of ventilation or unexpected air movements which may facilitate wider distribution of droplets and/or aerosols in the air (or e.g. opening of doors between spaces of differential air pressure or temperature)
  - Complex or less controlled care settings, including transport, home or community-based care.
  - Room placement of high risk patients should ideally be in a negative pressure room with anteroom. Where not available, a standard isolation room or a single room where there is negative airflow is an acceptable alternative. Rooms with positive pressure airflow should be avoided. Other design types require additional risk assessment (Australasian Health Facility Guidelines, part D, Infection Prevention and Control<sup>3</sup>).

## Likely low risk of SARS-CoV-2 transmission

Health care workers providing direct patient care or working within the patient/client/resident zone for individuals where risk assessment<sup>4</sup> suggests a likely low risk of transmission, should use PPE in accord with existing guidance for Standard, Contact and Droplet Precautions as specified in the [Australian Guidelines for the Prevention and Control of Infection in Healthcare \(2021\)](#). This may include the use of a surgical mask, gloves, gown and eye protection, depending on the indications for use.

## Surgical masks

Varying levels of fluid resistant surgical masks are available. When the likelihood of exposure to blood or body fluid is low, in routine care, a level 1 surgical mask is acceptable. Level 2 or 3 masks should be used when there is a risk of blood or body fluid exposure and in the operating theatre.

<sup>3</sup> <https://healthfacilityguidelines.com.au/part/part-d-infection-prevention-and-control-0>

<sup>4</sup> Refer to jurisdictional risk matrix on mask use.

When putting on a surgical mask:

- Check for defects in the surgical mask, such as tears or broken loops
- If present, make sure the metallic strip is at the top of the mask and positioned against the bridge of your nose
- If the mask has:
  - **Ear loops:** Hold the mask by both ear loops and place one loop over each ear
  - **Ties:** Hold the mask by the upper strings. Tie the upper strings in a secure bow near the crown of the head. Tie the bottom strings securely in a bow near the nape of the neck.
  - **Dual elastic bands:** Pull the top band over your head and position it against the crown of the head. Pull the bottom band over your head and position it against the nape of the neck
- Mould the bendable metallic upper strip to the shape of the nose by pinching and pressing down on it with fingers
- Pull the bottom of the mask over the mouth and chin
- Ensure the mask fits snugly on the face
- Don't touch the mask once in position
- If the mask gets soiled or damp, replace it with a new one.

## Likely high risk of SARS-CoV-2 transmission

Health care workers providing direct care or working within the patient/client/resident zone for individuals where risk assessment suggests a likely high-risk of transmission should use P2/N95 respirators rather than surgical masks, along with the other required PPE as specified in the [Australian Guidelines for the Prevention and Control of Infection in Healthcare \(2021\)](#).

### Particulate filter respirators

Particulate filter respirators such as P2/N95 respirators should be worn instead of a surgical mask if risk assessment suggests a likely high risk of transmission.

Health care workers who use P2/N95 respirators should be trained in their correct use. Health care workers should complete fit testing before first use to select the most suitable P2/N95 respirators, and perform a fit (seal) check properly each time they are used. P2/N95 respirators must be used correctly in order to provide protection against airborne pathogen transmission. A respiratory protection program should be developed to guide the selection, testing and use of P2/N95 respirators.

When using a P2/N95 respirator:

- it must be certified (i.e. 94-95% removal of small airborne particles), including meeting Australian Standard AS/NZS 1715-2009
- the balance of benefits and potential harm (e.g. skin irritation, headache and increased work of breathing) associated with wearing P2/N95 respirators must be discussed with the wearer
- health care workers must continue to observe other IPC measures.

When putting on a P2/N95 respirator:

- remove glasses/headwear
- tie back long hair so it does not become tangled in the straps of the respirator
- put the mask on the face, ensuring the nose piece is at the top of the mask
- place the headband or ties over the head and at the base of the neck
- compress the mask against the face to ensure a seal across the bridge of the nose
- compress the mask to ensure a seal across the cheeks and the face
- conduct a fit check.

P2/N95 respirators are available in several different designs globally. Information on how to fit and remove a P2/N95 respirator is available through jurisdictional resources (e.g. NSW Clinical Excellence Commission <https://www.cec.health.nsw.gov.au/keep-patients-safe/COVID-19/education-training-posters-videos> )

### Fit testing and fit checking

- Fit testing, as defined in the Australian/New Zealand Standard 1715: 2009, is a validated method for matching P2/N95 respirators with an individual's facial shape.
- Fit testing should be performed by an appropriately trained person.

- A range of styles and sizes of P2/N95 respirator may need to be fit tested to find one that achieves a protective seal
- Health care workers who wear P2/N95 respirators should complete fit testing before first use, and perform a fit check properly each time they are used.
- Fit checking ensures the respirator fits the user's face snugly (i.e. creates a seal) to minimise the number of particles that can bypass the filter through gaps between the user's skin and the respirator seal which can be checked by gently inhaling. If the mask is not drawn in towards the face, or air leaks around the face seal, readjust the mask and repeat process or check for defects in the mask.
  - If a suitable P2/N95 respirator cannot be found an alternative (e.g. elastomeric or Powered air purifying respirators (PAPRs)) should be considered.
- An airtight protective seal is difficult to achieve in the presence of facial hair that underlies the edge of the P2/N95 respirator.
  - The face must be smooth and/or clean-shaven to achieve a good air tight seal.
  - Facial hair should be removed or an alternative type of P2/N95 respirator be considered.
- In situations where fit testing has not yet been carried out, and a P2/N95 respirator is recommended for use, a fit checked P2/N95 respirator is preferred over a surgical mask if airborne precautions are required.
- Fit testing does not guarantee a respirator will not leak, particularly if a different type or size is used to one previously fit tested. A repeat fit test is required if a different P2/N95 respirator is utilised.
  - This reinforces the need to fit check each time a respirator is used.

## Powered air purifying respirators (PAPRs)

- A powered air purifying respirators (PAPR) may be considered as an alternative to a P2/N95 respirator in selected circumstances (e.g. when the fit of a P2/N95 respirator is compromised or when extended use is required). The following should be considered:
  - A number of different types of relatively lightweight, comfortable PAPRs are available.
  - The use of a PAPR may not provide any additional protection compared to a well-sealed P2/N95 respirator.
  - PAPRs should only be used by health care workers trained in their use, including safe application and removal using the correct sequence.
  - PAPRs should be used according to the manufacturer's instructions including battery use, filter position, reprocessing of re-usable components etc.
  - If a health care worker is required to remain in the patient's room continuously for a long period the use of a PAPR may be considered for additional comfort and visibility.
  - PAPRs used during sterile procedures should be suitable for use to maintain sterile field.
  - PAPRs designed for use in settings outside of health care are not recommended.

Manufacturers' instructions for reprocessing of reusable PAPR components and management of filters, should strictly be followed

## Donning (putting on) and doffing (taking off) PPE

All PPE should be used in line with the [Australian Guidelines for the Prevention and Control of Infection in Healthcare \(2021\)](#). Health care workers should be trained in the correct procedure for donning (putting on) and doffing (taking off) of PPE.

### Donning PPE

The following PPE should be donned in the following order before entering the patient area including any patient interaction:

- Perform hand hygiene
- Put on gown/apron
  - Long-sleeved, preferably fluid-resistant
  - A launderable cloth gown or apron is adequate when direct physical contact is minimal and/or the risk of blood or body fluid splash is low (e.g. observations, medication delivery)
- Put on surgical mask or P2/N95 respirator (whichever is applicable)
- Put on eye protection (see Protective eyewear, below)

- Put on disposable non-sterile gloves when in direct contact with patients
  - Vinyl gloves are not recommended for the clinical care of patients in the context of COVID-19.
  - Powder-free latex or nitrile gloves are accepted as superior in clinical care and are less likely to be breached compared with vinyl gloves.
  - Gloves should be selected and worn in line with the [Australian Guidelines for the Prevention and Control of Infection in Healthcare \(2021\)](#).

#### Note

- Use of boots or shoe covers is not recommended unless gross contamination is anticipated or they are required as standard attire in operating theatre or trauma room.
- If using head covers, long hair should be securely tied back and off the neck. Head covering is not required except as part of standard operating theatre attire or when performing a sterile/aseptic procedure (e.g. central line insertion). A head covering may be used to contain hair or for comfort reasons (e.g. to form a barrier for straps from masks or face shields).
- As per [Australian Guidelines for the Prevention and Control of Infection in Healthcare \(2021\)](#), artificial nails and jewellery that interferes with the safe use and correct donning and doffing PPE should be removed.

## Doffing PPE

The correct and safe removal of PPE is necessary to avoid self-contamination of clothing, skin or mucous membranes (including the eyes) with potentially contaminated PPE. In some situations, an additional person (wearing appropriate PPE) can assist in the guidance and supervision during the doffing sequence.

The following sequence is recommended but alternative sequences can be performed safely. Do not touch the front of the gown, eye protection or mask and perform hand hygiene between steps:

- Remove gloves without touching the outside of the glove and perform hand hygiene.
- Remove gown/apron, without touching the front of the gown, by folding it so that the external (exposed) side is inside; perform hand hygiene.
- Remove eye protection and perform hand hygiene. To take off eye protection, the wearer should remove them using the tip of the arms or the band that secures them to the wearer's head, and avoid touching the face near the eyes. Protective eyewear labelled as 'single-use' should be discarded after use and not reused. Ideally, protective eyewear should be issued for individual use only and should only be shared if thoroughly cleaned/disinfected between wearers.
- Remove surgical mask by only handling the ties or ear loops, then discard in appropriate waste and perform hand hygiene. Do not touch front of the mask.
- Demonstrations of safe removal of P2/N95 respirators are available via jurisdictional resources (e.g. NSW Clinical Excellence Commission, <https://www.cec.health.nsw.gov.au/keep-patients-safe/COVID-19/education-training-posters-videos> )

#### Note

- Eye protection and masks/respirators should only be removed outside of the patient's room. Local jurisdictional regulations for waste disposal should also be followed.
- Only PPE marked as reusable should be reused and then only after decontamination and reprocessing according to the manufacturer's instructions. All other PPE must be disposed of appropriately after use.

## Protective eyewear<sup>5</sup>

The eye is a potential route of transmission for SARS-CoV-2. Protective eyewear can protect the eye from contamination with particles and body fluids that may contain SARS-CoV-2 and prevent people from touching their eyes and face and spreading virus from their hands to their face and eyes.

<sup>5</sup> Adapted from 'Use of eye protection for healthcare workers' Coronavirus (COVID-19) update © State of Victoria, Australia, Department of Health and Human Services, 1 December 2020.



Protective eyewear should be used (in addition to other required PPE) by health care workers who are providing direct care or working within the patient/client/resident zone with individuals with confirmed, or suspected COVID-19, who have epidemiological risk factors and symptoms consistent with COVID-19, or who have clear epidemiological risk factors and are either asymptomatic or have non-specific signs of infection.

Standard Precautions apply in all risk assessment and eyewear recommended where risk of exposure (splash) from blood or body fluids is anticipated.

## Types of protective eyewear

Options for eye protection include closely fitted wrap-around goggles, safety glasses, and face shields. The type of eye protection most suitable for an individual health care worker will depend on the brand/style of the eye protection, the setting in which the individual is working, the tasks they are required to complete, and individual preferences.

There are many varieties and styles of each of the eye protection options. The usability, comfort and impact on ability to communicate and deliver care can vary markedly both between options, and between versions of each option. Individuals may need to trial several types of eye protection to find one that meets their needs.

When selecting the type of protective eyewear, consider:

- durability and appropriateness of the PPE for the task
- type of anticipated exposure
- fit

Eye protection for wearers of prescription glasses include goggles which are designed to be worn over prescription glasses, safety goggles with prescription lenses, or a face shield.

**Goggles or Safety Glasses**

To be effective, closely fitted wrap around goggles and safety glasses must fit snugly. Antifog coating can improve clarity. Normal prescription glasses, contact lenses or safety glasses that are not wrap-around do not provide adequate protection and are not suitable for use as eye protection

Advantage	Disadvantage
Durability and appropriateness of the PPE for the task.	Wearing them for prolonged periods may increase the risk of skin injuries, particularly if they seal too tightly
Some types of safety glasses have a clear plastic lens with fog and scratch resistant treatment	They do not deter the wearer from touching the front of their mask, face or respirator
Prescription safety glasses may be ordered	They may not be able to be worn over prescription glasses (depending on style)
They have a flexible frame to easily fit contours of the face	They may become scratched over time
They provide good eye protection by enclosing the eyes	There is a higher risk of fogging

**Single-use or reusable face shields**

May be used as an alternative to goggles or safety glasses. All face shields should provide a clear plastic barrier that covers the face, which extends below the chin and to the ears, and there should be no gap between the wearer’s forehead and the shield’s headpiece. Face shields are particularly useful in situations where there may be splashes or sprays of blood or body fluids. NOTE: Face shields are NOT a replacement for wearing a mask or respirator.

Advantage	Disadvantage
They have an adjustable band to attach firmly around the head and fit snugly against the forehead	Gaps on the sides and underneath the face shield may allow virus-contaminated droplets to reach the eyes (or the nose and mouth if not worn with a well-fitting mask at the same time)
They provide additional blood or body fluid splash/spray/droplet protection to the face and mask/respirator (prolonging the life of the mask/respirator)	Some face shields do not wrap-around the eyes and these types are not as protective as other forms of eyewear
The wearer’s eyes can be seen more easily which may be important when caring for some residents/patients/clients	Face shields may make communication more difficult by muffling the wearer’s voice, especially when used, as should be the case, with a mask.
There is less risk of fogging	
The wearer is less likely to touch their face/mask	

**Reporting breaches in PPE**

If there is a concern about a potential breach in PPE or potential self-contamination, follow your workplace’s protocols for reporting a breach. Notify the direct supervisor for advice on next steps. The incident reporting process usually involves notification of workplace health and safety and immediate risk mitigation, where possible.