

Health Report

Guidance on the use of N100 masks by healthcare workers

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To:	Hon Dr David Clark, Minister of Health		

Contact for telephone discussion

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Action for Private Secretaries

Return the signed report to the Ministry of Health.

Date dispatched to MO:

Proactively released

Guidance on the use of N100 masks by healthcare workers

Purpose of report

This report provides information on the use of different types of face masks and recommendations for their use in the context of COVID-19. Based on current evidence, transnational guidance and international jurisdictions it is recommended that the current guidance regarding the use of face masks remain unchanged but be regularly reviewed.

Key points

- Keeping New Zealand's healthcare workers safe is a priority for the Government and the Ministry of Health (the Ministry). Personal protective equipment (PPE) is one component of infection prevention and control measures that are fundamental to keeping New Zealand's healthcare workers safe. The use of PPE can reduce transmission of infection when used as part of a suite of infection prevention controls.
- Current Ministry guidance recommends the use of surgical masks for all healthcare workers in contact with suspected or confirmed cases of COVID-19, and the use of N95 respirator for aerosol generating procedures (AGPs). This is consistent with the World Health Organisation's (WHO) guidelines.
- The respiratory subgroup of the intensive care unit (ICU) ventilator stream has requested that these recommendations be revised to state that N95 respirators be used by all healthcare workers managing suspected or confirmed cases of COVID-19, and that the recommended respirator for use during AGPs be raised from N95 to N100.
- The Ministry has reviewed evidence and international guidelines to determine whether there are environments where it should be recommended that respirators higher than N95 level be used, particularly during AGPs.
- Based on this review, the Ministry concludes that there is no clinical evidence showing that N100 respirators provide greater benefit than N95 respirators against transmission of COVID-19 during AGPs.
- The Ministry recommends that there is no change to the current guidance, but that the guidance is reviewed as additional evidence and data becomes available.

Recommendations

There are no recommendations associated with this paper.



Dr Andrew Simpson
Chief Medical Officer
Date: 13/5/20

Hon Dr David Clark
Minister of Health
Date:

Proactively released

Background / context

1. The provision of PPE, including face masks, is one strategy within a set of effective infection prevention and control (IPC) measures that are fundamental to keeping New Zealand's healthcare workers safe.
2. To-date, approximately 11 percent of the total COVID-19 cases in New Zealand have been in healthcare workers. Around half of these cases have been linked to outbreaks in healthcare facilities.
3. So far, 6 percent of COVID-19 cases in New Zealand have been hospitalised, with less than one percent requiring admission to an intensive care unit (ICU).
4. Preventing the transmission of COVID-19 in hospital settings, including ICU, is critical in order to protect New Zealand's healthcare workers and their colleagues, whānau and families.

Infection prevention and control in the context of COVID-19

5. Evidence suggests that respiratory droplets and contact are the main methods of COVID-19 transmission. Transmission-based precautions – in the form of protection from contact and droplets are required for all healthcare workers and hospital personnel who enter a clinical area with suspected or confirmed COVID-19 patients.
6. The Ministry's guidance emphasises the importance of adhering to standard precautions in the context of COVID-19 in order to protect frontline health workers. These precautions include:
 - hand hygiene
 - respiratory hygiene and cough etiquette
 - appropriate use of PPE
 - patient placement
 - safe handling of needles and other sharps
 - safe injection practices
 - sterile instruments and devices
 - safe handling of linen and laundry
 - clean and disinfected environmental surfaces.

Personal protective equipment (PPE)

7. PPE is an important element of transmission-based precautions. PPE includes gowns, eye protection, gloves and masks. The use of PPE can reduce the spread of infection when used correctly and in the appropriate context. It is important that health care workers know and are trained in how to put on (don) and take off (doff) PPE.
8. However, incorrect use of PPE may contribute to an increased spread of disease. If PPE is not used properly health care workers can put themselves, their patients, colleagues, whānau and community at greater risk.

Masks and respirators as protection against infection

9. Wearing a mask or respirator is one measure that can reduce the risk of transmission of respiratory infections, including COVID-19.
10. The main masks used in healthcare settings in New Zealand are surgical masks and N95 respirators.

Surgical masks

- Surgical masks significantly reduce the spread of droplets from the wearer to others, reducing the potential for an asymptomatic infected staff member to spread the infection to others. They provide limited protection against airborne infections.
- Surgical masks are recommended for all healthcare workers and hospital personnel interacting with patients who are suspected or confirmed cases of COVID-19.
- Surgical masks are not suitable for reuse.

N95 respirators (also referred to as FFP2 or P2)

- Respirators refer to face protection such as N95 and N100 that exceed the filtration capabilities of a standard face or surgical mask.
- The N95 respirator protects the wearer from aerosolised particles. As indicated by the '95' rating, N95 respirators filter at least 95 percent of particles.

11. The current guidance provided by the Minister regarding masks is as follows:
 - Masks are not necessary for the general public
 - Surgical masks are recommended for patients who are unwell with respiratory symptoms
 - Surgical masks are recommended for healthcare workers interacting with patients or clients who are unwell with respiratory symptoms
 - N95 respirators are recommended for aerosol generating procedures (AGPs), for example intubation, tracheostomy or upper airway procedures, of patients who are confirmed, probable or suspected cases of COVID-19

Current Ministry guidance is that respiratory protection above N95 respirators is not necessary in any circumstances related to COVID-19.

12. In the context of COVID-19, N95 respirators are recommended for AGPs. During AGPs there is an increased risk of airborne transmission, meaning that increased safety precautions are necessary. Respirators are critical in preventing airborne transmission in these environments.
13. The respirators must comply with AS/NZS 1716:2012 – the joint Australian and New Zealand standard for respiratory protective devices.
14. The Ministry's recommendation that N95 respirators be used in AGPs is in line with international guidelines including those released by the World Health Organisation, the Australia and New Zealand Intensive Care Society (ANZICS) and the US Centers for

Disease Control and Prevention (CDC). It is also in line with the guidance released by the Australian Government.

15. ANZICS recommends that fit checking is performed to ensure an appropriate seal when a health worker dons an N95 respirator.

Request for increased use of N95 and N100 respirators

16. Similar to the N95, the N100 respirator (also referred to as FFP3 or P3) protects the wearer from aerosolised particles with the N100 respirators filtering at least 99 percent of particles.
17. The COVID-19 respiratory subgroup of the ICU ventilator stream has requested that all staff caring for suspected or confirmed cases of COVID-19 should wear an N95 respirator, and in environments where there are cohorts of patients with COVID-19 this should be raised to an N100 respirator. The subgroup presented the argument that coughing and sneezing generate aerosol, so therefore warrant a higher standard of PPE.
18. In addition, the subgroup has requested that the appropriate minimum standard for AGPs be raised to N100 respirators, rather than the current minimum standard of N95.
19. The COVID-19 respiratory subgroup of the ICU ventilator stream is comprised of members with ICU and respiratory expertise. The Ministry notes that the membership does not include IPC expertise.
20. Currently, the Ministry does not deem N100 respirators necessary in any situation related to COVID-19. This is in line with the WHO and ANZICS guidelines referenced above.
21. The European Centre for Disease Prevention and Control (ECDC) recommends that N95 respirators be used by healthcare workers managing suspected or confirmed cases of COVID-19. The CDC also recommends the use of N95 respirators by healthcare workers in the same room as a suspected or confirmed case of COVID-19, however they state that a surgical mask can be used if no N95 respirator is available.
22. The ECDC has also stated that a FFP3 (N100) respirator should always be used when performing AGP and the United Kingdom recommends the use of N100 respirators in AGPs; however they acknowledge that N95 respirators are also safe to use.

Advice on request

23. The Ministry has given consideration to the subgroup's request and changing its guidance and recommending the use of N100 respirators in AGPs.
24. The Ministry has also investigated the possibility of purchasing N100 respirators for distribution and can confirm that there is stock available. Current stock in New Zealand is limited, and a higher volume supply line would be necessary if N100 respirators were to be used in AGPs.
25. The suitability of both N95 and N100 respirators for re-use can depend on multiple factors including the model, method of sterilisation and condition of mask. However, N100s generally last longer than N95s due to their replaceable filters.
26. The Ministry notes that the cost of N100 respirators is greater than that of N95s.

27. While there is a theoretical consideration for escalation to N100 respirators for healthcare workers during AGPs (given that they filter a higher percentage of particles) there is no clinical evidence showing the benefit of N100s over N95s.
28. Therefore, based on current evidence and guidelines released by the WHO and other transnational entities, the Ministry recommends continuing with the current guidance, while remaining up-to-date with global and national developments and being prepared to review this advice at any point.
29. For both N95 and N100 respirators, as with all PPE, it is important that healthcare workers use it correctly. This includes exercising correct donning and doffing procedures and ensuring that the respirators are well-fitted. An ill-fitting N100 respirator may fail to provide as much protection as a well-fitted N95.
30. The World Health Organisation's guidelines stress the importance of well-fitted N95 respirators, along with correct donning and doffing procedures. The Ministry recommends the continued focus on these elements, along with standard infection prevention control such as hand hygiene, physical distancing and appropriate PPE, to further ensure the safety of frontline healthcare workers.
31. Protecting frontline healthcare workers is a top priority of the Ministry and the Government. Above all, it is critical that all healthcare workers and hospital staff adhere to standard precautions, regardless of the type of mask they are wearing.

Next steps

32. The Ministry will continue to monitor the situation, including developments in international guidance or evidence.

ENDS.