COVID-19
Strategies for optimising supply of personal protective equipment (PPE)

Last updated: 29 December 2020

The aim of this document is to provide health care workers and other facility administrators with advice on how to conserve and optimise the use of personal protective equipment (PPE) as contingency when there is a shortage or interruption to supply. Strategies should be regularly reviewed, in order to conserve and maximise the amount of stock available.

The advice in this document has been adapted from the Centres for Disease Control (CDC) Strategies for Optimizing the Supply of P2/N95 Respirators (or equivalent) and other national and interstate guidelines.

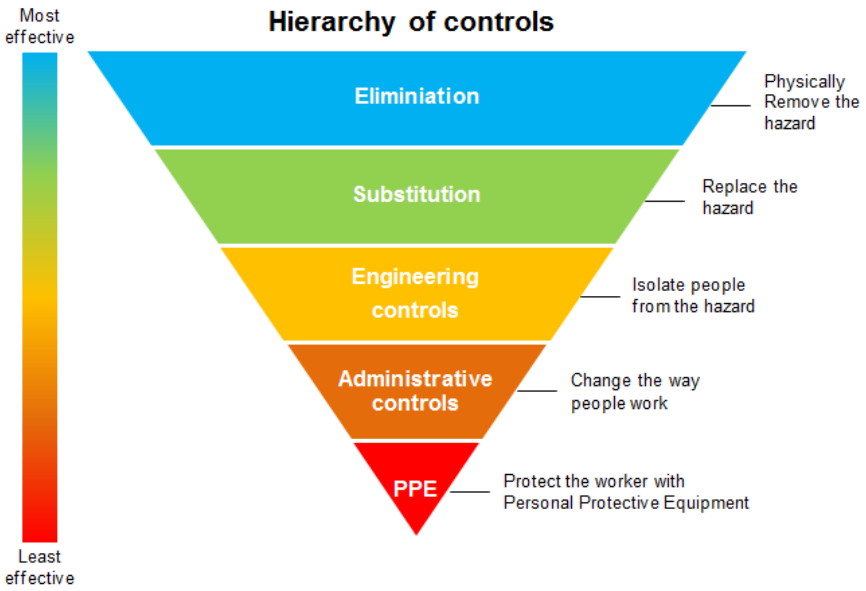
This document offers advice regarding various items of PPE and a self-assessment checklist for healthcare facilities and other associated services, however not all measures may be applicable in all settings.

The following strategies are based upon these assumptions:

1. facilities understand their current PPE inventory and supply chain status
2. facilities understand their PPE utilisation rate
3. the principles of standard and transmission based precautions are adhered to.

Hierarchy of controls

Controlling exposures to occupational hazards is a fundamental way to protect personnel. Conventionally, a hierarchy has been used to achieve feasible and effective controls. Multiple control strategies can be implemented concurrently and or sequentially. This hierarchy can be represented as follows:



To prevent infectious disease transmission, elimination (physically removing the hazard) and substitution (replacing the hazard) are not typically options for the healthcare setting. However, exposures to transmissible respiratory pathogens in healthcare facilities can often be reduced or possibly avoided through engineering and administrative controls and PPE. (Refer to Appendix A) Prompt risk assessment, detection and effective triage and isolation of potentially infectious patients are essential to prevent unnecessary exposures among patients, healthcare workers (HCW), and visitors at the facility.

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Engineering and administrative controls to optimise the use of PPE:

- Reduce the number of patients going to the hospital or outpatient settings, where possible, e.g. by establishing fever/testing clinics, or rescheduling non-urgent appointments
- Installation of physical barriers e.g. screens, barriers or curtains and physical distancing of >1.5 meters
- Exclude Healthcare Workers (HCW) who are not essential for patient care from the patient care area
- Reduce face-to-face HCW encounters with patients by maximizing use of telemedicine, where possible
- Restrict visitors for patients with confirmed, probable or suspected COVID-19
- Consider cohorting of patients as clinically appropriate e.g. same laboratory confirmed illness
- Allocation of HCW to specific areas / patients.

Reserve and conserve existing supplies of PPE:

- Monitor and manage the supply chain e.g. ordering, distribution and storage
- Store PPE in secure locations to avoid stock losses but still ensure PPE is accessible to the HCWs
- Provide surgical masks to patients only when needed and do not leave supplies unattended
- Locate respiratory hygiene stations in areas which can be monitored and or observed.
- Promote the appropriate use of PPE, refer to the SA Health PPE Matrix
- PPE should be appropriately rotated to avoid expired stock
- PPE training should use expired stock only where possible
- Use of cloth masks are not recommended for HCWs but may be considered for use as a barrier for patients to wear for droplet source control if there is limited availability of disposable surgical masks.

Reduce unnecessary or inappropriate PPE use:

The appropriate use of PPE should be as per the SA Health PPE Matrix.

- Any strategy to conserve the use of PPE must not reduce the safety of health workers or those required to wear PPE as part of their role and PPE must be available to be used by those who require it
- Staff should be trained in appropriate use of PPE
- Where clinically appropriate, HCW can practise clustering of care tasks for a single patient e.g. perform multiple tasks during one episode of care using the same PPE as clinically appropriate.

Elimination and Substitution of PPE:

- Review and substitute the use of single use PPE with reprocessable items where safe to do so
- Consider using full-sleeved plastic aprons instead of disposable single-use gowns
- Consider use of cloth gowns (note these are not impervious) with a plastic apron over the top if safe
- Consider use of powered air purifying respirators (PAPRs) as clinically appropriate for trained staff.

Extended use of PPE including surgical masks, respirators, and eye protection:

- In consultation with LHN Worker Health and Safety (WH&S) Units and under certain circumstances, the use of PPE such as surgical masks, P2/N95 respirators (or equivalent), protective eyewear and gowns may be used as extended wear for multiple patient interactions, without needing to remove it or replace it, as long as they do not come in direct contact with patients, have not been contaminated and are still intact and not damp or compromised in any way.

Note: Extending the use of PPE should only be considered after consultation with Worker Health and Safety (WH&S) and Infection Control to prevent cross infection.

- Any items of PPE being considered for extended use or re-use must be inspected for integrity and for any signs of deterioration (e.g. breaches, tears, damaged surfaces, scratches etc.) PPE that is wet, dislodged or compromised is no longer fit for purpose and must be discarded.
- Current advice for extended wear of surgical masks or P2/N95 respirators (or equivalent) is up to four hours as long as they have not been compromised e.g. damp, contaminated, damaged, removed or no longer fit for purpose.
- PPE used for multiple confirmed COVID-19 patients e.g. in a bay type setting, multiple COVID-19 patient rooms or drive through testing clinics, should be replaced if damaged, visibly soiled, moist and/or when the HCW leaves the patient care or testing area.
- Some items such as, face shields or goggles may need to be considered for re-use, however this must be risk assessed by WH&S to be deemed safe practice. Any reusable items must be cleaned and disinfected by wiping over the entire surface with detergent, followed by a large alcohol wipe (or other suitable Therapeutic Goods Administration listed disinfectant) and allowed to dry before re-use. Refer to the Australian Government Department of Health: Coronavirus (COVID-19) face shields – a quick guide.

P2/N95 respirators (or equivalent) should be immediately discarded:

- after performing aerosol generating procedures (AGP) and/or when soiled with blood or other bodily fluids
- after encounters with patients who have aerosol generating behaviours (AGB) if there is significant community transmission
- before the HCW exits the patient care area to enter a break room or bathroom
- if the HCW is experiencing difficulty breathing or the mask has lost its shape and no longer fits properly
- when the HCW is caring for patients who are not suspected, probable or confirmed cases of COVID-19.

Surgical masks should be immediately discarded when:

- removed and discarded when it becomes damp or soiled with blood or other bodily fluids
- not worn outside of the patient care area (i.e. to a ward reception area or break room, bathroom or between wards)
- replaced before providing care for patients other than those who are isolated for COVID-19.

General considerations for extended wear of respirators and surgical masks

- It is expected that a health worker will also (in addition to indications as per standard and transmission based precautions) remove or change a mask for reasons such as taking a toilet break or leaving the patient care area before the mask is not performing.
- HCWs should not touch the outer side of the mask or respirator whilst wearing it and should perform hand-hygiene before and after removing the mask or respirator.
- Masks should not be pulled down around the chin, worn on top of the head, worn dangling around the neck or any other non-recommended position and then re-worn.
- Hand hygiene must be performed immediately before and immediately after removing a mask.

Eye protection

Eye protection can consist of items that protect the wearer's eyes from sprays and splashes. It may consist of reusable or disposable safety goggles, face shields or reusable frames fitted with single use lenses.

Reusable eye protection should be cleaned and disinfected as per local procedure and manufacturers guidelines for non-critical medical devices before it is reused.

Note: Ensure reusable frames are not discarded, but are cleaned between use using detergent and water, dried, then wiped with a disinfectant wipe or alcohol and allowed to dry. Refer to local Worker Health and Safety unit for further advice.

Eye protection should be removed:

- immediately if soiled with blood or other bodily fluids
- before the HCW exits the patient care area to enter a break room or bathroom
- before proceeding to care for patients other than those who are isolated for COVID-19.

Appendix

- Self-assessment check list for healthcare facilities for the optimisation of PPE supplies.

References

- Centers for Disease Control. Strategies for optimizing the supply of PPE. Can be accessed from: www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html
- Queensland Government. COVID-19 – General considerations for conserving the personal protective equipment, 7 March 2020. Can be accessed from: www.health.qld.gov.au/__data/assets/pdf_file/0032/946373/covid19-ppe-conserving.pdf
- WHO. Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19). Interim guidance 19 March 2020. Can be accessed from: https://apps.who.int/iris/bitstream/handle/10665/331498/WHO-2019-nCoV-IPCPPE_use-2020.2-eng.pdf
- Australian Government, Department of Health. Guidance on the use of personal protective equipment (PPE) in hospitals during the COVID-19 outbreak. Can be accessed from: https://www.health.gov.au/sites/default/files/documents/2020/07/guidance-on-the-use-of-personal-protective-equipment-ppe-in-hospitals-during-the-covid-19-outbreak.pdf

For more information

Infection Control Service
Communicable Disease Control Branch
www.sahealth.sa.gov.au/COVID2019
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APPENDIX A: Self-assessment check list for healthcare facilities regarding general engineering and administrative controls to optimise PPE supply and usage:

Engineering controls	
Where possible, use negative pressure rooms for COVID-19 patients with severe symptoms and for AGPs. If a negative pressure room is not available, use a single room with the door closed.	
Physical barriers such as glass or plastic screens can be a strategy in triage and reception areas.	
Maintaining airflow direction away from staff workstations towards patient care areas can also be an effective strategy.	

Administrative controls	
Manage the PPE supply chain at all levels of the health service, including monitoring appropriate use and ordering of PPE by all staff.	
Storage of stock of essential PPE including P2/N95 respirators (or equivalent) and surgical masks should be secure and not freely accessible to staff, patients or the general public except as required.	
Limit the number of patients going to hospitals or outpatient settings (e.g. establish fever clinics, reschedule non-urgent appointments).	
Limit face-to-face HCW encounters with patients (e.g. combine tasks into one episode of care, HCW delivering food trays whilst attending to other routine care, etc.).	
Exclude all HCW not directly involved in COVID-19 patient care from entering the patient's room.	
Restrict the number of visitors to infected patients to the absolute minimum, consider video/phone calls	
Consider the use of telemedicine where possible.	

Personal protective equipment	
Ensure appropriate use of P2/N95 respirators (or equivalent), surgical masks and other items of PPE. Refer to the SA health PPE Decision Matrix.	
Consider the use of PAPR as clinically indicated in critical care units if available and staff are trained.	
Only surgical masks (not P2/N95 respirators or equivalent) as source control on patients if indicated.	
Consider cohorting of patients with confirmed COVID-19, which may allow HCWs to undertake extended use of PPE as per agreed procedures However, PPE should be replaced after performing AGPs or is compromised in any way. .	
Consider assigning HCW teams to provide care to specific patient cohorts.	
Use reusable eye protection in place of single-use items where possible. Ensure reusable items are reprocessed e.g. cleaned and disinfected in between uses.	
Use only expired PPE for the training of HCWs and performing fit testing.	
Staff should be appropriately trained in the use of PPE, including fit testing of staff who are required to wear a P2/N95 respirators (or equivalent). Refer to SA Health web pages for further information.	