Infection prevention and control guidelines for the management of COVID-19 in healthcare settings

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Purpose

This guideline provides infection prevention and control recommendations for managing patients with suspected or confirmed COVID-19 in healthcare settings.

Scope

This guideline provides information for all Queensland Health Hospital and Health Service (HHS) employees (permanent, temporary and casual) and all organisations and individuals acting as its agents (including visiting Medical Officers and other partners, contractors, consultants and volunteers) and all Queensland licensed private health facilities.

Related documents

This guideline should be read in conjunction with the following:

- Communicable Diseases Network Australia: Coronavirus Disease 2019 (COVID-19) CDNA National Guidelines for Public Health Units
- Infection Control Expert Group (ICEG) Guidance on the use of personal protective equipment (PPE) for healthcare workers in the context of COVID-19
- Infection Control Expert Group: Minimising the risk of infectious respiratory disease transmission in the context of COVID-19: the hierarchy of controls
- Chief Health Officer Public Health Directions
- Queensland Health: Escalation of personal protective equipment usage in healthcare delivery, community health and care services, in-home care settings, and for healthcare delivery in correctional services
- Queensland Health: Escalation of personal protective equipment usage in residential aged care and disability accommodation services
- Queensland Health: Conserving personal protective equipment
- Australian Commission on Safety and Quality in Healthcare: Australian Guidelines for the Prevention and Control of Infection in Healthcare
- Queensland Health: Fit testing of P2/N95 respirators in respiratory protection programs
- Queensland Health: COVID-19 and managing employee health risks

Background

These infection prevention and control recommendations combine recommendations found in the Communicable Diseases Network Australia (CDNA) Series of National Guidelines (CDNA SoNG) Coronavirus 2019 (COVID-19), Infection Control Expert Group (ICEG) Guidance on the use of personal protective equipment for
health care workers in the context of COVID-19, the World Health Organization (WHO) guideline, Infection prevention and control during health care when coronavirus disease (COVID-19) is suspected or confirmed, and other guidelines and papers (see references for full list).

Advice regarding the management of confirmed and suspected COVID-19 cases has evolved as further information associated with this disease has become known. As it has become available, this advice has been and will continue to be incorporated into this guideline.

For further background information on SARS-CoV-2 and COVID-19 please refer to the CDNA SoNG, which contains sections on the infectious agent, mode of transmission, case definitions, infectious period, incubation period, testing, contact tracing and more.

Key principles

Cough and respiratory hygiene must always be maintained.

Physical distancing is recommended by CDNA and should be maintained as much as practicable[1]. Stay at least 1.5 metres[1] away from other people including:

- Patients, except when unavoidable, e.g. during physical examination and provision of care, and
- Members of the public, hospital visitors and other staff in wards, clinics and nonclinical areas, e.g. during meetings, in offices and shared workplaces and during tea breaks etc.

General principles

- Check-in records for individual wards, departments and outpatient areas will assist in contact tracing activities if required.
- Assess any patients presenting with symptoms of respiratory illness for epidemiological evidence[5] for COVID-19 within the last 14 days.
- Any person tested for COVID-19 should be isolated pending test results, excepting those undergoing routine surveillance COVID-19 screening for employment purposes.
- Manage routine care of suspected or confirmed cases of COVID-19 using personal protective equipment (PPE) as per ICEG Guidance on the use of personal protective equipment for health care workers in the context of COVID-19 and current Queensland guidance.

Infection prevention and control in healthcare settings

Hierarchy of controls

Guidance on consideration of the hierarchy of controls in the context of minimising the risk of COVID-19 transmission has been produced by the Infection Control Expert Group.

Standard precautions

Standard precautions should be used when providing care to all patients[2], whether or not they are suspected of having COVID-19 and are necessary to help prevent exposure/infection by asymptomatic or pre-symptomatic carriers of COVID-19.
Standard precautions include hand hygiene, appropriate and correct use of PPE, respiratory hygiene and cough etiquette, reprocessing of reusable medical devices, cleaning of shared equipment, aseptic technique, sharps/waste handling and disposal, appropriate handling of linen and routine environmental cleaning[2].

Standard precautions apply to all settings where care is provided or where there is a risk of blood or body fluid exposure including acute and subacute care facilities, residential care facilities, home care settings, community settings and other settings such as mortuaries.

Healthcare workers should perform hand hygiene in accordance with the National Hand Hygiene Initiative program, *5 Moments for Hand Hygiene*. All healthcare workers having direct contact with patients or a patient’s environment should ensure they are Bare Below the Elbows.

**Transmission-based precautions**

The below criteria should be used to decide what level of PPE is required for an individual patient based on their risk for transmission of COVID-19.


**General considerations**

In accordance with the Infection Control Expert Group *Minimising the risk of infectious respiratory disease transmission in the context of COVID-19: the hierarchy of controls* and the Infection Control Expert Group *Guidance on the use of personal protective equipment for healthcare workers in the context of COVID-19* an assessment of risk of transmission of COVID-19 to workers should be undertaken when providing direct care to patients. The assessment of risk of transmission should consider the following:

- the individual patient’s pre-existing likelihood of COVID-19
- patient factors
- physical location of care.

When the risk is unknown, is yet to be assessed, or is unable to be assessed, a patient should be managed as a suspected COVID-19 case.

Workers in less controlled settings such as fever/testing clinics and triage settings in Emergency Departments should consider the use of P2/N95 respirators in addition to other PPE when having face to face contact or providing direct patient care. This should particularly apply when the risk of unexpected COVID-19 infections in the community is increased. This is because the ability to conduct an individual risk assessment prior to having contact with patients may be constrained in these settings. Such environments may be less controlled with multiple patients with symptoms consistent with COVID-19 requiring review and testing concurrently.
Non-COVID-19 patients

Patients with NO acute respiratory illness or clinical evidence of COVID-19\(^a\) (in the past 14 days) AND

- no recognised epidemiological evidence\(^b\)
- no other indication for transmission-based precautions

Confirmed COVID-19 cases, suspected COVID-19 cases and those with epidemiological evidence of COVID-19

- All patients with confirmed COVID-19
- All patients with clinical evidence of COVID-19\(^a\) AND epidemiological evidence\(^b\) for COVID-19 within the last 14 days\(^c\)
- All patients with epidemiological evidence\(^b\) of COVID-19

Remaining patients

Patients with clinical symptoms consistent with COVID-19:

- WITHOUT epidemiological evidence\(^b\) for COVID-19 within the last 14 days

Note: Consult with local infectious diseases, public health and/or infection prevention and control practitioners for patient management guidance following confirmation of a negative COVID-19 combined deep nasal and oropharyngeal swab for patients meeting the “remaining patients” classification.

Personal protective equipment (PPE)

The PPE described below is required for the management of patients during periods of low risk of community transmission of COVID-19. For PPE requirements during periods of increased risk of community transmission refer to:

- Escalation of personal protective equipment in healthcare delivery, community health and in-home care settings, correctional services, or
- Escalation of personal protective equipment in residential aged care and disability accommodation services

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\(^a\) Clinical evidence of COVID-19. In the last 14 days: Fever (≥37.5 °C) or history of fever (e.g. night sweats, chills), acute respiratory infection (e.g. cough, shortness of breath, sore throat), loss of smell or loss of taste, other symptoms may include: headache, myalgia, fatigue, runny nose, acute blocked nose (congestion), muscle pain, joint pain, diarrhoea, nausea/vomiting, loss of appetite. Clinical judgement should be applied where there are alternative clinical explanations for symptoms or non-specific symptoms are present.

\(^b\) Epidemiological evidence for COVID-19. In the last 14 days: All international arrivals and close contacts of COVID-19 cases. Risk assessment for: In the last 14 days: people who provide care for COVID-19 cases (e.g. Health care workers), Domestic and international aircrew, Workers in managed quarantine facilities. People who provide care for COVID-19 cases are listed as at epidemiological risk in the CDNA guidelines – a risk assessment should be undertaken to determine whether there is sufficient exposure risk to warrant additional precautions if healthcare staff require healthcare.
Contact and airborne precautions

The PPE required for contact, droplet and airborne precautions[2] for confirmed and suspected COVID-19[3] cases and patients with epidemiological evidence of COVID-19 is:

- Long-sleeved, preferably fluid-resistant gown
  - An apron or a non fluid-resistant gown may be used in situations where physical contact is minimal and there is little chance of body fluid splash[3] (e.g. medication delivery, observations, fever clinics)
- Gloves
- P2/N95 respirator
- Protective eyewear/face shield

A powered air-purifying respirator (PAPR) may be considered instead of a P2/N95 respirator if a suitable P2/N95 respirator cannot be fitted, when the fit of a P2/N95 respirator is compromised, or when use for an extended time is required[3, 4]. Refer to the ICEG Guidance on the use of personal protective equipment for health care workers in the context of COVID-19, the Queensland Health Guidance on Fit testing of P2/N95 respirators in respiratory protection programs and Queensland Health Guideline for CleanSpace HALO for further guidance on selection and use of PAPR.

Contact and droplet precautions

The PPE required for contact and droplet precautions[2] for patients meeting the definition of “remaining patients” is:

- Long-sleeved, preferably fluid-resistant gown
  - An apron or a non fluid-resistant gown may be used in situations where physical contact is minimal and there is little chance of body fluid splash[3] (e.g. medication delivery, observations, fever clinics)
- Gloves
- Surgical mask
- Protective eyewear/face shield

Room placement

Contact and airborne precautions

Patients being managed using contact and airborne precautions should be placed in a single, negative pressure room with dedicated ensuite and anteroom where available[2].

In situations where there are not enough single negative pressure rooms with dedicated ensuite and anterooms available, the below options are to be considered in descending order:

- Single negative pressure room with dedicated ensuite without anteroom
- Standard single room with ensuite, door remains closed (negative airflow preferred)

For use of single rooms without anterooms, an adjacent room or area for storage of and putting on clean PPE, and a separate area of adequate size for the safe removal of PPE and the disposal of clinical waste are required.

Do not use rooms that are designed to have positive pressure e.g. such as designated positive pressure rooms in oncology wards and avoid rooms with positive airflow[3].

If cohorting is to be considered, a local, contemporaneous risk assessment is required. Please refer to Appendix 1 for information to consider in this risk assessment.

Contact and droplet precautions
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**Considerations on use of PPE**

PPE should be available in sufficient amounts and different sizes and easily accessible by healthcare workers.

PPE used in healthcare for the prevention of transmission of disease is regulated as a medical device by the Therapeutic Goods Administration[5]. These products must be included on the Australian Register of Therapeutic Goods before they can be supplied[5]. Refer to the TGA website for further information.

For reusable items such as PAPR, face shields, eye protection etc., each organisation should develop a local procedure for reprocessing these items, including which products are to be used, where cleaning and disinfection will occur, and the products and process to be used for cleaning and disinfection. Where an item of PPE is labelled as single use it must not be reused.

Follow the manufacturer’s instructions for reprocessing, including the number of times an item can be reprocessed.

**Safe use of PPE**

As it is possible that PPE may be worn for extended periods of time, staff preparation and care is vital. Health services should consider PPE fatigue (see below) and the need for PPE valets/spotters.

Prior to donning PPE, it is important that the staff member is:

- nourished, hydrated and toileted,
- hair should be tied back and/or kept away from the face to not interfere with the mask and eye-protection,
- bare below the elbows i.e. nails are short and no jewellery to be worn under gloves to avoid puncture

For information about facial care while wearing masks, please refer to Facial injury and respiratory protective equipment guidance. Please note that the use of some of these methods of skin care may change the effectiveness of the fit of a respirator. Fit testing should be conducted with protective dressings in place if they are to be used.

PPE should be removed in a manner that prevents contamination of the healthcare worker’s clothing, hands and the environment. For instructions on safe fitting and removal refer to Safe fitting and removal of PPE poster.

For guidance on risk assessment for locations for fitting and removal of PPE refer to Appendix 2: PPE fitting and removal decision tree.

For guidance on the correct procedures and sequence for safe fitting and removal of PPE refer to Safe fitting and removal of PPE poster and Correct use of PPE video.

**P2 respirators**

Respiratory protection programs that include fit testing and fit checking should be implemented as per Fit Testing of P2/N95 respirators in respiratory protection programs.
Fit checking must be performed each time a respirator is used, regardless of previous fit testing. Healthcare workers are to be instructed on how to perform a fit check. No clinical activity should be undertaken until a satisfactory fit has been achieved. Fit checks ensure the respirator is sealed over the bridge of the nose and mouth and that there are no gaps between the respirator and face. Generic instructions for performing a fit check are available in this poster. Manufacturers of respirators also provide instructions for fit checking.

Appendix 5 has detailed information about the types of P2/N95 respirators and manufacturer user instructions where available. This appendix represents the range of respirators that may be available in Queensland Health. Stock levels of different masks may vary. Consult with your local stocks and stores personnel for current availability.

Facial hair
An adequate seal may be difficult to achieve in the presence of facial hair that underlies the edge of the respirator. The effectiveness of a tight fitting facepiece, such as half-face or full-face respirators that use straps, relies on achieving a protective seal with the wearer’s face. If an airtight protective seal is not achieved, the wearer will not get the expected level of protection. Facial hair that lies along the sealing surface of a tight-fitting respirator will stop it sealing properly. Therefore, any hair growth between the skin and the facepiece sealing surface must be removed in order to achieve a fit. Please discuss local issues regarding any staff that decline to remove their facial hair with your local Human Resources department.

Patient management considerations

Patient Movement
Movement of patients within a facility should be limited to essential purposes.

If a patient being managed under droplet or airborne precautions needs to be transferred to another department within the facility:

- The patient should wear a surgical mask wherever possible if tolerated.
- The receiving department should be notified in advance.
- Healthcare workers transferring the patient should wear clean PPE during transit.
- If transferring via a lift, ensure the route is clear and the lift is used for the sole purpose of transferring the patient. Cleaning and disinfection must be completed after the transfer to reduce potential environmental contamination. All high touch lift surfaces (such as buttons and handrails) must be cleaned and disinfected prior to the lift becoming operational again. See the “Management of environment” section below for more information about cleaning and disinfection.
- Do not place paper medical records on the patient’s bed.

Management of bathroom and personal care
Bathrooms are wet and enclosed and may be poorly ventilated; being in this environment over a prolonged period should be avoided.

- In the case of patients who require minimal assistance with personal hygiene, the risk of transmission of SARS-CoV-2 to staff may be reduced by minimising the time spent in the bathroom with a case. The risk of infection transmission may also be mitigated by using a gentle stream of water from a handheld shower head.
- In the case of patients who require direct support with their personal hygiene, alternative hygiene care (e.g. bed bath) may be provided outside of the bathroom environment if the risk of showering is deemed unacceptably high until they are released from isolation.
Handling of paper health records

The risk of paper health record contamination and subsequent exposure to SARS-CoV-2 in the absence of a spill (or similar) is considered low risk. However, care should still be taken to manage this risk. A local process should be implemented to manage these health records and the following steps may assist in reducing the risk of cross contamination of these items:

- Hand hygiene before/after contact with notes (patients and healthcare workers)
- Use clean pens and accessories. Clean and disinfect pens and accessories after use
- Keep desk areas clean and tidy
- Frequent cleaning of workstations and work sites
- Attending administration areas with clean hands and no gowns or gloves
- Move to electronic notes where able
- Zone/modelling to reduce notes going directly into the patient care zone

Paper records do not need to be held for any period prior to scanning. This may increase the risk of delay in the documentation and communication of patient information.

It is acknowledged that some paper records/forms may require handling by patients during their hospital journey. The risk of contamination can be mitigated by asking patients to perform hand hygiene before touching records/forms and placing them into a plastic sleeve following patient handling.

Care of the deceased

Staff are to wear the same level of PPE and comply with the appropriate transmission based precautions as per above section when handling the body of a deceased suspect or confirmed COVID-19 patient. Refer to Appendix 6 for detailed information.

Staff considerations

Education

All healthcare workers should be educated in the application of standard precautions, transmission-based precautions, the use of the hierarchy of controls, and the correct selection and use of PPE including safe fitting and removal.

PPE fatigue

The combination of PPE required in the care of suspected or confirmed cases can cause fatigue. The impact of PPE fatigue on staff comfort and potential PPE breaches should be monitored.

A PPE spotter or valet can aid in monitoring workers who are in PPE and the use of a PPE spotter can assist in guiding staff safely through the PPE removal process to avoid self-contamination.

Testing

All healthcare workers are to self-monitor for signs and symptoms consistent with COVID-19 infection. If healthcare workers experience signs or symptoms consistent with COVID-19 they should self-exclude from work and seek testing for COVID-19.
Vaccination


Physical distancing

Physical distancing of staff during work and during breaks should be facilitated by engineering and administrative controls wherever possible. Example control measures can be found in the ICEG guidance on minimising the risk of infectious respiratory disease transmission in the context of COVID-19: the hierarchy of controls.

Uniforms

It is good practice to change out of your uniform/work clothes after you finish work and launder these clothes daily on the warmest appropriate water setting for the items and dry them completely (either air dry or tumble dry as appropriate for the item)[6].

The Australian Nursing and Midwifery Federation has produced an evidence brief on laundering of healthcare worker uniforms.

Management of environment

Ventilation

Facilities that provide care for diagnosed COVID-19 patients and quarantined individuals, should make use of local heating, ventilation, and air conditioning (HVAC) expertise to determine suitability of accommodations and minimum time required to enable sufficient air changes[2, 7, 8].

Cleaning

Environmental cleaning and disinfection are crucial to preventing transmission of infection in the healthcare environment. Coronaviruses can persist on surfaces but can be effectively inactivated by appropriate disinfectants. All cleaning processes should comply with the Queensland Health Strategic Operational Services Unit Environmental Cleaning Guidelines and the ICEG Coronavirus (COVID-19) environmental cleaning and disinfection principles for health and residential care facilities. Also refer to Hygiene and cleaning for the health workforce during COVID-19.

Routine cleaning

Cleaning tasks in the COVID-19 patient care environment should be undertaken using appropriate detergent and disinfectant product/s that have been entered into the Australian Register of Therapeutic Goods with specific claims against SARS-CoV-2.

The routine cleaning process should involve either:

- A physical clean using a combined detergent and 1,000ppm available chlorine solution, or combined detergent/disinfectant product that has been entered into the Australian Register of Therapeutic Goods with specific claims against SARS-CoV-2 (2-in-1 clean).
- A physical clean using detergent, followed by a clean with 1,000ppm available chlorine solution or disinfectant product that has been entered into the Australian Register of Therapeutic Goods with specific claims against SARS-CoV-2 (2-step clean).

Manufacturer instructions must be followed for dilution and/or use of products.
When cleaning, staff are to wear the same level of PPE as for the care of the patient and comply with the appropriate transmission based precautions as per above section.

Daily cleaning of inpatient areas should be undertaken at a minimum according to Strategic Operational Services Unit guidelines and local facility procedures. The Strategic Operational Services Guidelines also provides recommended frequency of cleaning for different surfaces and items. Frequently touched surfaces particularly in common areas such as entrances, waiting rooms, foyers, around staff stations and lifts should be cleaned with increased frequency.

**Discharge clean**

Discharge cleaning of rooms occupied by patients or residents who have COVID-19 requires both thorough cleaning and disinfection. Refer to the ICEG Coronavirus (COVID-19) environmental cleaning and disinfection principles for health and residential care facilities for further detailed information.

- Staff who are cleaning should wear the same level of PPE as for the care of the patient.
- Following discharge or transfer of the patient, the patient’s personal effects should be removed, and fabric privacy curtains and window curtains, if present, should be removed for laundering prior to cleaning the room, and all consumables unable to be cleaned should be discarded
- For disposable curtains, follow local policy or follow manufacturer’s instructions including checking the expiry date
- Handle used linen and fabrics with minimum agitation to avoid contamination of air, surfaces and persons
- The room and all patient care equipment remaining in the room should be physically cleaned
  - Follow or combine cleaning with a disinfectant process (see 2-step clean and 2-in-1 step clean) as per the Australian Guidelines for the Prevention and Control of Infection in Healthcare.
- All furniture, patient equipment items, horizontal surfaces, frequently touched surfaces, e.g. light switches and call buttons, bathroom, toilet and shower area should be thoroughly cleaned and disinfected
- For procedural rooms with short patient stays (e.g. CT scan, MRI, fever/testing clinics) clean and disinfect surfaces that have been used during the procedure and frequently touched surfaces between cases and terminally clean the area as per local policies e.g. at the end of the session/day.

**Equipment**

Patient care and patient assessment devices, e.g. electronic thermometers, sphygmomanometers, glucometers, hoists, pat slides, may transmit COVID-19 if devices are shared between patients.

Preferably, equipment should be disposable and either single-use or single-patient-use. Reusable equipment should be dedicated for the exclusive use of the case until the end of their admission where possible. Reusable equipment must be cleaned and disinfected according to manufacturer’s recommendations using a suitable disinfectant prior to use on another patient. Equipment used in clinical areas should have a smooth, non-porous, intact surface to facilitate cleaning/disinfecting. Equipment that cannot be cleaned/disinfected between patients should not be reused.

**Waste**

Existing procedures for the management of general and clinical waste should be used.

The need for frequent emptying of waste bins used for the disposal of PPE in clinical areas should be considered. Anecdotal evidence suggests that when such bins become full, healthcare workers may start to tamp down the waste when discarding used PPE, potentially leading to self-contamination.

The correct disposal of used PPE is dependent upon local council and facility requirements:

- Unsoiled PPE can be discarded into general waste if this is acceptable within local council regulation and local facility waste management procedures.
• If PPE is visibly soiled e.g. with blood or faeces, PPE should be disposed of as clinical/infectious waste.

**Linen**

Used linen from a patient with suspected or confirmed COVID-19 should be managed as foul or infectious linen (for example, immediately placed in an alginate bag and then into an appropriate laundry receptacle). This reduces the risk of exposure for operational and laundry workers.

**Food services and cutlery reprocessing**

Non-essential staff should be restricted from entering the COVID-19 patient care area. Food services staff should deliver all food and beverages to the designated clean area. These should then be delivered into the patient room by healthcare workers directly caring for the patient; and removed by the healthcare workers directly caring for the patient once the meal is consumed and placed in a designated collection area/trolley.

Standard precautions should always be used when handling used crockery and cutlery. No additional precautions are required for the reprocessing of crockery and cutlery or other items such as meal trays.

**Outbreak management**

Refer to the Management of COVID-19 outbreaks in hospital settings and Guideline for the management of outbreaks of communicable diseases in healthcare facilities, for advice around outbreak management, outbreak plans and outbreak control teams (OCT) and roles and responsibilities during an outbreak of COVID-19 in a healthcare setting.

All health facilities should ensure their outbreak control plans are up-to-date and specific plans have been formulated for a response to COVID-19 outbreaks.

An outbreak of COVID-19 in a healthcare facility and the decision to convene an OCT should be triggered by one confirmed case only (unless the patient was admitted with COVID-19 and being managed under the appropriate precautions for their entire admission). For example (but not limited to):

• a confirmed case of COVID-19 in a staff member, contractor, student or volunteer who was at the facility during their infectious period

• a patient with a confirmed case of COVID-19 that went initially unrecognised and appropriate transmission-based precautions were not in place for some or all of their admission/episode of care

• a confirmed case of COVID-19 in a patient with onset of illness while an inpatient, or within 48 hours of discharge, and appropriate transmission-based precautions were not in place for some or all of their infectious period.

An OCT should be convened as soon as possible on the same day an outbreak is identified, with the early involvement of the local public health unit.

**Planning for the management of a COVID-19 outbreak in a health facility**

Health facilities should include the following in their planning for COVID-19 outbreaks:

• Staffing contingency plans
  – In the event of an outbreak in a health facility, large numbers of staff may be quarantined or isolated. Planning for a surge workforce should be undertaken. Clinical and non-clinical surge staff should be considered. As a result of the outbreak, additional staffing may be required for cleaning and administrative tasks and contact tracing.
  – Staff working in a facility where an outbreak is occurring should not attend work at a different facility (e.g. another aged care setting, hospital) until the outbreak is declared over.
• Consumables
  – There is likely to be an increased demand for PPE, cleaning and disinfectant products, and hand hygiene products. Engage with your local procurement and stores staff early.

• Cohorting
  – Consideration should be given to the location and requirements for quarantine and isolation wards and separate staffing for these.

• Screening
  – Staff and patients should undergo regular, routine screening for symptoms and risk factors

• Testing
  – Once an outbreak is detected, enhanced pathology testing of patients and staff is likely to be required. Plans should be in place for early communication with the laboratory and to facilitate the safe collection, transport and testing of bulk amounts of specimens, and communication of the results.

• Communication
  – All relevant stakeholders should be identified and a communication plan for an outbreak should be formulated as part of planning.

**Cleaning in the context of a COVID-19 outbreak in a health facility**

Enhanced environmental cleaning and disinfection is required in the event of an outbreak. This applies to all areas in the outbreak zone including patient care areas and communal areas, and areas that are for staff only.

The following are key points for cleaning in the context of an outbreak:

• Consider whether the frequency of routine cleaning should be increased, based on outbreak epidemiology
• Routine cleaning of all surfaces and all areas in the outbreak zone should be carried out using either a 2-step clean (detergent followed by disinfectant) or a combined detergent and disinfectant product. Refer to the section on environmental cleaning and disinfection.
• Consider increased frequency of the cleaning and disinfection of frequently touched surfaces.
• All patient care equipment must be dedicated as much as practicable and cleaned and disinfected between patients.
• Ensure adequate communication with the cleaning team. Ensure cleaning services are represented on the OCT. Additional staffing may be required for cleaning.
Appendix 1: Patient placement (cohorting) advice

Suspect cases

Cohorting suspect cases is not recommended if it can be avoided. The decision to cohort suspect cases needs to be taken following consultation with local experts, such as infectious diseases physicians and infection control practitioners.

Where suspect cases must be cohorted, epidemiological and clinical suspicion should be considered when deciding which suspect case are placed together. Physical distancing measures must be adhered to with a minimum of 1.5 metres distance maintained between patients at all times.

In addition to the requirements outlined above for cohorting suspect cases, curtains, privacy screens or barriers should be used at all times to physically separate patients. This will help to reduce the potential for transmission of infection. The curtains or barriers between patients must remain in place whenever a patient is present.

Suspect cases should not be cohorted with confirmed cases.

Confirmed cases

There are a number of risk factors for transmission in hospital settings, including multiple patients with COVID-19 in the same clinical space, and older ventilation systems that are less effective at recirculating air[9]. Therefore, cohorting of confirmed cases of COVID-19 in shared bed areas must only be undertaken following consultation with local experts and hospital executive after risk assessment of the environment and ventilation characteristics[8] in the intended area.

Cohorting patients who are infected with COVID-19 confines their care to one area and prevents contact with other patients.

The following principles apply when making decisions about patient placement:

- Prioritise patients who have severe pneumonia symptoms and patients early in the course of infection for placement in single rooms with negative pressure air handling.
- Consider the patient’s ability to perform hand hygiene and follow appropriate cough and personal hygiene etiquette.
- Care should be taken to ensure that suspected cases are not cohorted with confirmed cases.
- Avoid cohorting confirmed cases with different variants/strains[10].
- Care should be taken to ensure that confirmed COVID-19 cases co-infected with influenza or other respiratory viruses are not cohorted.

A suitable ward should be identified for the exclusive use of cohorting confirmed COVID-19 patients. When determining the location of the cohort ward the following should be considered:

- the ability to isolate the ward air handling system from other areas of the hospital
- the ventilation of the ward area is to be assessed by a qualified engineer:
  - early engagement with local engineering experts (BEMS) is advised. These local experts understand the way the systems have been designed, operated and perhaps modified over the years and can help to
ensure the understanding of the movement of airflows and that sharing of return air is allocated across the facility
− in heating, ventilation and air conditions (HVAC) systems with modulating outside air systems, or where manual adjustment is possible, increasing outside air rates to provide increased dilution should be considered. It is recommended that ventilation or air conditioning systems that normally run with a recirculation mode should be set up to run on full outside air where this is possible. This will also require increasing the system’s exhaust air rate and will help dilute any contaminants in the circulating air.
− It should be noted that increasing outside air rates and or ventilation rates will generally result in increased energy usage and in some circumstances may result in difficulties in the system maintaining the desired internal temperature and humidity conditions.

− the ward is in a separate area from the rest of the hospital
− the ward has an entry and exit exclusively for the COVID-19 ward and measures in place to monitor and record who is entering the ward
− the ward is clearly signed/identified as COVID-19 ward
− the ability to limit entry/access to the ward
− the ward contains the necessary equipment
− patient populations of adjacent areas.

− The cohort ward should be separated from patients who are potentially at greater risk of complications from COVID-19, for example, haematology, oncology and transplant services
− wherever possible, curtains, privacy screens or barriers should be used to physically separate patients within shared bed areas to help reduce the transmission of infection.

Management of cohort areas

Management of cohort areas should incorporate the following:

− Standard and transmission-based precautions must be maintained. One of the following options can be used:
  1. Gowns/aprons and gloves must be changed, and hand hygiene performed between contact with patients in the fever/testing clinic, or
  2. **When a long-sleeved gown is worn a** plastic apron is worn over the long-sleeved gown when providing care with minimal patient contact. The plastic apron and gloves must be changed, and hand hygiene performed between contact with patients.

− When using one of the above options, the P2/N95 respirator and eye protection can stay in place between patients. Once a mask is removed it must be discarded. Once eye protection is removed it must be either discarded or cleaned and disinfected appropriately (according to whether it is a single use or reusable item).

− Where there is extensive patient contact, in addition to the apron and gloves, the gown must also be changed at the end of the procedure and hand hygiene performed. Examples of extensive contact are providing care such as dressing large or complex wounds; hygiene cares for incontinent patients; hygiene cares or pressure area care when a patient is fully dependent; urinary catheter cares.

− Whenever possible, healthcare workers assigned to cohorted patient care units should be experienced healthcare workers and should not float or be assigned to other patient care areas. Separate staffing arrangements for COVID-19 and non-COVID-19 patients may also assist in protecting patients, as well as staff members, at particular risk of COVID-19 complications. Consideration should also be given to separate staffing for COVID-19 patients with different variants.

− The number of persons entering the cohorted area should be limited to the minimum number necessary for patient care and support.
− To assist with contact tracing records of all persons entering the cohort area are to be maintained.
• Patient transport should be limited by having necessary equipment, e.g. portable X-ray, available in cohort areas.
• The frequency of environmental cleaning and disinfection should be increased in cohort areas.
• The need for frequent emptying of waste bins used for the disposal of PPE in clinical areas should be considered. Anecdotal evidence suggests that when such bins become full, healthcare workers may start to tamp down the waste when discarding used PPE, potentially leading to self-contamination.
Appendix 2: PPE fitting and removal decision tree

Key principles:
HCW should keep masks and protective eyewear on until they have exited the patient care area.
Gowns and gloves should be removed in an area which reduces the risk of contaminating environment or persons passing by.
Masks/respirators and protective eyewear may remain on in between care areas
Hand hygiene must be performed after removing each item of PPE to reduce the risk of self-contamination.
Appendix 3: Fever/testing clinics

Infection prevention and control principles

People who present for screening should be considered to be infectious and should be provided with a surgical mask on arrival and asked to perform hand hygiene with alcohol-based hand rub. The use of signage or recorded message to guide patients on expected actions should also be considered.

For face-to-face consultation or to provide care, staff should use PPE (Gown, gloves, eye protection and P2/N95 respirator). An apron or a non fluid-resistant gown may be used in situations where physical contact is minimal and there is little chance of body fluid splash (e.g. medication delivery, observations, fever clinics).

All staff in the same room as the patient should wear a P2/N95 respirator and protective eyewear at a minimum, regardless of whether the patient is wearing a mask.

Most interaction with patients in a fever/testing clinic should be managed as follows:

For patients

- Patients should wear a surgical mask for their entire visit while they are in the waiting area and in consultation (unless it needs to be removed as directed by a healthcare professional to perform assessment or care, or to collect a pathology specimen).
- Hand hygiene and respiratory hygiene should be encouraged.
- Patients should maintain physical distancing (at least 1.5 metres) from others in the clinic.

For staff

- Maintain hand hygiene.
- Staff should maintain physical distancing (at least 1.5 metres) from others in the clinic where possible.
- When providing patient care, staff should wear a P2/N95 respirator, eye protection, gloves and long-sleeved gown. An apron or a non fluid-resistant gown may be used in situations where physical contact is minimal and there is little chance of body fluid splash (e.g. medication delivery, observations, fever clinics).
- Standard and transmission-based precautions must be maintained. One of the following options can be used:
  3. Gowns/aprons and gloves must be changed, and hand hygiene performed between contact with patients in the fever/testing clinic, or
  4. When a long-sleeved gown is worn a plastic apron is worn over the long-sleeved gown when providing care with minimal patient contact. The plastic apron and gloves must be changed, and hand hygiene performed between contact with patients.

Site and layout of fever/testing clinic

The site and layout of the space used for the fever/testing clinic should be carefully considered and planned. The layout should allow enough space to maintain physical distancing.

- The location of the fever/testing clinic should have direct external access and not require presenting patients to travel through a hospital or healthcare facility. Careful consideration should be given to ensuring patients presenting to the fever/testing clinic do not have contact with other vulnerable patients.
- Consider the use of markings on the floor (e.g. tape) to indicate physical distancing requirements.
- The reception station should be the first point of contact for patients presenting to the clinic. There should be clear signage directing patients to stand at least 1.5 metres back from the reception desk.
• Chairs in the waiting area should be placed greater than 1.5 metres apart. Patients should be directed not to move the chairs.
• Alcohol-based hand rub should be placed at all stations and made available to patients. Facilities for hand washing (using running water and liquid soap, and paper towels to dry hands) should also be available to staff with visually contaminated hands.
• The space should not be carpeted, and all surfaces should be impermeable and easily cleaned.
• Any indoor venue should be assessed for HVAC and determination made if airflow is sufficient to reduce the risk of transmission from a positive case to other persons requiring testing.

**Drive through clinic**

Infection prevention principles remain important in external settings, particularly when interacting with persons who are suspected or requiring testing for SARS CoV-2. These points should be considered when providing a screening service in an external or “drive-through” setting:

• Adequate protection from the elements must be provided for staff wearing PPE to prevent equipment failure. i.e. protection from rain, wind, and heat.
• Staff members should not place their heads inside the vehicle. This may dislodge eye protection and mask and/or expose them to safety risks.
• If the person to be swabbed cannot be reached safely from the window, they should be requested to exit the vehicle for swabbing. Children should be held by the parent/guardian.
• Sufficient staffing should be allocated to allow for adequate hydration and relief from PPE fatigue.
Appendix 4: Properties of PPE for use in healthcare

The hierarchy of control is a system for controlling risks in the workplace. The Australian Guidelines for the Prevention and Control of Infection in Healthcare (2019), and the Infection Control Expert Group have provided an overview of risk management in infection prevention and control. The use of personal protective equipment (PPE) is the lowest in the hierarchy of control measures and is also considered the least reliable. All other measures should be taken to remove or control the risk to workers and patients where it is practicable to do so without the need for PPE. Healthcare workers must perform a local risk assessment prior to fitting PPE to inform their use and selection of PPE.

This risk assessment should consider the type of patient interaction, the risk of transmission of the infectious agent, and the risk of contamination of the healthcare worker skin/mucous membranes by patients’ blood, body substances, secretions or excretions and how long the PPE is likely to be required to be worn.

Any examples included in this appendix are not exhaustive and are intended to illustrate potential uses for each type of protection.


Masks

Surgical masks

Surgical masks are single use, fluid-resistant, disposable and loose-fitting protection devices that create a physical barrier between the mouth and nose of the wearer and the immediate environment but do not achieve a close seal to the wearer’s face. When used, surgical masks should cover both the mouth and the nose and be secured using the ear loops or ties at the back of the head. Surgical masks are graded as barrier level 1, 2 or 3 based on the level of fluid resistance and are used for blocking splashes and large particle droplets or sprays which may occur (see below). They do not provide complete protection from pathogens and other small particle contaminants, however, can provide some source control for expelled particles.

Australian Standard 4381:2015 Single use face masks for use in health care (AS 4381:2015) sets out the requirements for single use face masks which are used in healthcare. Masks intended by the manufacturer for use in an Australian hospital setting to reduce the transmission of pathogens should be included on the Australian Register of Therapeutic Goods (ARTG). These masks are used to minimise mucous membrane exposure to infectious microbial droplets.

Surgical masks are suitable for droplet precautions and are not suitable for use to protect the wearer from airborne infectious agents. Please see the section for respirators (P2/95 respirators) below for more information about respirators that are suitable for airborne precautions.

Face masks are categorised as level 1 barrier, level 2 barrier, or level 3 barrier. The barrier protection levels refer to the characteristics of the masks based on three characteristics (see Table 1). The mask’s resistance to penetration by synthetic blood at different pressures is the characteristic that is most relevant when considering whether a level 1, 2 or 3 barrier masks is used.

All three levels of surgical masks are fluid-resistant; however, the level of fluid resistance increases with each level of mask. Please refer to the Australian Standard 4381:2015 Single use face masks for use in health care for detailed information.
In most situations where droplet precautions are required, a single use surgical mask is appropriate (minimum level 1 barrier).

Considerations when using a surgical mask include:

- Masks should be changed when they become soiled or wet.
- Masks should never be reapplied after they have been removed.
- Masks should not be left dangling around the neck.
- Touching/adjusting the front of the mask while wearing it should be avoided.
- Hand hygiene should be performed upon touching or discarding a used mask.
Table 1. Characteristics of level 1, level 2, and level 3 surgical masks. Information adapted from AS 4381:2015

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacterial filtration efficiency %</td>
<td>≥95</td>
<td>≥98</td>
<td>≥98</td>
</tr>
<tr>
<td>Differential pressure (mm H₂O/cm²)</td>
<td>&lt;4.0</td>
<td>&lt;5.0</td>
<td>&lt;5.0</td>
</tr>
<tr>
<td>Resistance to penetration by synthetic blood (minimum pressure in mm Hg for pass)</td>
<td>80 mm Hg</td>
<td>120 mm Hg</td>
<td>160 mm Hg</td>
</tr>
<tr>
<td>Standard precautions</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Droplet precautions</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Suitable uses (as per AS 4381:2015)</td>
<td>For general purpose medical procedures where the wearer is not at risk of blood or body fluid splash or to protect staff and/or the patient from droplet exposure to microorganisms.</td>
<td>For use in emergency departments, dentistry, changing dressings on small wounds or healing wounds where minimal blood droplet exposure may possibly occur.</td>
<td>For all surgical procedures, major trauma first aid or in any area where the health care worker is at risk of blood or body fluid splash.</td>
</tr>
<tr>
<td>Examples of use</td>
<td>Suitable for droplet precautions, or as part of standard precautions when the likelihood of exposure to body fluid is low. Suitable to be provided to symptomatic patients or carer/s of those with respiratory symptoms. If only a level 1 mask is available and splash or spray of body fluid is anticipated, the level 1 mask may be used in combination with a full-face shield.</td>
<td>Suitable for droplet precautions or as part of standard precautions when there is a risk of blood or body fluid exposure/splash. Procedures where moderate to low blood or body fluid splash or spray or droplets are possible such as endoscopic procedures, IVC insertion, IDC emptying or phlebotomy.</td>
<td>These should be reserved for operating theatre use and trauma use where able. Suitable for droplet precautions or as part of standard precautions for interventions or situations where a blood or body fluid splash is more likely to occur such as during surgical procedures or obtaining an arterial blood specimen or there is or are likely to be large volumes of bodily fluids present.</td>
</tr>
</tbody>
</table>
P2/N95 respirators (respirators)

Respiratory protection programs including fit testing and fit checking should be implemented as per Queensland Health Fit Testing of P2/N95 respirators in respiratory protection programs.

The wearer of these devices must be trained in their application and removal, be able to obtain a suitable fit and perform a fit check of the device.

A fit check is required each time a P2/N95 respirator is put on to ensure it is applied properly. Fit checks ensure the respirator is sealed over the bridge of the nose and mouth and that there are no gaps between the respirator and face creating an airtight protective seal. No clinical activity should be undertaken until a satisfactory fit has been achieved.

Respirators are used to reduce the transmission of pathogens in healthcare and must comply with the Australian and New Zealand Standard 1715:2009 Respiratory protective devices. When intended or marketed for use in clinical settings they must be included on the ARTG. The TGA advises that AS/NZS 1716:2012 Respiratory protective devices, the standard for P2 respirators, can be used as a functional standard for both medical devices and for respirators that are not medical devices.

NB: Devices that meet AS/NZS 1716:2012 may not be fluid resistant, particularly if they are not intended or marketed for use in clinical settings. Where devices are not fluid resistant, they should be used in conjunction with a full-face shield where there is a risk of exposure to droplets, splash or spray. Use of respirators that are not fluid resistant should be avoided for major trauma and surgical procedures.

Respirators are designed to form a very close seal around the nose and mouth to protect the wearer from exposure to airborne particles, including pathogenic biological airborne particulates such as viruses and bacteria. These respirators have been tested for particulate filtration to ensure they remove a minimum of 95% solid and liquid aerosols that do not contain oil. P2/N95 respirators are a single use item.

Surgical respirators are of a similar structure and design to standard respirators and therefore meet the same testing requirements to achieve a minimum 95% filtration against airborne particulates but have also been tested for fluid resistance against penetration by synthetic blood under different pressures, such as may occur during certain high-risk medical procedures. Correct selection of respirators is important to ensure optimal protection of staff while maintaining supply of respirators where PPE supplies are constrained.
Table 2. Respirators

<table>
<thead>
<tr>
<th>Respirator type</th>
<th>Indication for use</th>
<th>Requirement of respirators</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2/N95 respirator</td>
<td>Airborne precautions where splash or spray of body fluids is not anticipated, OR in conjunction with a face shield if splash or spray of body fluids is anticipated.</td>
<td>Meet AS/NZS 1716:2012, AS/NZS 1715:2009</td>
</tr>
<tr>
<td>Surgical P2/N95 respirator</td>
<td>Aerosol-generating procedures in an operating theatre setting or setting where splash or spray of blood or body fluids is likely and fluid resistance is indicated.</td>
<td>Meet AS/NZS 1716:2012, AS/NZS 1715:2009 and fluid-resistant properties in accordance with 4381:2015 and ATSM F1862/F1862M-13 or ISO 22609</td>
</tr>
</tbody>
</table>

Gowns

The purpose of a gown when used for droplet, airborne and contact precautions is to prevent direct contact between the healthcare worker’s skin or clothing and the patient/care area, in order to prevent direct transfer of micro-organisms. A long-sleeved, preferably fluid-resistant gown are the current recommendations for contact precautions for COVID-19. A cloth/non fluid-resistant gown or apron may be worn when direct physical contact is minimal and/or the risk of splash is low (e.g. medication delivery, observations, fever clinics).

Surgical gowns are single use items intended for use in the operating room to protect operating room personnel from the transfer of body, fluids, micro-organisms and particulate material. These are usually sterile.

Single use isolation gowns are intended to protect either the patient or healthcare providers and visitors from the transfer of infectious agents when they are in contact with each other. They must have long sleeves and cuffs or thumb loops so that they cover the wearer to the wrist.

Fluid-resistant gowns can be further categorised based on the level of protection from fluid. The standards referring to fluid-resistant properties of gowns used in healthcare are ANSI/AAMI PB70:2012. These provide standards for liquid barrier performance. There are levels 1 to 4 for gowns in this standard.

All gowns meeting ANSI/AAMI PB70:2012 can be used for the care of COVID-19 patients. The level of fluid resistance should determine which gown should be used. The choice of gown should be made based on the level of risk of fluid contamination:

- **If** the risk of blood or body fluid exposure is low or minimal, gowns that claim minimal or low levels of barrier protection (ANSI/AAMI PB70 Level 1 or 2) can be used.
- **If** there is a medium to high risk of blood or body fluid exposure gowns that claim moderate to high barrier protection (ANSI/AAMI PB70 Level 3) can be used.
- **For** surgical procedures or a high risk of blood or body fluid exposure gowns that claim high level barrier protection (ANSI/AAMI PB70 Level 4) should be used.

A level 1 gown is suitable for contact and droplet precautions where the risk of blood or body fluid exposure is low or minimal. When choosing a gown, healthcare workers should undertake a risk-based assessment in line with standard precautions. If a gown is required to protect against anticipated splash or spray of blood or body fluids in line with standard precautions, in an environment outside of operating theatres, a level 3 gown or the addition of a plastic apron over a level 1 or level 2 gown may be required. Level 4 gowns are only required for surgical procedures or major trauma response, where large volumes of blood are anticipated.
Table 3. Possible use cases for barrier levels of gowns

<table>
<thead>
<tr>
<th>Fluid barrier level (ANSI/AAMI PB70)</th>
<th>Examples of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloth gown or apron (no ANSI/AAMI PB 70 rating)</td>
<td>Minimal contact with patients with COVID-19 where the risk of splash with blood or body fluid is low. For example, delivering medications.</td>
</tr>
<tr>
<td>Level 1 OR Level 2</td>
<td>Close contact with patients with COVID-19 including any routine care where the risk of spray or splash of blood or body fluid is minimal. For example: assisting with ADLs, dressing small wounds or insertion of a peripheral intravenous cannula.</td>
</tr>
<tr>
<td>Level 3</td>
<td>Suctioning, large dressings or dressings with high levels of exudate, emptying or inserting a urinary catheter or inserting an intravenous catheter. Aerosol-generating procedures outside of a major trauma or operating theatre setting.</td>
</tr>
<tr>
<td>Level 4</td>
<td>Surgery or major trauma</td>
</tr>
</tbody>
</table>

**Eye protection**

Eye protection can consist of face shields, goggles, visors or wrap-around safety glasses. These may be single use or reusable devices. Their use is designed to prevent the mucous membranes of the wearer coming into contact with respiratory droplets. Eye protection is required for all patient-facing healthcare workers. Options include face shields, goggles and safety glasses.

When wearing an P2/N95 respirator, it is important to select the proper eye protection to ensure that the respirator does not interfere with the correct positioning of the eye protection, and that the eye protection does not affect the fit or seal of the respirator. Fit check is required each time a respirator is worn.

Face shields should be well designed and should extend below the chin anteriorly, to the ears laterally, and there should be no exposed gap between the forehead and the shield’s headpiece. All should provide a clear plastic barrier that covers the face. Face shields which have a gap between the forehead and the headpiece are unsuitable for use in the operating theatre, birthing suite, or when certain aerosol-generating procedures are performed on COVID-19 cases (unless additional eye protection is worn under the face shield). These shields are however an appropriate form of eye protection in non-high-risk areas.


As with other items that are intended for use in a health environment and make claims to protect the wearer or others from the transmission of diseases or micro-organisms, eye protection must be included in the ARTG as a Class I medical device. AS/NZS 1337.1:2010, particularly Appendix V, lists the required testing methods that
determine the splash resistance of face or eye protection. Please note that if impact resistance is required, testing against other appendices of the standard may be required to be shown.

**Gloves**

All gloves used in the provision of healthcare should be disposable and include examination gloves, sterile gloves and medical gloves for handling chemotherapy.

The World Health Organization (WHO) recommends that examination gloves be powder free to avoid reactions with alcohol-based hand rubs used in healthcare facilities. If there are no other gloves available, powdered gloves may be used and healthcare workers should be instructed to perform hand hygiene using running water and liquid soap.

The wearing of gloves is not a substitute for hand hygiene. Gloves should be changed between episodes of care for different patients, and during the care of a single patient to prevent transmission of microorganisms from different body sites. Hand hygiene should be performed before putting gloves on and after removing gloves.

The standards applicable to medical gloves are AS/NZS 4011 and ISO 11193, and for sterile gloves AS/NZS 4179 and ISO 10282.

Appendix 5: Quick reference information about P2/N95 respirators

The purpose of this appendix is to assist in decision-making about appropriate selection of a P2/N95 respirator. It is important to note that inclusion in this appendix does not guarantee that the specific respirators are in stock and available for immediate dispatch. Please check with your local stock and supply coordinator for availability.

Table 1 outlines details of the respirators’ specifications, the standards the respirators meet, the Australian Register of Therapeutic Goods (ARTG) number and respirator indications for use. Please refer to Appendix 4 for more detail about fluid resistance and standards.

**Table 1. P2 or N95 respirator range available to order in Queensland Health**

<table>
<thead>
<tr>
<th>Mask</th>
<th>Description</th>
<th>P2 OR N95</th>
<th>Fluid resistance rating</th>
<th>Standard</th>
<th>Indication for use</th>
<th>Specifications and additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSN Medical Surgical Proshield N95 respirator</td>
<td>N95</td>
<td>Level 3</td>
<td>NIOSH N95 Approval number 84A-3348</td>
<td>ATSM F1862-98 and ATSM F1862-00a At 21.3kPa</td>
<td>Surgical respirator suitable for use where a P2/N95 respirator is indicated and high-level fluid resistance is required, e.g. in some surgeries or trauma settings and where there is potential for high velocity splash</td>
<td>Item was part of normal stock prior to February 2020 Available in two sizes Manufacturer user instructions: BSN N95 application.pdf ARTG ID: 342557</td>
</tr>
</tbody>
</table>

Available sizes:
- Medium: 10019056 (72509-10)
- Small: 10038091 (72509-09)
<table>
<thead>
<tr>
<th>Mask</th>
<th>Description</th>
<th>P2 OR N95</th>
<th>Fluid resistance rating</th>
<th>Standard</th>
<th>Indication for use</th>
<th>Specifications and additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Halyard FLUIDSHIELD N95 Particulate Filter Respirator and Surgical Mask</td>
<td>N95</td>
<td>Level 3</td>
<td>NIOSH N95 TC-84A-7521, ATSM Level 3</td>
<td>Surgical respirator suitable for use where a P2/N95 respirator is indicated and high-level fluid resistance is required, e.g. in some surgeries or trauma settings and where there is potential for high velocity splash.</td>
<td>Item was part of normal stock prior to February 2020. Manufacturer user instructions: HalyardHealth.pdf. ARTG ID: 351812.</td>
</tr>
<tr>
<td></td>
<td>3M™ Flat Fold Particulate Respirator &amp; Surgical Mask 1870+, N95/P2 with Fluid Resistance</td>
<td>N95</td>
<td>Level 3</td>
<td>NIOSH N95 Approval number 84A-5726</td>
<td>Surgical respirator suitable for use where a P2/N95 respirator is indicated and high-level fluid resistance is required, e.g. in some surgeries or trauma settings and where there is potential for high velocity splash.</td>
<td>Item was part of normal stock prior to February 2020. Manufacturer user instructions: 3M 1870+.pdf. ARTG ID: 255656.</td>
</tr>
<tr>
<td>Mask</td>
<td>Description</td>
<td>P2 OR N95</td>
<td>Fluid resistance rating</td>
<td>Standard</td>
<td>Indication for use</td>
<td>Specifications and additional information</td>
</tr>
<tr>
<td>-------------------------------</td>
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<td>---------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Trident</td>
<td></td>
<td>P2</td>
<td>Level 3</td>
<td>AS/NZS 1716: 2012 AS 4381: 2015 Level 3, 160 mmHg</td>
<td>Surgical respirator suitable for use where a P2/N95 respirator is indicated and high-level fluid resistance is required, e.g. in some surgeries or trauma settings and where there is potential for high velocity splash.</td>
<td>Manufacturer information TRIDENT® P2 Level 3 Surgical Disposable Respirator – Trident Safety</td>
</tr>
<tr>
<td>Available sizes: Universal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3M™ Cupped Particulate Respirator &amp; Surgical Mask 1860 (standard size), N95/P2 with Fluid Resistance</td>
<td></td>
<td>N95</td>
<td>Level 2</td>
<td>NIOSH N95 Approval number 84A-0006</td>
<td>Appropriate for use in a setting where a P2/N95 respirator is indicated and a blood or body fluid splash is likely. Not suitable in a trauma or a procedure where high velocity splashes are likely. Please note: this item has an exposed metal nose piece and should be checked for suitability of use in some areas, such as MRI rooms.</td>
<td>Manufacturer user instructions Data sheet 3m-disposable-respirator-1860-1860s-te 3m-healthcare-respirator-1860-and-186C Stock is sourced from the Commonwealth pandemic stockpile. Please note: the small size of this mask has a different fluid resistance rating to the regular size.</td>
</tr>
<tr>
<td>Available sizes: Regular: 10401026</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mask</td>
<td>Description</td>
<td>P2 OR N95</td>
<td>Fluid resistance rating</td>
<td>Standard</td>
<td>Indication for use</td>
<td>Specifications and additional information</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>-----------</td>
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<td>--------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Molnlycke duckbill respirator Model 42904</td>
<td>FFP2 (~ P2 or N95)</td>
<td>Level 2</td>
<td>EN 149:2001+A1:200 ASTM F18629</td>
<td>Appropriate for use in a setting where a P2/N95 respirator is indicated and a blood or body fluid splash is likely. Not suitable in a trauma or a procedure where high velocity splashes are likely.</td>
<td>ARTG ID: 342901</td>
<td></td>
</tr>
<tr>
<td>3M™ Cupped Particulate Respirator &amp; Surgical Mask 1860S (small size), N95 with Fluid Resistance</td>
<td>N95</td>
<td>Level 1</td>
<td>NIOSH N95 TC-84A-0006</td>
<td>Appropriate for use in a setting where a P2/N95 respirator is indicated but a blood and body fluid splash are unlikely to occur. Please note: this item has an exposed metal nose piece and should be checked for suitability of use in some areas, such as MRI rooms.</td>
<td>Stock is sourced from the Commonwealth pandemic stockpile. Please note: the small size of this mask has a lower fluid resistance rating to the regular size.</td>
<td></td>
</tr>
</tbody>
</table>

Available sizes:
Universal: 10401710

Available sizes:
Small: 10401027
<table>
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<th>Mask</th>
<th>Description</th>
<th>P2 OR N95</th>
<th>Fluid resistance rating</th>
<th>Standard</th>
<th>Indication for use</th>
<th>Specifications and additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>BYD</td>
<td>N95</td>
<td>Level 1</td>
<td>NIOSH N95 TC-84A-9221</td>
<td></td>
<td>Appropriately for use in a setting where a P2/N95 respirator is indicated but a blood and body fluid splash are unlikely to occur.</td>
<td>Use instructions N95 RESPIRATOR - BYD.care</td>
</tr>
</tbody>
</table>

Available size
Universal
Appendix 6: Management of deceased persons

It should be noted that usual processes for confirming, documenting and notification of the death apply. For a death in hospital the treating consultant and team identify if the death is reportable to the coroner.

Viewing of the deceased

Health Services should consider the local context in decision-making about feasibility of allowing family members to view the body of the deceased.

If a local decision is made to allow family members to view the body this should only be allowed in a single room. Family members should be clearly advised to avoid any contact with the body. Family members should wash their hands with running water and liquid soap or use an alcohol-based hand rub after the viewing. Gloves are not necessary for family members.

Handling and preparing the body

Minimum PPE includes:
- long sleeved gown
- P2/N95 respirator
- face shield or goggles
- disposable non-sterile gloves.

Preparing the body for transfer:
- place a shroud (gown) onto the body.
- the body must be placed and secured in a leak-proof body bag to prevent leakage of body fluids.
  1. Place patient into the body bag ensuring zip closure is at the head of the patient.
  2. Disinfect the outside of the body bag by wiping down with a disinfectant listed on the [ARTG](https://www.arts.gov.au) with claims against COVID-19.
     - If the body bag is not of a type that prevents leakage of body fluids, the patient must be placed in a second body bag.
       - The second body bag must also be wiped over with a disinfectant listed on the [ARTG](https://www.arts.gov.au) with claims against COVID-19.
- Change gloves and perform hand hygiene.
- The shroud slip should go on the outside body bag. The shroud slip should state their death was related to COVID-19 and where applicable must also indicate if two body bags are being used.

Transporting the body to the mortuary

- On arrival to the ward, the minimum level of PPE will be a long-sleeved gown, gloves, P2/N95 respirator and protective eyewear.
- Place the deceased in/on the transport trolley. Do not remove PPE.
- If in a single room outside of a COVID-19 ward or ICU pod, wipe down trolley with a disinfectant listed on the [ARTG](https://www.arts.gov.au) with claims against COVID-19 and change gown and gloves prior to leaving the bedside.
• If COVID-19 ward transport to airlock area of ward, wipe down concealment trolley with a disinfectant listed on the ARTG with claims against COVID-19.

• After wiping down trolley, change gown and gloves as per procedure.

• Transfer the deceased to the mortuary as per facility guidelines.

• Use appropriately designated lifts to transport the body.

**Once the deceased has arrived at the mortuary**

• Mortuary personnel should don correct PPE.

• Linen from concealment transport trolley should be placed into the linen skip with alginate bag.

• Clean the concealment trolley with a disinfectant listed on the ARTG with claims against COVID-19.

• Staff in PPE transporting the deceased should remove their PPE as per procedure. Staff should buddy each other in the removing of PPE as per fitting and removal procedure.
Appendix 7: Factors increasing the risk of transmission

Aerosol generating procedures

Some procedures may be more likely to generate higher concentrations of infectious respiratory aerosols than coughing, sneezing, talking or breathing.

For additional advice on recommendations for escalation of PPE for the performance of AGPs in areas of moderate or high community transmission refer to Pandemic Response Guidance: Personal protective equipment in healthcare delivery.

Although not quantified, the procedures that might pose an increased risk in healthcare include:

- **Respiratory tract instrumentation or surgery:**
  - bronchoscopy,
  - ear nose throat, faciomaxillary or trans-sphenoidal surgery
  - tracheal intubation and extubation
  - tracheotomy
  - open suctioning of airways
  - intercostal catheter insertion for relief of pneumothorax
  - thoracic surgery that involves entering the lung
  - transoesophageal echocardiography
  - certain dental procedures, including: use of triplex syringe, high and low speed drilling and ultrasonic scaling (this is not an exhaustive list, please refer to Australian Dental Association Managing of COVID-19 Guidelines and Dental Professionals portal for detailed dental practice guidance)
  - procedures in the oral cavity or respiratory tract involving high-speed devices (surgical or post-mortem)
  - bronchoalveolar lavage
  - other respiratory interventions:
    - high-flow nasal oxygen
    - administration of aerosolised/nebulised medication
    - manual ventilation
    - non-invasive ventilation
    - high-frequency oscillating ventilation
    - disconnecting/reconnecting the patient from a closed-circuit ventilator (intentional or inadvertent)
    - turning critically ill patients to the prone position (due to the high risk of inadvertent disconnection of ventilator circuits)
    - sputum induction.

Collection of a deep nasal or oropharyngeal swab is **not** considered an AGP.
Cardiopulmonary resuscitation (CPR):

- Chest compression and defibrillation during resuscitation is not considered an AGP[11].
- Airway management in the context of CPR is considered an AGP[11].

Refer to the National COVID-19 Clinical Evidence Taskforce *Cardiopulmonary resuscitation of adults with COVID-19 in healthcare settings* for additional information.

AGPs should be avoided in patients who are suspected or confirmed cases of COVID-19 where possible. If AGPs can’t be avoided a combination of measures should be used to reduce exposures when performing these on suspected or confirmed COVID-19 patients:

- Only perform AGPs when medically necessary.
- Where possible, AGPs should be performed in a single room with negative pressure air handling. If no rooms with negative pressure air handling are available, the AGP should be performed in a single room with the door closed.
- Use standard, contact, and airborne precautions.
- Nebuliser use should be discouraged and alternative administration devices (e.g. spacers) should be used[11].
- Limit the number of healthcare workers present during the procedure to those essential for patient care and support.
- Conduct environmental cleaning following these procedures: The room must be left empty for at least 30 minutes after the procedures before environmental cleaning is performed. Note: The time required for adequate air changes varies; follow local procedures where they exist for the period of time a room must remain empty.
- PPE should be worn for cleaning as recommended for care of the patient. This should include an apron in addition to a long-sleeved preferably fluid-resistant gown if high volumes of fluid are expected.
- Visitors must not be present.

**Patient factors that may increase the risk of transmission**

Patient factors that increase the risk of COVID-19 transmission include[3]:

- Potentially aerosol-generating behaviours such as shouting or screaming
- Challenging behaviours
- Coughing or increased work of breathing
- Cognitive impairment/inability to cooperate
- Inability to tolerate a surgical mask

**Environmental factors that may increase the risk of transmission**

Environmental factors that may increase the risk of transmission include[3]:

- Low level of ventilation or unexpected air movements.
- Care settings that are less controlled such as community-based or in-home care.
- Encounters with patients before their risk of COVID-19 is assessed, e.g. triage or initial assessment stage at fever/testing clinics.
- The presence of multiple patients with COVID-19 in an enclosed space.
### Appendix 8: Guide for PPE selection

Recommended PPE for healthcare settings during times of low risk of unexpected COVID-19 infections in hospital patients or healthcare workers.

<table>
<thead>
<tr>
<th>Risk level</th>
<th>Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-COVID-19 patients: No acute respiratory illness or clinical evidence of COVID-19 AND no recognised epidemiological evidence(^3) AND no other indication for transmission-based precautions</td>
<td><strong>STANDARD PRECAUTIONS FOR ALL PATIENTS</strong></td>
</tr>
<tr>
<td></td>
<td>Frequent hand hygiene</td>
</tr>
<tr>
<td></td>
<td><img src="https://example.com/checkmark.png" alt="Checkmark" /></td>
</tr>
<tr>
<td>Symptoms consistent with COVID-19 WITHOUT COVID-19 epidemiological evidence(^3)</td>
<td><strong>CONTACT and DROPLET</strong></td>
</tr>
<tr>
<td>Confirmed COVID-19 OR Suspected COVID-19 based on clinical evidence AND epidemiological evidence for COVID-19(^3) OR epidemiological evidence for COVID-19(^4)</td>
<td><strong>CONTACT and DROPLET and AIRBORNE</strong></td>
</tr>
</tbody>
</table>

---

1. For advice on escalation of PPE requirements during times of increased risk of unexpected COVID-19 infections in hospital patients or healthcare workers refer to [Pandemic Response Guidance: Personal protective equipment in healthcare delivery](https://example.com/pandemic-response-guidance).

2. An apron or a non fluid-resistant gown may be used in situations where physical contact is minimal and there is little chance of body fluid splash (e.g. medication delivery, observations, fever clinics).

3. Epidemiological evidence for COVID-19. In the last 14 days: All International arrivals and close contacts of COVID-19 cases. Risk assess for: In the last 14 days: people who provide care for COVID-19 cases (e.g. Health care workers), Domestic and international aircrew, Workers in managed quarantine facilities. People who provide care for COVID-19 cases are listed as at epidemiological risk in the CDNA guidelines — a risk assessment should be undertaken to determine whether there is sufficient exposure risk to warrant additional precautions if healthcare staff require healthcare.

4. Aerosol generating procedures (AGP), aerosol generating behaviours (AGB) and other factors increasing the risk of transmission are outlined in Appendix 7 of the Queensland Health infection prevention and control guidelines for the management of COVID-19 in healthcare settings.
## Definition of terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition/Explanation/Details</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerosol-generating procedures (AGPs)</td>
<td>Any medical procedure that can induce the production of aerosols of various sizes, including small (&lt;5µm) particles. See section on aerosol-generating procedures in this document</td>
<td>WHO</td>
</tr>
<tr>
<td>Clinical evidence of COVID-19</td>
<td>Clinical evidence of COVID-19. In the last 14 days: Fever (≥37.5 °C) or history of fever (e.g. night sweats, chills), acute respiratory infection (e.g. cough, shortness of breath, sore throat), loss of smell or loss of taste, other symptoms may include: headache, myalgia, fatigue, runny nose, acute blocked nose (congestion), muscle pain, joint pain, diarrhoea, nausea/vomiting, loss of appetite. Clinical judgement should be applied where there are alternative clinical explanations for symptoms or non-specific symptoms are present.</td>
<td>Queensland Health</td>
</tr>
<tr>
<td>Epidemiological evidence for COVID-19</td>
<td>Epidemiological evidence for COVID-19. In the last 14 days: All International arrivals and close contacts of COVID-19 cases. Risk assess for: In the last 14 days: people who provide care for COVID-19 cases (e.g. Health care workers), Domestic and international aircrew, Workers in managed quarantine facilities. People who provide care for COVID-19 cases are listed as at epidemiological risk in the CDNA guidelines – a risk assessment should be undertaken to determine whether there is sufficient exposure risk to warrant additional precautions if healthcare staff require healthcare.</td>
<td>Queensland Health</td>
</tr>
<tr>
<td>Cohorting</td>
<td>Placing together in the same room patients who are infected with the same pathogen and are suitable roommates.</td>
<td>NHMRC</td>
</tr>
<tr>
<td>Negative pressure room</td>
<td>A single-occupancy patient care room used to isolate persons with a suspected or confirmed airborne infectious disease. Environmental factors are controlled in negative pressure rooms to minimise the transmission of infectious agents that are usually transmitted from person to person by droplet nuclei associated with coughing or aerosolisation of contaminated fluids.</td>
<td>NHMRC</td>
</tr>
<tr>
<td>Personal protective equipment (PPE)</td>
<td>A variety of barriers used alone or in combination to protect mucous membranes, skin and clothing from contact with infectious agents. PPE used in healthcare</td>
<td>NHMRC</td>
</tr>
</tbody>
</table>
Review

Knowledge about COVID-19 is evolving therefore Queensland Health will continue to review and update these guidelines as new information becomes available.


Business area contact

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Approval and implementation

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Approving officer:
Dr James Smith, Deputy Chief Health Officer, Prevention Division, Queensland Health

Approval date 25 January 2022

Endorsed by PPE Working Group 19 January 2022

Endorsed by COVID-19 System Response Group

Endorsement date: 25 January 2022
## Version control

**Status:** Revised document

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Prepared by</th>
<th>Comments</th>
</tr>
</thead>
</table>
| 2.2-3.0| 12 January 2022 | PPE Working Group                  | Change to definition of epidemiological evidence.  
Addition of clarification that an apron or non fluid-resistant gown may be used instead of a long-sleeved fluid-resistant gown if minimal physical contact anticipated and low risk of body fluid splash.  
Removal of reference to Designated COVID-19 Hospitals Direction.  
Update to available P2/N95 respirators in appendix 8.  
Addition of “Fit testing” requirements.  
Removal of duplications throughout document. |
| 2.0    | 12 August 2021  | COVID-19 IMT and CDIM Infection Management | Endorsed by CSLF                                                                                                                                |
Major rewrite to update entire document to align with latest national guidance and Queensland Chief Health Officer Public Health Directions.  
Removal of Appendix 1: Airborne contaminant removal  
Removal of Appendix 3: PPE quick reference guide  
Appendices renumbered  
Removal of repeated information throughout  
“Interim” status removed |
| 1.14    | 22 September 2020 | CDB Infection Management            | Addition of outbreak management section.  
Additional of cleaning in the context of an outbreak in a health facility section.  
Revision of key points to include information regarding areas of community transmission.  
Revision of section isolation and restriction of suspect, probable and confirmed cases, transmission-based precautions advice and PPE and patient placement in accordance with the Department of Health Guidance on the use of PPE in hospitals during the COVID-19 outbreak published 31 July 2020 and 17 September.  
Revision of patient movement section.  
Addition of advice about use of face masks in children.  
Clarification and minor wording changes throughout. |
<p>| 1.13    | 24 June 2020   | CDB Infection Management            | Revision of advice on precautions required for the collection of upper respiratory swab specimens. Standard, droplet and contact precautions required regardless of disease severity (i.e. no requirement for airborne |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Change</th>
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</thead>
</table>
| 11 May 2020| CDB Infection Management                    | Revision of advice on droplet versus airborne precautions and PPE throughout based on revised Australian Department of Health Guidance on the use of personal protective equipment (PPE) in hospitals during the COVID-19 outbreak published 27 April 2020:  
  - Previous advice to use airborne precautions has been rescinded for: routine care of cases with severe respiratory symptoms suggestive of pneumonia (e.g. fever and difficulty breathing), with severe or productive coughing episodes, and clinically ill patients requiring high-level/high-volume care outside of ICU.  
  - Plastic apron as a suitable alternative to a long-sleeved gown for patients being managed using standard, contact and droplet precautions in situations in which the risk of splash is low.  
  
  Major update to:  
  - aerosol-generating procedures  
  - patients being managed in ICU.  
  
  Minor revisions to:  
  - background  
  - patient movement  
  - visitors  
  - routine cleaning  
  - final disinfectant clean. |
| 23 April 2020 | CDIM Infection Management                  | Inclusion of advice for probable cases throughout.  
  
  Minor revisions to the following:  
  - key points  
  - recognition of suspect and probable cases and immediate action  
  - immediate isolation and restriction of suspect, probable and confirmed cases  
  - collection of respiratory specimens  
  - PPE and patient placement  
  - aerosol-generating procedures  
  - patient movement  
  - duration of infection prevention and control precautions  
  - staffing considerations |
Infection prevention and control guidelines for the management of COVID-19 in healthcare settings - Version 3.0

January 2022

References


8. World Health Organization, *Roadmap to improve and ensure good indoor ventilation in the context of COVID-19*. 2021: file:///C:/Users/adamsrc/AppData/Local/Temp/MicrosoftEdgeDownloads/7c84a22a-8e9b-4ea5-a3b7-c1d8e3574a30/9789240021280-eng.pdf.

