

COVID-19

The role of medical masks and particulate respirators in health and disability care settings

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Purpose of this document

The purpose of this document is to provide information on the role of medical masks and P2/N95 particulate respirators in health and disability care settings for health care workers.

Preserving the supply of medical masks and P2/N95 particulate respirators for high risk procedures and settings is an important consideration.

When a medical mask or P2/N95 particulate respirator is required

Health care settings have specific policies and procedures for when people should wear medical masks or P2/N95 particulate respirators based on Standard and Transmission-based Precautions. To offer protection, the right type of mask needs to be worn correctly.

A medical mask or P2/N95 particulate respirators and other PPE are just one level of control used to prevent infections. Other more effective controls involve triage to identify at risk individuals at the point of contact, engineering controls, administrative controls and specific work practices (e.g. installing physical barriers, teleworking, grouping cares for a patient, practising respiratory hygiene and cough etiquette, performing hand hygiene, and physical distancing when possible and practical).

What is a medical mask worn for?

Medical masks are used as a physical barrier to protect the wearer from splashes or sprays of body fluids, including respiratory droplets from coughing or sneezing. When someone talks, coughs, or sneezes they may release small particles containing infectious virus into the air that can infect others.

If a person symptomatic with a respiratory tract infection can wear a mask, this will reduce the number of particles containing infectious virus that the wearer releases during exhalation, protecting other people in close proximity from being exposed to the infectious particles. This is called source control.

When should a medical mask be worn?

Medical masks are used for different purposes. They may be:

- worn by healthcare workers to protect themselves from larger infectious respiratory particles termed droplets – Droplet Precautions
- worn by health care workers as part of Standard Precautions to protect themselves from splashes or sprays of blood or body fluids. They also keep contaminated fingers/hands away from the mouth and nose
- placed on sick people to limit the spread of infectious respiratory particles to others - source control.

What is a P2/N95 particulate respirator used for?

P2/N95 particulate respirators are used as a physical barrier to protect the wearer from inhaling airborne particles smaller than 5 microns in diameter in settings when there is a high probability of transmission of airborne pathogens.

When should a P2/N95 particulate respirator be worn?

It should be worn by health care workers to protect themselves from exposure to infectious respiratory particles generated by patients suspected or confirmed to be infected with pathogens transmitted by the airborne route.

What are the different types of P2/N95 particulate respirators available?

There are several types of respirators. Currently in New Zealand, a molded respirator and the 'duck bill' or 'flat fold' type mask are used. The use of the term N95 and P2, is because of the standard that the respirator is tested against.

Applying the US Standard (NIOSH – 42CFR84) '95' relates to the efficiency of the filtration of the mask – 95% of particles with a diameter between 3-5 microns in size. The letter N shows the mask is not resistant to oil.

Applying the Australian and New Zealand Standard (AS/NZS 1716:2012), disposable or filtering face piece (FFP) respirators are typically categorised with a 'P' rating in the construction and industrial sectors. The 'P' refers to the particle size of the particulate matter that the mask is designed to protect against. P2 masks must comply with Australian and New Zealand standards to ensure the best protection for workers.

While essentially the N95 and P2 respirator may be the same respirator type mask and offer the same filtration levels; there are some subtle differences between each international standard, and these should be reviewed when choosing a particular brand for use.¹

What is fit testing?

Fit testing is a process used to evaluate the fit of a particulate respirator, including the make and model, to ensure that it fits the wearer correctly. A risk management approach should be undertaken to ensure that staff working in high risk areas or situations in which exposure to diseases that are transmitted via an airborne

¹ A guide to buying P2 or equivalent respirators for use in the Australian and New Zealand work environment. June 2020 V 1.0
Australian Institute of Occupational Hygienists, Australian Institute of Health & Safety, New Zealand Occupation Hygiene Society and Indoor Air Quality Association Australia.

route, are fit tested. Any person requiring a P2/N95 particulate respirator should undergo annual fit testing and be trained in fit checking.

To access P2/N95 particulate respirators from the Ministry of Health's central supply, health care workers will need to be fit tested to the supplied brand and model. Fit testing must also be carried out whenever there is a change in circumstances of the wearer that could alter the fit of the mask, such as weight loss, or gain, or there is a change to the supplied brand or model (unless the model is considered equivalent by the company and has been tested to confirm this).

Independent fit testers are available and can be located via: <https://nzohs.org.nz/commit2fit/>.

Refer to the manufacturer's instructions on how to fit test a specific brand or model of mask or particulate respirator.

What is fit checking?

Fit checking involves a quick check each time a particulate respirator is put on to ensure that the particulate respirator is properly applied, that a good seal is achieved around all edges of the respirator and there are no gaps between the particulate respirator and face.

Beards and facial hair can make obtaining a good seal difficult and could potentially pose a risk of exposure to infection to the wearer. Fit checking must be undertaken each time a person dons a P2/N95 particulate respirator. Refer below on how to **perform a fit check**.

General reminders for safe use of medical masks and particulate respirators

- Ensure you have received training on how to don and doff your mask correctly (and other PPE).
- Always perform hand hygiene before putting on a mask.
- Do not touch your mask or face while wearing a mask.
- Always perform hand hygiene before and after removing a mask.
- Once the mask is on, only touch loops, ties, or bands to remove.
- Replace a mask if it becomes damp, damaged, or at the end of a session if the mask is being worn continuously for an extended period (up to 4 hours).
- Do not re-use single-use masks. Dispose of immediately after removal.
- Practice other IPC measures, including the '5 moments for hand hygiene' and physical distancing.

How to don a medical mask or P2/N95 particulate respirator safely

1. Clean your hands with soap and water or hand sanitiser before touching the mask.
2. Check there are no obvious tears or holes in either side of the mask.
3. Determine which side of the mask is the top. The side of the mask that has a stiff bendable (metallic strip) edge is the top and is meant to mold to the shape of your nose.
4. Determine which side of the mask is the front. The coloured side of the mask is usually the front and should face away from you,
5. Follow the instructions below for the type of mask you are using. For P2/ N95 particulate respirators perform a fit test to ensure there is a good seal around all the edges. **Refer below.**
 - a. *Face mask with ear loops*: Hold the mask by the ear loops. Place a loop around each ear. Ensure the ear loops do not cross over as this widens the gap between the face and mask.
 - b. *Face mask with ties*: Bring the mask to your nose level and place the ties over the crown of your head and secure with a bow.

- c. *Face mask with bands*: Hold the mask in your hand with the nosepiece or top of the mask at fingertips, allowing the headbands to hang freely below hands. Bring the mask to your nose level and pull the top strap over your head so that it rests over the crown of your head. Pull the bottom strap over your head so that it rests at the nape of your neck.
6. Mold or pinch the stiff edge to the shape of your nose.
7. If using a *face mask with ties*: Take the bottom ties, one in each hand, and secure with a bow at the nape of your neck.
8. Pull the bottom of the mask over your mouth and chin. Ensure mask fully covers the nose, mouth and is stretched over the chin and fits snugly over the face. If it fits properly, your eye protection or glasses should not fog.
9. Change mask if it becomes damp or damaged.

How to doff a medical mask or P2/N95 particulate respirator safely

1. Avoid touching the front of the mask. The front of the mask is contaminated. Only touch the ear loops/ties/band.
2. Follow the instructions below for the type of mask you are using.
 - a. *Face mask with ear loops*: Hold both ear loops and gently lift and remove the mask.
 - b. *Face mask with ties*: Untie the bottom bow first then untie the top bow and pull the mask away from you as the ties are loosened.
 - c. *Face mask with bands*: Lift the bottom strap over your head first and then pull the top strap over your head.
3. Dispose of mask in a waste bin.
4. Clean your hands with soap and water or hand sanitiser.

How to perform a fit check (also called user-seal check)

1. Place the P2/N95 particulate respirator on your face.
2. Place the headband or ties over your head and at the base of your neck.
3. Compress the particulate respirator to ensure a seal across your face, cheeks and the bridge of your nose.
4. Check the positive pressure seal of the respirator by gently exhaling. If air escapes, the respirator needs to be adjusted.
5. Check the negative pressure seal of the respirator by gently inhaling. If the respirator is not drawn in towards your face, or air leaks around the face seal, readjust the respirator and repeat process, or check for defects in the respirator.
6. Always refer to the manufacturer's instructions for fit checking of individual brands and types of P2/N95 respirators.
7. If you are unable to achieve a good facial seal do not proceed with the activity.

Possible reasons include:

- the respirator has not been put on properly e.g. headbands are incorrectly positioned, hair or earrings are caught in the seal
- the respirator is the incorrect size or type for your face
- facial hair* (including a 1–2-day beard growth can interfere with an adequate seal)

If you cannot achieve a good facial seal after working through the possible reasons listed, speak to your team leader. An alternative style or size of respirator may need to be sourced.

8. To prevent failure of the respirator, once you have the respirator in the correct place and have achieved a good seal, do not touch the front of the mask or re-adjust it.

Note: Facial hair applies equally to full beards and/or stubble growth. Moustaches, unless large, will not normally encroach on the respirator seal area. Some small 'goatee' type beards that do not extend under the chin or wider than the edges of the mouth, can fit wholly within the respirator and may not preclude face-fit testing.) Any person who has facial hair, in the area of contact of the face seal of a P2/N95 particulate respirator will not be able to be fit tested for use of such Respiratory Protective Equipment (RPE).

Other resources information or posters on correct use and disposal of masks

For information or posters on correct use of masks, please visit the **Ministry of Health website** or **WHO website**.

References

1. Mask use in the context of COVID-19. Interim guidance. 1 December 2020. Geneva. World Health Organization. [https://www.who.int/publications-detail/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-\(2019-ncov\)-outbreak](https://www.who.int/publications-detail/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-(2019-ncov)-outbreak)
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4. Rapid review of the literature: Assessing the infection prevention and control measures for the prevention and management of COVID-19 in health and care settings. V15: 11 June 2021 ARHAI Scotland <https://www.hps.scot.nhs.uk/web-resources-container/rapid-review-of-the-literature-assessing-the-infection-prevention-and-control-measures-for-the-prevention-and-management-of-covid-19-in-healthcare-settings/>