



Minimising the risk of infectious respiratory disease transmission in the context of COVID-19: The hierarchy of controls

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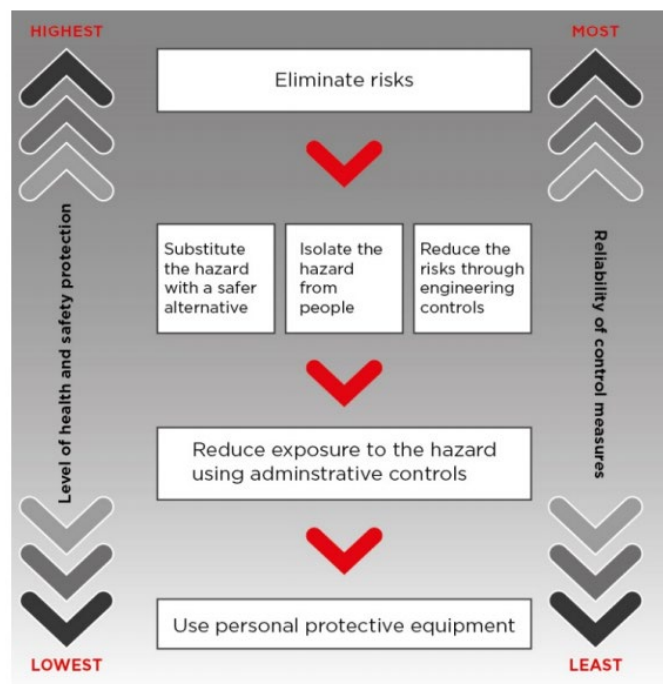
This document outlines how to use the hierarchy of controls to manage the risk of COVID-19 transmission. This advice applies to settings where there may be a high risk of COVID-19 transmission such as health care, residential care, and quarantine settings.

For more guidance on infection prevention and control during the COVID-19 pandemic, see the [Department of Health website](#).

Controlling exposures to occupational hazards is the main way to protect personnel in a workplace. You can use the hierarchy of controls to achieve practical and effective control of workplace hazards.

This hierarchy lists different risk avoidance or mitigation strategies in decreasing order of reliability. Use multiple control strategies until you eliminate the hazard or it's effectively minimised. These can be implemented at the same time and/or following on from one another.

The hierarchy consists of hazard control measures broadly grouped into five categories. The diagram below¹ shows the most effective measures higher in the list.



¹ Source: Safe Work Australia, [How to manage work health and safety risks Code of Practice May 2018](#), page 19, Hierarchy of Control Measures.

The model code of practice: *How to manage work health and safety risks* is on the [Safe Work Australia website](#). [This](#) provides information on how to do risk assessments, including:

- how to identify hazards; and
- how to apply effective risk controls.

Applying the hierarchy of controls in health care, residential care and quarantine settings

Under the hierarchy, employers have a primary duty of care to do all that is reasonably practicable to eliminate the risk. If this is not possible, minimise risks as far as is reasonably practicable. This can be done by using one or a combination of:

- substitution
- isolation
- engineering controls.

Then consider administrative controls and personal protective equipment (PPE).

Specific measures for COVID-19 have been introduced to protect people in health and residential care facilities, [quarantine](#) and other relevant high-risk settings. These include:

- advising staff and visitors with relevant symptoms to stay away
- completing health screening questions before entry
- screening body temperature and other measures

Engineering controls to prevent infectious disease transmission are an important part of the hierarchy of controls in high-risk settings. These may include measures such as:

- use of negative pressure rooms and
- optimising ventilation to manage the risk of transmission.

These measures, applied broadly as part of infection prevention and control in health and residential care and in quarantine settings, are very important.

As part of the COVID-19 outbreak response, administrative controls have become more widely adopted in health and residential care facilities.. These include:

- introduction of small staff groups (cohorts),
- using isolation wards or cohorting patients, residents or guests in separate locations to minimise risk of transmission
- making contact tracing more efficient.

Using PPE is an important component of a risk management program to prevent potential COVID-19 exposure. However, administrative controls need to support PPE use to enable timely identification and isolation of potentially infected patients, residents or staff.

PPE must be accessible at the point of care for high-risk individuals or COVID-19 cases. Correct use of PPE in line with situational risk assessment is essential. See the ICEG [Guidance on the use of PPE for health care workers in the context of COVID-19](#). You should consider:

- individual PPE training and competency assessment
- supervising putting on (donning) and removing (doffing) PPE
- auditing PPE use
- anticipating PPE supply needs.

Workplaces should adopt a complete PPE program covering all aspects of [PPE use](#).

Standard and transmission-based precautions consist of a range of risk-minimisation strategies to prevent infection. Each strategy used in standard and transmission-based precautions sits in one or more of the five control categories.

You can adopt a range of engineering and administrative controls to reduce or avoid exposure to transmissible respiratory pathogens in health and residential care and quarantine settings. Use these and appropriate PPE. Use these measures in:

- patient/resident contact settings
- other shared facilities such as
 - lunch/tea rooms
 - offices
 - foyers
 - corridors
 - changing areas
 - meeting rooms
 - toilets.

Table 1 has several suggested strategies.

Table 1. Potential risk minimisation strategies for high impact infectious respiratory pathogens, including SARS-Cov-2

Category	Example control measures
Elimination	Physically remove the hazard
Reduce opportunities for the virus to enter the facility	Do not admit SARS-CoV-2-positive patients to hospital unless clinically necessary. Manage care in home or another location if possible.
	Limit the number of patients or residents going into hospitals or outpatient settings. For example: <ul style="list-style-type: none"> • set up offsite or outdoor fever/testing clinics • consider telehealth appointments.
	Proactively detect and prevent entry to the facility of potentially infectious staff, students, volunteers or visitors. This includes temperature screening, travel risk assessment etc.
	Reduce the number of visitors, students and non-essential staff in a facility to a minimum. Promote the use of telelinks for patient/resident visitors, where appropriate.
	Reduce the number of entry points into the facility/campus and monitor visitor/staff movements. Simplify visitor registration.
	Exclude quarantine staff who have been exposed to infection without appropriate PPE.
	Use CCTV monitoring in corridors and other high risk areas of quarantine hotels, rather than stationed security personnel.
Substitution	Replace the hazard
Find other ways to provide care that will reduce the potential for transmission	Where you can, plan for alternatives to aerosol generating procedures, including high flow oxygen and continuous/bilevel positive airways pressure (CPAP/BiPAP).
	Administer aerosolised medicine with spacers instead of nebulisers.

Category	Example control measures
Engineering Controls	Isolate people from the hazard
<p>Use physical barriers and other forms of hazard reduction. For example: ventilation controls, patient separation</p>	<p>Review and optimise ventilation and air quality including:</p> <ul style="list-style-type: none"> • air exchange rates • air flow and air filtration systems • temperature • ambient humidity. <p>Use negative pressure rooms with anteroom for SARS-CoV-2-positive patients where available. If a negative pressure room is not available, use a standard isolation room or single room with negative airflow. Avoid rooms with positive pressure airflow.</p> <p>In quarantine facilities, ensure:</p> <ul style="list-style-type: none"> • sufficient air exchanges in guest rooms • that room air does not leak significantly into adjacent corridors. <p>Consider grouping SARS-CoV-2-positive patients in dedicated wards or zones separate to:</p> <ul style="list-style-type: none"> • uninfected patients/residents • those with uncertain SARS-CoV-2 status. <p>If there are multiple COVID-19 patients/clients/residents, consider:</p> <ul style="list-style-type: none"> • increasing the distance between patients/residents/guest rooms • a physical redesign or • creating a dedicated SARS-CoV-2-positive quarantine area. <p>Place quarantine hotel guests in single rooms with private bathroom facilities rather than shared rooms or bathrooms. Consider immediate transfer of SARS-CoV-2-positive guests to a healthcare facility or “medi-hotel”.</p> <p>Consider using safe, temporary barriers to direct wandering residents or quarantine hotel guests into chosen areas.</p> <p>Redesign work areas to limit number of workers at workstations. Maintain airflow direction away from staff workstations towards patient care areas where possible.</p> <p>Place physical barriers such as glass or plastic screens in triage and reception areas where physical distancing is difficult to maintain.</p>
Administrative Controls	Change the way people work
<p>Effective and consistent implementation of policies & protocols</p>	<p>Set up clear lines of governance. Assign an organisational lead with overall responsibility for overseeing:</p> <ul style="list-style-type: none"> • task analysis • risk assessments • ventilation assessments/monitoring indoor air quality where applicable • infection prevention and control strategies implementation • promoting and facilitating hand hygiene, respiratory hygiene and cough etiquette.

Category	Example control measures
	Ensure evidence-based infection prevention and control policies and guidance are in line with national guidance. If needed, adapt the guidance to suit local worker health and safety requirements and other conditions.
	Give clear guidance on when to change resident placement. For example, residents with signs and symptoms typical of COVID-19 should not have roommates.
	In quarantine settings, consider making “safe” and “high-risk” zones to help staff and guest movement.
	Ensure staff training and competency assessment in standard and transmission-based precautions is provided.
	Give guidance on environmental cleaning and disinfection according to risk. Conduct regular checks with frequency determined by risk.
	Give continuing and appropriate education on infection prevention and control to all staff, residents and visitors.
	Regularly update residents, family members, staff, other service providers and the broader community on COVID-19 policies.
	Give policy support to reduce the risk of staff attending when unwell. This can include conducive pay and leave arrangements for casual staff.
	Discourage casual staff from working across different facilities. Ensure that agency staff satisfy infection control training requirements before employment.
	Use signage (in appropriate languages) at the facility entrance to alert visitors to not attend while unwell.
	Consider surveillance testing of asymptomatic staff during periods when community transmission is locally prevalent.
	Do regular testing of quarantine facility staff to detect infection early and remove staff from duty.
	If possible, delay new admissions to residential aged care facilities during periods of community transmission. Give alternative home-care.
Minimise opportunities for infection transmission	Separate care of SARS-CoV-2-positive and unaffected patients or residents. Assign staff to care groups and reduce frequency and number of personnel on ward rounds.
	Triage and manage visitors. Ensure they comply with hand hygiene and PPE requirements.
	Reduce opportunities for transmission between staff by promoting use of telehealth technology for all staff meetings.
	Allocate surgical masks for source control to patients or residents with respiratory symptoms to use when they are outside of their ward or room. Educate patients/residents/guests on safe mask use and disposal.
	In quarantine facilities, ensure guests remain in their allocated room, use a surgical mask whenever the door is opened, and maintain physical distancing from staff.

Category	Example control measures
	<p>Manage all workspaces to reduce respiratory transmission risk by adopting measures to improve physical distancing. For example, floor markings, spaced seating, maximum room occupancy notices.</p> <p>Adopt general measures to reduce contact spread, such as education and training. Have enough hand hygiene products and facilities available, and increase cleaning and disinfection of shared areas.</p> <p>Set up a plan to manage a facility outbreak and ensure all stakeholders are aware of roles and responsibilities.</p> <p>Use standardised infection control signage for standard and transmission-based precautions.</p>
Maintain staff wellbeing	<p>Have enough staff to avoid excessive workloads and ensure staff can take regular breaks.</p> <p>Know which staff may be vulnerable to severe COVID-19 infection and redeploy if needed.</p> <p>Develop policy to manage staff and others who become unwell in the workplace.</p> <p>Ensure all staff providing health care, aged care, and hotel quarantine services are vaccinated against SARS-CoV-2 as soon as practicable.</p> <p>Provide an employee assistance program that provides psychological support.</p>
Personal Protective Equipment (PPE)	<i>Protect the worker</i>
Review PPE policies and guidelines	<p>Have risk-assessed PPE recommendations for specific staff roles and activities. Make sure these are consistent with ICEG Guidance on the use of PPE for health care workers in the context of COVID-19.</p> <p>Have enough supply of PPE items and related equipment at the point of use.</p> <p>Give effective education and communicate on appropriate PPE use for standard, contact, droplet and airborne precautions.</p> <p>Conduct regular staff PPE donning and doffing competency assessments.</p> <p>Manage the PPE supply chain across all levels of the health service and ensure appropriate PPE ordering by staff.</p>
Set up a respiratory protection program	<p>Fit test staff who may need to wear a particulate filter respirator (P2/N95 or equivalent).</p> <p>Train staff to perform a fit check (seal check) every time a P2/N95 respirator is used.</p> <p>Emphasise the importance of eye protection as an essential component of droplet and airborne precautions. Train staff in safe cleaning of reusable eyewear, if used.</p> <p>Consider the use of reusable powered air purifying respirator (PAPR) or elastomeric respirator where there is high risk from aerosol exposure. For example, critical care environments. Train staff in their safe use.</p>

Category	Example control measures
	Where PAPR devices or equivalent are available to use, ensure staff: <ul style="list-style-type: none"> • are trained and competency assessed for their use • continue to use the devices to maintain currency of practice.

Resources

Safe Work Australia. How to manage work health and safety risks Code of Practice MAY 2018. Available at https://www.safeworkaustralia.gov.au/system/files/documents/1901/code_of_practice_-_how_to_manage_work_health_and_safety_risks_1.pdf

The Australasian Faculty of Occupational and Environmental Medicine (AFOEM) in the Royal Australasian College of Physicians has produced a detailed document on COVID-19 workplace risk mitigation strategies. This is available at: https://www.racp.edu.au/docs/default-source/advocacy-library/covid-19-workplace-on-workplace-risk-management.pdf?sfvrsn=88f5f71a_4

Queensland Health. Hierarchy of controls for prevention of COVID-19 transmission in hospitals. Available at: https://www.health.qld.gov.au/_data/assets/pdf_file/0021/1012683/hierarchy-of-controls-prevention-covid-19.pdf

SA Health. [Strategies for optimising supply of personal protective equipment.](#)

Kelaher, et al. How do we Find a “New Normal” for Industry and Business After COVID-19 Shut Downs?, Journal of Occupational and Environmental Medicine: Sept2020, 62 (9),p e531-e534, https://journals.lww.com/joem/fulltext/2020/09000/how_do_we_find_a_new_normal_for_industry_and_24.aspx

Australian Guidelines for the Prevention and Control of Infection in Healthcare (2019): <https://www.nhmrc.gov.au/about-us/publications/australian-guidelines-prevention-and-control-infection-healthcare-2019>

Australasian Health Facility Guidelines: <https://healthfacilityguidelines.com.au/ausfhg-parts>

Morawska, L. et al. How can transmission of COVID-19 indoors be minimised? Environment International, vol 142, Sept 2020. <https://www.sciencedirect.com/science/article/pii/S0160412020317876?via%3Dihub>