Evidence check

20 May 2020

Rapid evidence checks are based on a simplified review method and may not be entirely exhaustive, but aim to provide a balanced assessment of what is already known about a specific problem or issue. This brief has not been peer-reviewed and should not be a substitute for individual clinical judgement, nor is it an endorsed position of NSW Health.

Guidance and underlying evidence about personal protective equipment (PPE) use during COVID-19

Rapid review questions

1. What is the current guidance on the use of PPE in COVID-19?
2. What is the evidence base for that guidance?

In brief

- Personal protective equipment refers to specialised clothing or apparatus worn by an employee for protection against infectious materials or other hazards.
- Occupational health and safety guidance asserts PPE should be considered in the context of broader, more effective hazard reduction approaches such as elimination, engineering and administrative controls
- The core principles underpinning the use of PPE for infection control are: the safety of staff and patients is a priority at all times; PPE selection is informed by the anticipated contact with body substance or pathogens and the evidence base about transmission; a risk assessment approach is used to guide decisions about appropriate use.

Advice during the COVID-19 pandemic

- WHO guidance currently states contact and droplet precautions should be implemented by staff caring for patients with confirmed or suspected COVID-19 at all times. Airborne precautions should be applied for aerosol-generating procedures.
- Recommended PPE for contact and droplet precautions includes gloves, gowns, medical mask and eye protection.
- Recommended PPE for aerosol-generating procedures includes respirator (N95 or FFP2 or FFP3 or equivalent), apron, gloves, gowns and eye protection.
- For patients who are NOT suspected of having COVID-19, current advice from the Australian government is that usual infection prevention and control precautions, including PPE if required, should be observed, according to clinical circumstances. Additional COVID-19 specific precautions are not required.

- WHO guidance is reflected in a range of jurisdictional publications however some professional groups have called for more stringent protection for their members.

Evidence and scientific debates

- According to the WHO, the available evidence shows COVID-19 is primarily transmitted via respiratory droplets and contact routes. Airborne transmission may be possible in specific circumstances e.g. procedures that generate aerosols.
- However, some researchers have questioned whether COVID-19 should be considered an airborne pathogen. To date, the risk of airborne transmission demonstrated theoretical rather than actual risk and there is insufficient evidence to change guidance.
- Managing PPE in a pandemic is a complex multi-factorial issue and policy and management require decision-making informed by evidence as well as knowledge of local context and constraints.

Limitations

Evidence is rapidly emerging about COVID-19 and many of the available studies are single site, comprised of small sample size, or have methodological limitations. From a scientific perspective, it can be difficult to disentangle evidence about theoretical risk and actual risk. From a policy perspective, committees of experts therefore consider various types of evidence in developing recommendations. Guidance about PPE is subject to frequent change and can vary according to specific context. There are differences in the stringency of guidelines across jurisdictions. Recommendations in this review are copied from source material and no attempt has been made to integrate the different guidance.

Methods

PubMed and Google were searched on 10 May 2020.

PubMed: ((2019-nCoV[title/abstract] or nCoV[title/abstract] or covid-19[title/abstract] or covid19[title/abstract] or "covid 19"[title/abstract] OR "coronavirus"[MeSH Terms] OR "coronavirus"[title/abstract])) AND (PPE OR personal protective equipment [title/abstract])

Google: COVID-19-AND guidelines-AND-ppe; health and safety; COVID-19 transmission

Background

Occupational health and safety covers staff health, safety and welfare in the workplace. It is particularly important in public hospitals because major hazards exist, such as exposure to infectious and chemical agents, manual handling of patients and materials, slips, trips, falls, and occupational violence.

Personal protective equipment

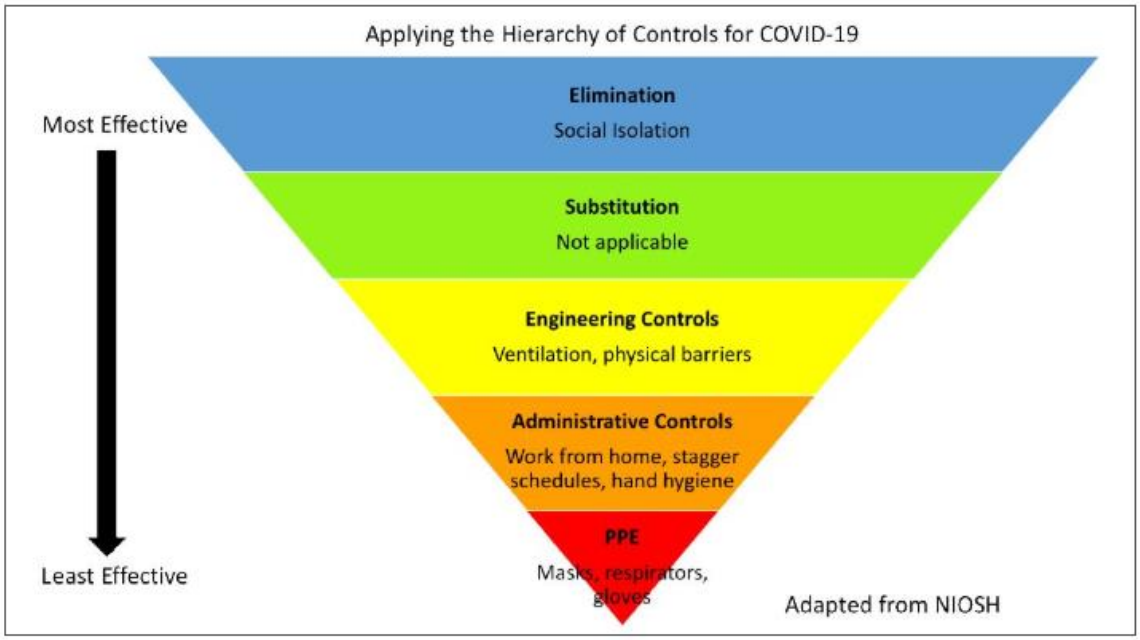
PPE refers to specialised clothing or apparatus worn by an employee for protection against infectious materials or other hazards.

- The safety of staff is a priority at all times.[1]
- The selection of PPE is guided by contact anticipated with body substance or pathogens.
- A risk management approach is used to protect patients, healthcare workers and the healthcare setting more broadly.[2]

Hierarchy of controls

The Australian Health Protection Principal Committee highlights the use of the hierarchy of controls for COVID-19.[3] The hierarchy of controls is a framework used in occupational health to protect workers. It features five levels of control efforts ranked in order of effectiveness: elimination, substitution, engineering controls, administrative controls, and personal protective equipment or PPE (Figure 1).

Figure 1: Applying the hierarchy of controls for COVID-19



Source: Johns Hopkins. Can a mask protect me? Putting homemade masks in the hierarchy of controls.[4]

The hierarchy of controls for COVID-19

Elimination can include making sure staff are not coming to work when they are ill or have potentially been exposed to others who are ill and more general social isolation measures.

Substitution – use a less hazardous condition process or practice. In the case of COVID-19, this is not applicable).

Engineering controls – separate workers from the hazard and include ventilation and physical barriers.

Administrative controls – change the way work is performed. They include encourage working from home for non-essential staff, stagger schedules, team based rostering, hand hygiene, dedicated hospital and wards.

PPE – the least effective strategy as it relies on continuous and proper use, which is difficult to achieve. Includes masks respirators and gloves and gowns.

Selection of PPE in general

Selection of appropriate PPE is based on three factors.

- The type of anticipated exposure, such as touch, splashes or sprays, or large volumes of blood or body substance that might penetrate the clothing, and the category of isolation precautions assigned to patients, i.e. standard, contact, droplet or airborne infection prevention and control.
- The durability and appropriateness of the PPE for the task. This will affect, for example, whether a gown or apron is selected for PPE, or, if a gown is selected, whether it needs to be fluid resistant, fluid proof, or neither.
- The fit and availability of sizes appropriate for the workforce. Putting on and removing PPE (donning and doffing) is tailored to the specific type of PPE.[2]

Assessments often draw on a risk analysis matrix (Figure 2).

Figure 2: Risk analysis matrix

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	Medium

Low risk	Manage by routine procedures.
Medium risk	Manage by specific monitoring or audit procedures.
High risk	This is serious and must be addressed immediately.
Extreme risk	The magnitude of the consequences of an event, should it occur, and the likelihood of that event occurring, are assessed in the context of the effectiveness of existing strategies and controls.

Source: Australian Commission on Safety and Quality in Health Care. Australian Guidelines for the Prevention and Control of Infection in Healthcare (2019)[5]

PPE in COVID-19

WHO guidance on use of PPE in COVID-19 states that the following are the main infection prevention and control strategies to prevent or limit COVID-19 transmission in healthcare settings.

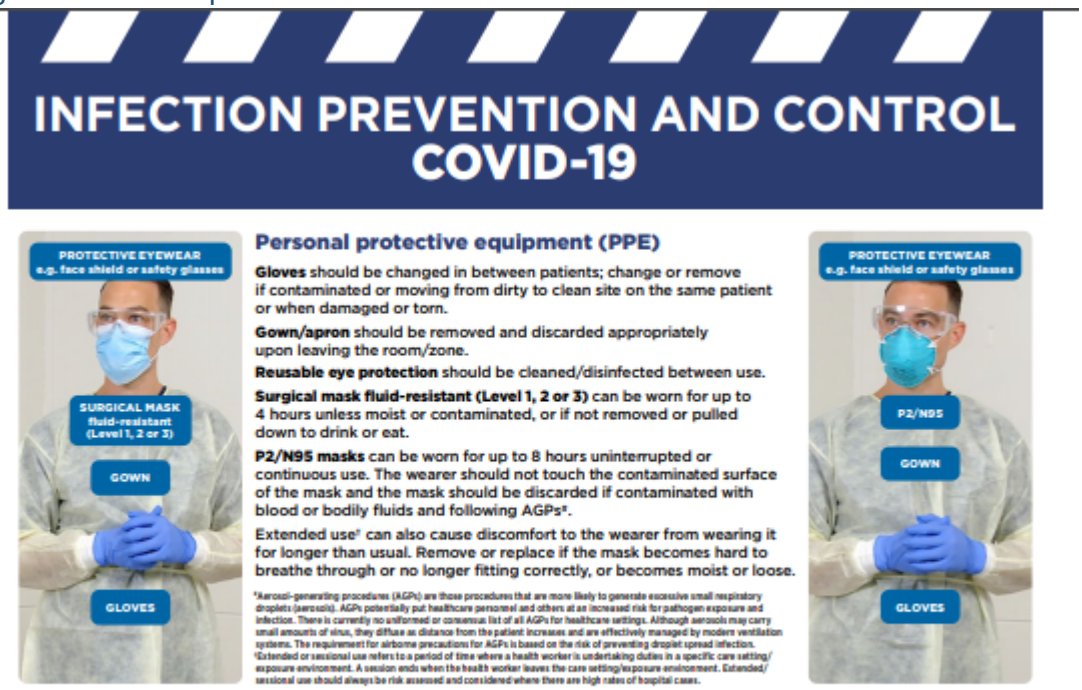
1. Ensuring triage, early recognition, and source control (isolating suspected and confirmed COVID-19 patients)
2. Applying standard precautions for all patients, including diligent hand hygiene
3. Implementing empiric additional precautions (droplet and contact and, for aerosol-generating procedures, airborne precautions) in suspected and confirmed cases of COVID-19
4. Implementing administrative controls
5. Using environmental and engineering controls.[6]

The potential for infection from aerosol-generating procedures is demonstrated in a systematic review.[7] WHO lists the following procedures as aerosol-generating: endotracheal intubation, bronchoscopy, open suctioning, administration of nebulised treatment, manual ventilation before intubation, turning the patient to the prone position, disconnecting the patient from the ventilator, non-invasive positive-pressure ventilation, tracheostomy, and cardiopulmonary resuscitation. Lists vary across jurisdictions.

More detailed advice is provided in tables published by the WHO (Appendix 1). The WHO guidance is reflected in publications in NSW (Figure 3) and other jurisdictions including Australia, Canada, Europe, England (Figure 4), New Zealand (Appendix 2).[8,9,10,11]

Some medical colleges and societies recommend more stringent PPE.[12,13]

Figure 3: Infection prevention and control COVID-19



Recommended PPE for health workers in clinical units

Context	Disposable gloves	Disposable plastic apron	Disposable fluid-resistant gown	Surgical mask fluid-resistant (Level 1, 2 or 3)	P2/N95 mask	Eye protection[1]
Working in an inpatient area with probable or confirmed case(s)[2] (not within 1.5m). Use standard precautions.	✗	✗	✗	✗	✗	✗
Performing a single aerosol-generating procedure (AGP) on probable or confirmed case(s)[2].	✓ Single use[3]	✗	✓ Single use[3]	✗	✓ Single use[3]	✓ Single use[3]
Working in any inpatient area with probable or confirmed case(s)[2] - direct patient care (within 1.5m), no AGPs.	✓ Single use[3]	✓ Single use[3] - application as per risk assessment[4] OR	✓ Single use[3] - application as per risk assessment[4]	✓ Single use[3] - application as per risk assessment[4]	✗	✓ Single use[3]
All individuals transferring probable or confirmed case(s)[2] (within 1.5m).	✓ Single use[3]	✓ Single use[3] - application as per risk assessment[4]	✗	✓ Single use[3]	✗	✗
Primary care, ambulatory and outpatient areas with probable or confirmed case(s)[2] - direct patient care (within 1.5m).	✓ Single use[3]	✓ Single use[3] - application as per risk assessment[4] OR	✓ Single use[3] - application as per risk assessment[4]	✓ Single use[3]	✗	✓ Single use[3]
Protection for vulnerable patient groups during COVID-19.	✓ Single use[3]	✓ Single use[3]	✗	✓ Single use[3]	✗	✗

1. This may be a single or reusable face/eye protection/face shield, mask visor, safety glasses or goggles.
2. A case is any individual who meets the current definition for a probable or confirmed case of COVID-19 as provided in *CDNA National Guidelines for Public Health Units Coronavirus Disease 2019 (COVID-19)*.
3. Single use refers to disposal of PPE or decontamination of reusable items e.g. eye protection or respirator after each patient and/or following completion of a procedure, task or session. PPE should be disposed of after each use or earlier if damaged, soiled, moist or uncomfortable.
4. Risk assessment refers to utilising PPE when there is an anticipated/likely risk of contamination with splashes, droplets, or blood or body fluids.

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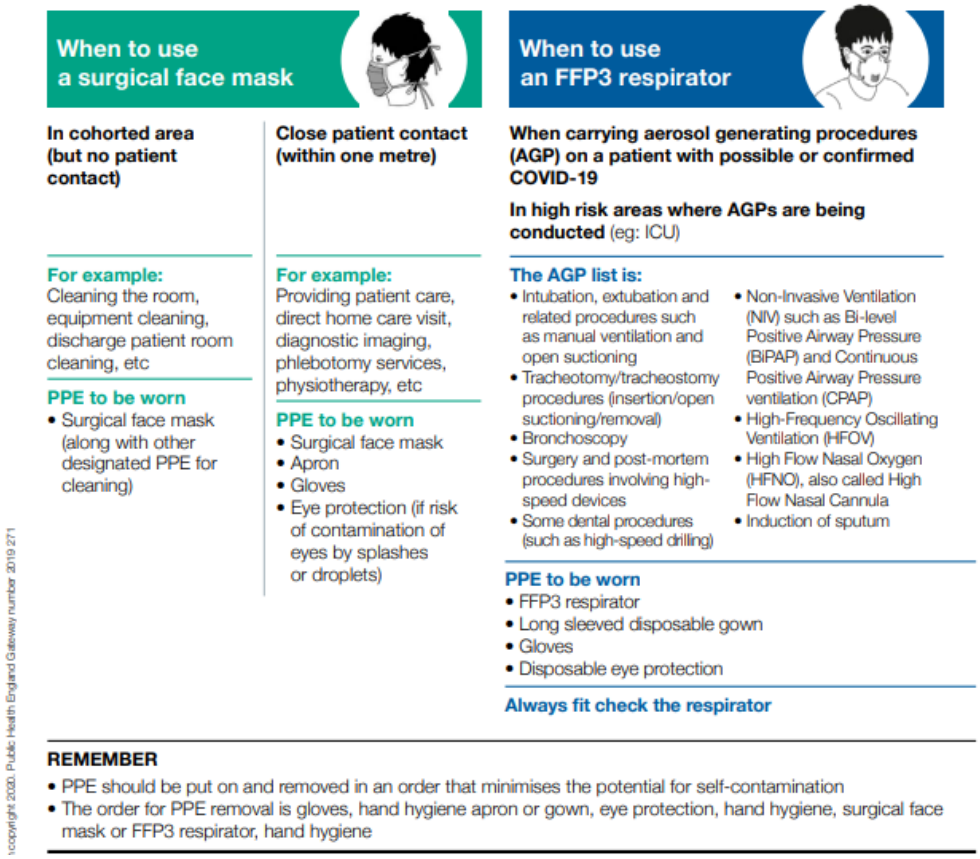
Source: Clinical Excellence Commission and Australian Commission on Safety and Quality in Health Care. Infection prevention and control COVID-19 personal protective equipment[14]

Figure 4: Guidance on surgical face mask or respirator when caring for COVID-19 patients



Source: Public Health England. When to use a surgical face mask or FFP3 respirator[15]

Evidence about transmission

Respiratory infections can be transmitted through droplets of different sizes.

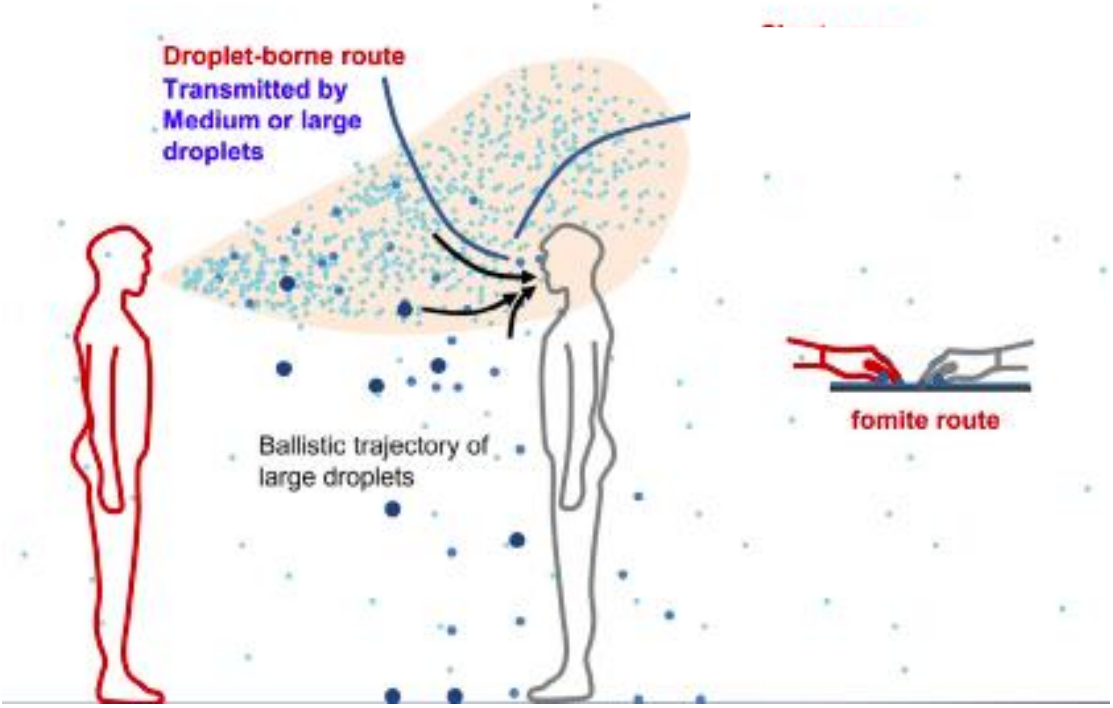
- Particles of >5μm in diameter are known as respiratory droplets and transmission occurs when a person is in in close contact (within 1m) with someone who has respiratory symptoms (e.g. coughing or sneezing) or via surfaces or objects (fomites) in the immediate environment around the infected person.
- Particles of <5μm in diameter are known as droplet nuclei which can remain in the air for long periods of time and be transmitted to others over distances greater than 1m via airborne transmission

COVID-19 is primarily transmitted via respiratory droplets and contact routes.[16] Airborne transmission may be possible in specific circumstances e.g. procedures that generate aerosols (such as endotracheal intubation, bronchoscopy, open suctioning, administration of nebulised treatment, manual ventilation before intubation, turning the patient to the prone position, disconnecting the patient from the ventilator, non-invasive positive-pressure ventilation, tracheostomy, and cardiopulmonary resuscitation).

Shedding of the virus is highest in upper respiratory tract early in the course of the disease (within the first three days from onset of symptoms).

An analysis of 75,465 COVID-19 cases in China did not find airborne transmission.[17] There have been no reports of disease transmission via faeces or urine.

Figure 5: Schematic of transmission



Source: Adapted from Wei and Li. Airborne spread of infectious agents in the indoor environment. 2016. [18]

Recent studies on airborne transmission have been assessed by the WHO.

- An experimental study induced an aerosol and evaluated virus persistence on the basis of a three-jet Collison nebulizer fed into a Goldberg drum under controlled laboratory conditions.[19] This does not reflect normal human cough conditions nor reflect a clinical setting in which aerosol-generating procedures are performed.
- Three published studies detected no COVID-19 RNA in settings with symptomatic patents. [172021] Recent pre-peer review studies have however found the presence of COVID-19 RNA in air samples. The detection of RNA in environmental samples based on PCR-based assays is not indicative of viable virus that could be transmissible.

A recent paper claims that there is evidence to support airborne precautions for the occupational health and safety of health workers treating patients with COVID-19.[22] It cites initial US Centers for Disease Control and Prevention guidance, described as precautionary. Current US Centers for Disease Control guidance states: 'The contribution of small respirable particles, sometimes called aerosols or droplet nuclei, to close proximity transmission is currently uncertain. However, airborne transmission from person-to-person over long distances is unlikely'.[23]

Bahl et al acknowledge that: 'Although no studies have directly evaluated the biophysics of droplets and gas cloud formation for patients infected with the SARS-CoV-2 virus, several properties of the exhaled gas cloud and respiratory transmission may apply to this pathogen'.[22]

The evidentiary basis for much infection control practice is weak and guidance is often based on opinion or entrenched assumptions about best practice. For example, *the Australian Guidelines for the Prevention and Control of Infection in Healthcare* (p 107) acknowledges that while there is 'a strong theoretical rationale' for using droplet precautions for patients known or suspected to be infected with agents transmitted by respiratory droplets, the certainty of the evidence is assessed as low.[5]

> Based on the available evidence, [including recently published studies] WHO continues to recommend droplet and contact precautions for people caring for COVID-19 patients.
>
> WHO continues to recommend airborne precautions for circumstances and settings in which aerosol generating procedures and support treatment are performed, according to risk assessment.
>
> These recommendations are consistent with other national and international guidelines, including those developed by the European Society of Intensive Care Medicine and Society of Critical Care Medicine and those currently used in Australia, Canada, and United Kingdom.
>
> WHO carefully monitors emerging evidence about this critical topic and updates advice as more information becomes available.[16]

Evidence about fit testing of respirators

The WHO advises that COVID-19 requires contact and droplet precautions, with additional airborne precautions in cases of aerosol-generating procedures. When there is a high probability of airborne transmission, scientific principles support the use of respirators that filter at least 94% of 0.3µm particles (the most penetrable size) from the air. Both P2 and N95 respirators are considered appropriate for use with airborne precautions in Australian healthcare facilities.[5]

Several infection control references, sources of advice from clinical colleges and societies, and manufacturer instruction booklets recommend fit testing – which is a process that verifies the respirator can adequately accommodate an individual's facial characteristics.[524]

Fit testing can encompass quantitative methods which use electronic equipment to measure air leakage into the respirator; or qualitative methods which use a hood and an odour or taste solution to determine the ability of the respirator wearer to smell or taste the test agent.[25]

A complementary process, fit checking, is widely accepted to be essential as the minimum standard of use.[5] Fit checking (user-seal check) describes the process that health workers perform each time a respirator is donned to check that a good facial seal is achieved, i.e. the respirator is sealed over the bridge of the nose and mouth and there are no gaps between the respirator and the face. (Figure 6).

While the need for fit testing is often cited, the scientific basis for this advice is weak.[262728]

The Critical Intelligence Unit in its recent evidence check, concluded the following.

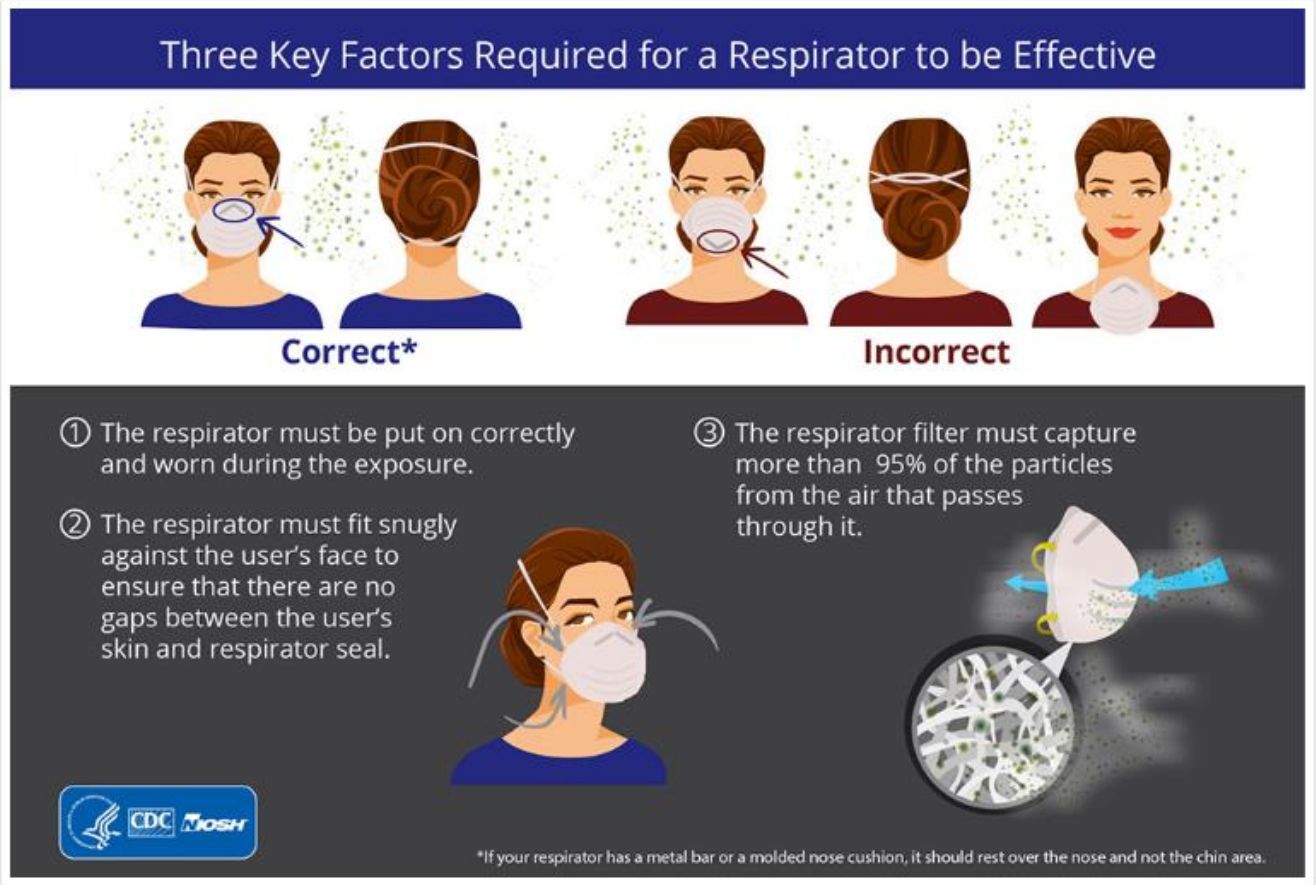
- Evidence on the use of fit testing is not clear. Some studies show no benefit, including a cluster randomised control trial, while other weaker studies have shown benefit.
- However, Australian COVID-19 guidance is consistent in advising that fit checking of masks should be applied.[5]

Most advice in favour of fit testing can be traced back to a 1996 study of tuberculosis ambient air particles with 25 person panel.[29] The applicability of this study to modern day testing and mask design is unclear, given face-seals and testing of masks have changed since then.

Intubation, bronchoscopy, cardiopulmonary resuscitation, nebulisation, and non-invasive positive pressure ventilation have been associated with respiratory virus transmissions but there are little or no compelling data documenting respiratory virus transmission for most other procedures. Despite this an increasing number of professional societies are creating their own definitions of aerosol-generating procedures based on theoretical concerns rather than documented transmissions.[30]

A recent publication has raised concerns that specialty groups can encourage the adoption of increasingly aggressive measures in response to COVID-19 that often exceed the scientific and evidence base.[30]

Figure 6: Fitting a respirator



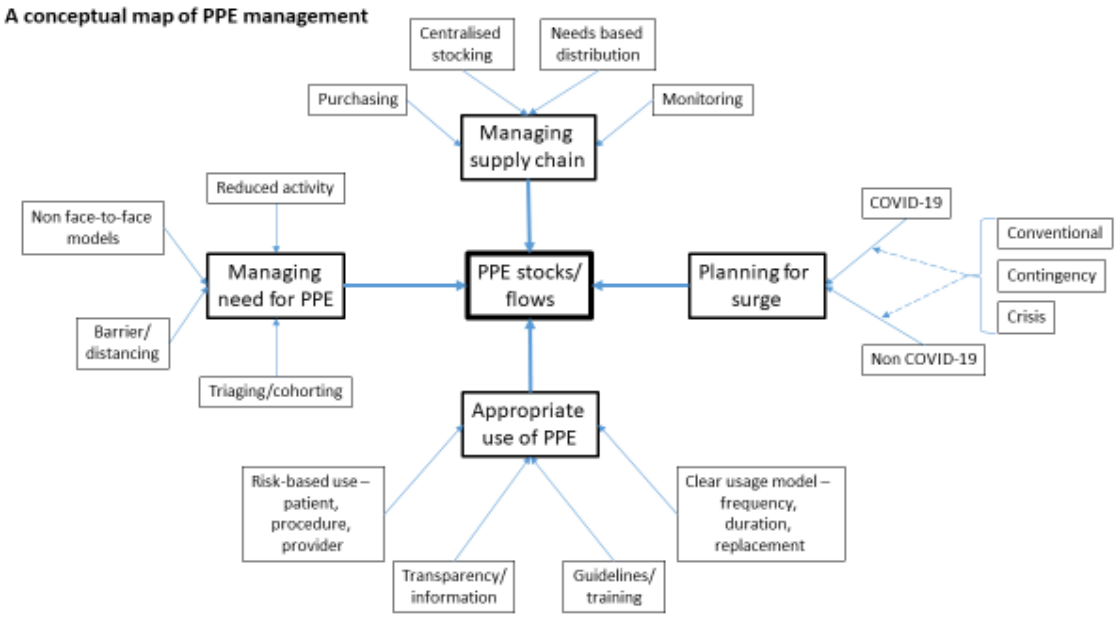
Source: D'Alessandro MM, Cichowicz JK. Proper N95 respirator use for respiratory protection preparedness.[24]

Complexity and local context

PPE management is a multifactorial issue, greatly complexified in a pandemic. Decision-makers are required to consider assessment of need for PPE in light of other hazard reduction approaches; risk assessment and appropriate use; supply chain and distribution; and the ability to respond to changes in organisational and system context, and to surge in the event of rapid increases in disease prevalence (Figure 7).

Communication and consultation are key considerations. An interactive exchange of information provides the basis for increased awareness of the importance of infection prevention and control, identification of risks before they arise, prompt management of risks, and confidence in supply and availability of PPE.

Figure 7: Conceptual map of PPE management



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Appendix 1: Recommended PPE during COVID-19 according to setting, personnel and type of activity

Table 1. Recommended PPE during the outbreak of COVID-19 outbreak, according to the setting, personnel, and type of activity[a]

Setting	Target personnel or patients	Activity	Type of PPE or procedure
Health care facilities			
Inpatient facilities			
Screening[i] Clinical triage for prioritization of care according to severity (e.g. Manchester classification) should be performed in separate area for individuals with symptoms and signs	Health care workers	Preliminary screening not involving direct contact[c]	• Maintain physical distance of at least 1 metre. • Ideally, build glass/plastic screens to create a barrier between health care workers and patients • No PPE required. • When physical distance is not feasible and yet no patient contact, use mask and eye protection.
	Patients with symptoms suggestive of COVID-19	Any	• Maintain physical distance of at least 1 metre. • Provide medical mask if tolerated by patient. • Immediately move the patient to an isolation room or separate area away from others; if this is not feasible, ensure spatial distance of at least 1 metre from other patients. • Perform hand hygiene and have the patient perform hand hygiene
	Patients without symptoms suggestive of COVID-19	Any	• No PPE required • Perform hand hygiene and have the patient perform hand hygiene
Patient room/ward	Health care workers	Providing direct care to COVID-19 patients, in the absence of aerosol-generating procedures	• Medical mask • Gown • Gloves • Eye protection (goggles or face shield) • Perform hand hygiene
	Health care workers	Providing direct care to COVID-19 patients in settings where aerosol-generating procedures are frequently in place[ii]	• Respirator N95 or FFP2 or FFP3 standard, or equivalent. • Gown • Gloves • Eye protection • Apron • Perform hand hygiene
	Cleaners	Entering the room of COVID-19 patients	• Medical mask • Gown • Heavy-duty gloves • Eye protection (if risk of splash from organic material or chemicals is anticipated) • Closed work shoes • Perform hand hygiene
	Visitors[b]	Entering the room of a COVID-19 patient	• Maintain physical distance of at least 1 metre • Medical mask • Gown • Gloves • Perform hand hygiene

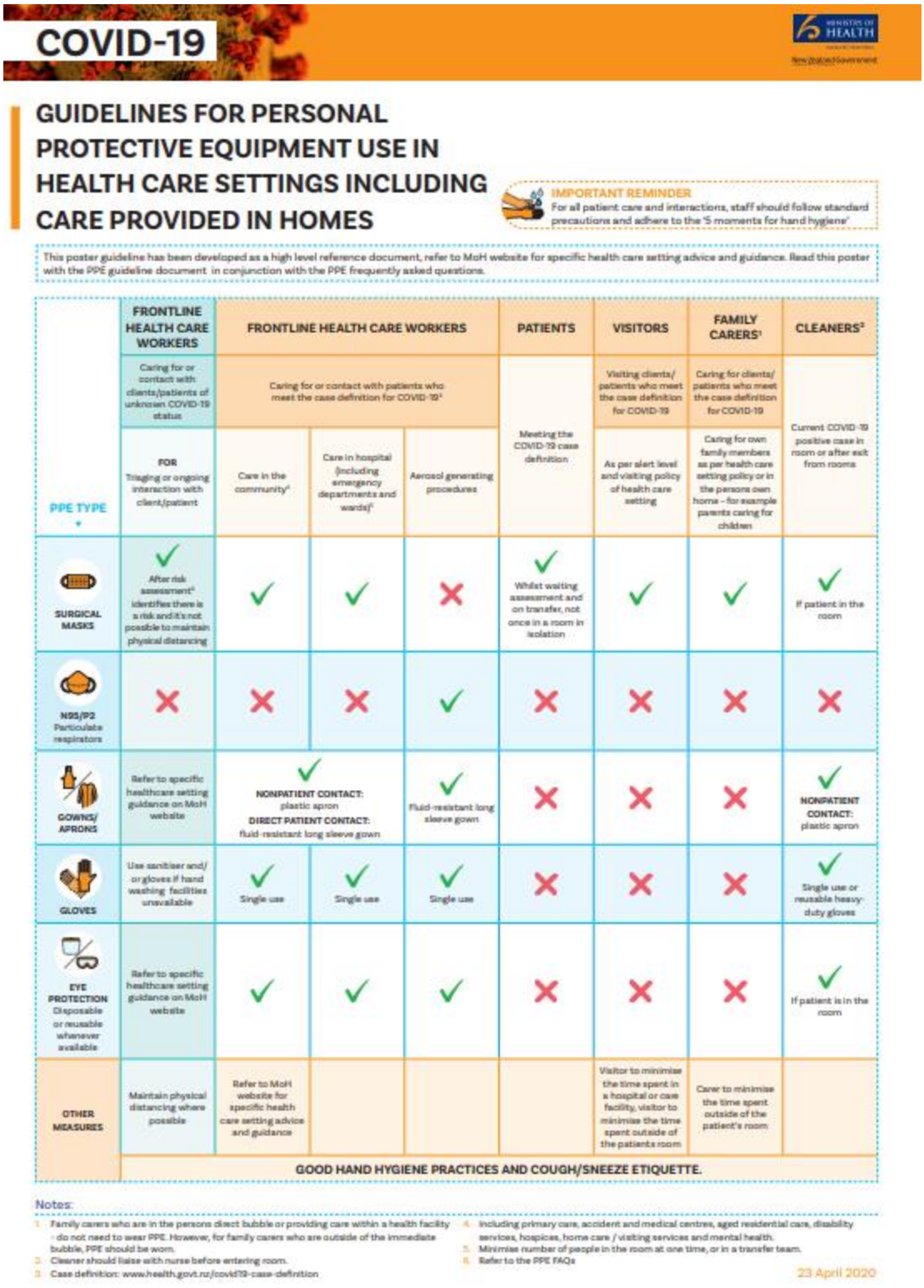
Setting	Target personnel or patients	Activity	Type of PPE or procedure
Areas of transit where patients are not allowed (e.g. cafeteria, corridors)	All staff, including health care workers.	Any activity that does not involve contact with COVID-19 patients	• Maintain physical distance of at least 1 metre • No PPE required • Perform hand hygiene
Laboratory	Lab technician	Manipulation of respiratory samples Specimen handling for molecular testing would require BSL-2 or equivalent facilities. Handling and processing of specimens from cases with suspected or confirmed COVID-19 infection that are intended for additional laboratory tests, such as haematology or blood gas analysis, should apply standard precautions[9]	• Maintain physical distance of at least 1 metre • Medical mask • Eye protection • Gown • Gloves • Perform hand hygiene
Administrative areas	All staff, including health care workers.	Administrative tasks that do not involve contact with COVID-19 patients.	• Maintain physical distance of at least 1 metre • No PPE required • Perform hand hygiene

Outpatient facilities			
Screening/triage	Health care workers	Preliminary screening not involving direct contact[c]	• Maintain physical distance of at least 1 metre. • Ideally, build a glass/plastic screen to create a barrier between health care workers and patients • No PPE required • When physical distance is not feasible and yet no patient contact, use mask and eye protection. • Perform hand hygiene
	Patients with symptoms suggestive of COVID-19	Any	• Maintain spatial distance of at least 1 metre. • Provide medical mask if tolerated. • Perform hand hygiene
	Patients without symptoms suggestive of COVID-19	Any	• No PPE required • Perform hand hygiene
Waiting room	Patients with symptoms suggestive of COVID-19	Any	• Provide medical mask if tolerated. • Immediately move the patient to an isolation room or separate area away from others; if this is not feasible, ensure spatial distance of at least 1 metre from other patients. • Have the patient perform hand hygiene
	Patients without respiratory symptoms	Any	• No PPE required • Have the patient perform hand hygiene
Consultation room	Health care workers	Physical examination of patient with symptoms suggestive of COVID-19	• Medical mask • Gown • Gloves • Eye protection • Perform hand hygiene
	Health care workers	Physical examination of patients without symptoms suggestive of COVID-19	• PPE according to standard precautions and risk assessment. • Perform hand hygiene
	Patients with symptoms suggestive of COVID-19	Any	• Provide medical mask if tolerated. • Hand hygiene and respiratory etiquette

Setting	Target personnel or patients	Activity	Type of PPE or procedure
	Patients without symptoms suggestive of COVID-19	Any	• No PPE required • Have the patient perform hand hygiene
	Cleaners	After and between consultations with patients with respiratory symptoms.	• Medical mask • Gown • Heavy-duty gloves • Eye protection (if risk of splash from organic material or chemicals). • Closed work shoes • Perform hand hygiene
Administrative areas	All staff, including health care workers	Administrative tasks	• Maintain physical distance of at least 1 metre between staff • No PPE required • Perform hand hygiene
Home care			
Home	Patients with symptoms suggestive of COVID-19	Any	• Maintain physical distance of at least 1 metre. • Provide medical mask if tolerated, except when sleeping. • Hand and respiratory hygiene
	Caregiver	Entering the patient's room, but not providing direct care or assistance	• Maintain physical distance of at least 1 metre • Medical mask • Perform hand hygiene
	Caregiver	Providing direct care or when handling stool, urine, or waste from COVID-19 patient being cared for at home	• Gloves • Medical mask • Apron (if risk of splash is anticipated) • Perform hand hygiene
	Health care workers	Providing direct care or assistance to a COVID-19 patient at home	• Medical mask • Gown • Gloves • Eye protection
Ambulance or transfer vehicle	Health care workers	Transporting suspected COVID-19 patients to the referral health care facility	• Medical mask • Gowns • Gloves • Eye protection • Perform hand hygiene
	Driver	Involved only in driving the patient with suspected COVID-19 disease and the driver's compartment is separated from the COVID-19 patient	• Maintain physical distance of at least 1 metre. • No PPE required • Perform hand hygiene
		Assisting with loading or unloading patient with suspected COVID-19	• Medical mask • Gowns • Gloves • Eye protection • Perform hand hygiene
		No direct contact with patient with suspected COVID-19, but no separation between driver's and patient's compartments	• Medical mask • Perform hand hygiene
	Patient with suspected COVID-19.	Transport to the referral health care facility.	• Medical mask if tolerated • Have the patient perform hand hygiene
	Cleaners	Cleaning after and between transport of patients with suspected COVID-19 to the referral health care facility.	• Medical mask • Gown • Heavy duty gloves • Eye protection (if risk of splash from organic material or chemicals). • Boots or closed work shoes • Perform hand hygiene
Special considerations for rapid-response teams assisting with public health investigations[d]			
Anywhere	Rapid-response team investigators	Remote interview of suspected or confirmed COVID-19 patients or their contacts.	• No PPE if done remotely (e.g. by telephone or video conference). • Remote interview is the preferred method.
		In-person interview of suspected or confirmed COVID-19 patients or contacts without direct contact	• Medical mask • Maintain physical distance of at least 1 metre. • The interview should be conducted outside the house or outdoors, and confirmed or suspected COVID-19 patients should wear a medical mask if tolerated. • Perform hand hygiene

Source: WHO Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages (pp 4-7) [6]

Appendix 2: New Zealand guidelines for PPE use in healthcare settings



COVID-19

MINISTRY OF HEALTH

GUIDELINES FOR PERSONAL PROTECTIVE EQUIPMENT USE IN HEALTH CARE SETTINGS INCLUDING CARE PROVIDED IN HOMES

IMPORTANT REMINDER
For all patient care and interactions, staff should follow standard precautions and adhere to the '5 moments for hand hygiene'

This poster guideline has been developed as a high level reference document, refer to MoH website for specific health care setting advice and guidance. Read this poster with the PPE guideline document in conjunction with the PPE frequently asked questions.

PPE TYPE	FRONTLINE HEALTH CARE WORKERS	FRONTLINE HEALTH CARE WORKERS			PATIENTS	VISITORS	FAMILY CARERS[1]	CLEANERS[2]
	Caring for or contact with clients/patients of unknown COVID-19 status	Caring for or contact with patients who meet the case definition for COVID-19[3]			Meeting the COVID-19 case definition	Visiting clients/ patients who meet the case definition for COVID-19	Caring for clients/ patients who meet the case definition for COVID-19	Current COVID-19 positive case in room or after exit from rooms
	FOR Triaging or ongoing interaction with client/patient	Care in the community[4]	Care in hospital (including emergency departments and wards)[5]	Aerosol generating procedures		As per alert level and visiting policy of health care setting	Caring for own family members as per health care setting policy or in the persons own home - for example parents caring for children	
SURGICAL MASKS	✓ After risk assessment[6] identifies there is a risk and it's not possible to maintain physical distancing	✓	✓	✗	✓ Whilst waiting assessment and on transfer, not once in a room in isolation	✓	✓	✓ If patient in the room
N95/P2 Particulate respirators	✗	✗	✗	✓	✗	✗	✗	✗
GOWNS/ APRONS	Refer to specific healthcare setting guidance on MoH website	✓ NONPATIENT CONTACT: plastic apron DIRECT PATIENT CONTACT: fluid-resistant long sleeve gown		✓ Fluid-resistant long sleeve gown	✗	✗	✗	✓ NONPATIENT CONTACT: plastic apron
GLOVES	Use sanitiser and/ or gloves if hand washing facilities unavailable	✓ Single use	✓ Single use	✓ Single use	✗	✗	✗	✓ Single use or reusable heavy-duty gloves
EYE PROTECTION Disposable or reusable whenever available	Refer to specific healthcare setting guidance on MoH website	✓	✓	✓	✗	✗	✗	✓ If patient is in the room
OTHER MEASURES	Maintain physical distancing where possible	Refer to MoH website for specific health care setting advice and guidance				Visitor to minimise the time spent in a hospital or care facility, visitor to minimise the time spent outside of the patients room	Carer to minimise the time spent outside of the patient's room	
GOOD HAND HYGIENE PRACTICES AND COUGH/SNEEZE ETIQUETTE.								

Notes:

1. Family carers who are in the persons direct bubble or providing care within a health facility - do not need to wear PPE. However, for family carers who are outside of the immediate bubble, PPE should be worn.
2. Cleaner should liaise with nurse before entering room.
3. Case definition: www.health.govt.nz/covid19-case-definition
4. Including primary care, accident and medical centres, aged residential care, disability services, hospices, home care / visiting services and mental health.
5. Minimise number of people in the room at one time, or in a transfer team.
6. Refer to the PPE FAQs

23 April 2020

Source: Ministry of Health NZ. Guidelines for personal protective equipment use in health care settings including care provided in homes.[32]