CONTROL OF COVID-19 INFECTION TRANSMISSION IN HEALTHCARE SETTINGS AND PREVENTING THE LOSS OF HEALTHCARE WORKFORCE

Dr David Anderson

Prof Nancy Baxter

Prof Sharon Chen

Ms Kate Cole

Ms Anna Davidson

Prof Raina MacIntyre

Dr. Jennifer H. Martin

Dr Alan McLean

Dr Kat McLean

Prof Rick Nunes-Vaz

Dr Karina Powers

Dr Mark Suss

Assoc Prof Craig Underhill

Dr Benjamin Veness

BACKGROUND

Australians have a legal right to safe and high-quality health care – a right that is dependent on access to effective and functioning health systems. Additionally, healthcare providers have both ethical and legal responsibilities to provide care in an environment free from preventable risks for patients and staff. Yet COVID-19 compromises health systems, affecting quality of care when hospitals are overloaded, ambulance capacities are exceeded or crucial staff are unavailable. Staff are frequently quarantined as contacts but, more seriously, a great many have become ill with workplace-acquired COVID-19.

The World Health Organisation estimates that some 115,000 health workers have died from COVID-19. They have urged "*political leaders and policy makers of member states to do all within their power to make regulatory, policy and investment decisions that ensure the protection of health and care workers*".

At this stage, there is no end to the pandemic in sight, and further waves of infection as well as new pandemics are entirely plausible. Therefore, it is incumbent on decision makers, administrators and workers to adjust policies and practice to better ensure safe systems of work for all in the health sector. This will demand that we take all possible steps to control the spread of infection in health care settings.

Understanding the way SARS-CoV-2 spreads

To control infection, we must address the main way that SARS-CoV-2 spreads. It is primarily transmitted by aerosols, produced when an infectious person breathes, talks, coughs or sneezes. Inhalation of lingering SARS-CoV-2 in aerosols is the dominant exposure route.

Aerosol movement in air behaves like smoke and contaminated aerosol accumulates indoors over time if ventilation is inadequate. Breathing and speaking contribute far more to accumulation of aerosols over time indoors, because they occur constantly. While there is no 'safe' exposure period, infection risk increases with time spent in a contaminated indoor environment. Also, close-range transmission is most likely due to direct inhalation of expelled virus-laden droplets. Our hard-won understanding of these transmission pathways, whereby people silently transmit disease through persistent, yet distant presence, is yet to be applied consistently in managing infection risk in the health sector.

COVID-19 in the health care context

Infection prevention and control in healthcare settings has traditionally focused on staff-to-patient and patient-to-patient transmission, viewing hands as the principal source. Through the pandemic that focus has come at a cost to healthcare workers because the emphasis of hazard control, including personal protection equipment (PPE), has inadequately considered aerosol exposure prevention.

In 2020 healthcare workers were at nearly three times greater risk of infection than members of the community, at which time national guidelines recommended use of surgical masks for workers treating COVID-19. patients. Despite this, in November 2021 NSW has flagged the intention remove automatic workers compensation, and to force health workers to prove that they acquired infection at work in order to be eligible for workers compensation. This comes at a time when we face a mass exodus of burnt-out health workers from the health system. Western Australia legislated to protect health care workers in claims. Surgical masks, which have been and still are recommended in many healthcare settings, are known to provide inadequate protection from airborne disease compared with N95/P2 respirators (see insert). Established occupational health and safety standards for prevention of airborne disease transmission were not employed in Australian health care prior to recognising aerosols as the main transmission path of SARS-CoV-2, and implementation has been slow since.

Respirators
- N95/P2 respirators provide higher level protection, to both the wearer and others who share the same air, than surgical or many commercial masks
- N95/P2 respirators must be 'fit-tested', in which qualified staff test for leaks while the wearer is resting and while simulating typical work activities
- All components of AS/NZS 1715 '*Selection, Use & Maintenance of Respiratory Protective Equipment*' must be followed, that is, guidance on respirator selection, and the need for fit-testing prior to commencing work, with (at a minimum) annual re-testing, and if significant change (e.g. weight gain or loss) occurs.
- Fit-testing results are specific to the make and model of respirator, and wearer
- Male workers must be clean shaven if they rely on close-fitting respirators such as N95/P2
- As future supplies of any specific respirator cannot be guaranteed, it is strongly recommended that supplies are increased (informed by fit-testing results) and reusable technologies explored. Other Therapeutic Goods Administration (TGA) approved respirators are available (e.g. the SR-100 Sundstrom half-face elastomeric respirator and the Cleanspace™ Halo compact powered air-purifying respirator) and respirators with expiratory valves have been shown to provide similar source (air and viral particle outflow) control as surgical masks; and cleaning protocols for these devices have been well-established in Australia and elsewhere
- A real-time central register of fit-testing results can guide the choice of alternatives when supplies are disrupted. In anticipation, it would be wise for staff to fit test alternative models.

In Victoria to date, there have been more than 4,800 COVID-19 cases in healthcare workers, nearly two thirds (65%) of which are assessed as acquired in the workplace, and a further 16% with source unknown or under investigation. Australia does not routinely report hospital-acquired COVID-19 infection rates. In the United States to September 30th 2020, nearly 2% of hospitalised patients acquired COVID-19 in hospital. That number was at least 8% for the UK during May 2020, a large proportion of whom consequently died.

There are reports in the media of hospital outbreaks in NSW and Victoria occurring in non-COVID wards, such as outpatient services, dialysis, psychiatry and geriatrics where staff are not routinely provided respirators.

The lack of focus on occupational safety has caused many staff absences in critical care services from the onset of an outbreak, and continues to cause service disruptions in other areas of health care. Even when community transmission rates are low, the risk of encountering infectious individuals in healthcare facilities will be significantly higher. Healthcare facilities are amongst the earliest to be impacted by outbreaks of COVID-19. When community transmission rates rise, failure to implement protection measures prior to confirmation of in-hospital outbreaks will cause the loss of medical staff precisely when they are most needed.

The lasting effects of COVID-19 in 'long COVID', where even vaccination is believed to reduce its occurrence by just half, imply that failure to reduce exposure risk to healthcare workers, patients and visitors will result in substantial numbers with symptoms that adversely affect quality of life and their ability to work.

Formal guidance

There was delayed recognition of airborne transmission of SARS-CoV-2 by the World Health Organization, the Centers for Disease Control in the USA and by the Infection Control Expert Group (ICEG) in Australia. The current Australian ICEG advice, whilst it refers to high risk situations, does not take in the reality of outbreaks occurring in the health system, which are in areas not typically thought of as high risk, such as tea rooms. In some jurisdictions during 2021, infection prevention and control procedures were introduced to address airborne transmission risk from acutely unwell COVID-19 patients, through protocols to manage confirmed COVID-19 (red zone), suspected COVID-19 (amber zone) and low risk of COVID-19 (green zone) patients. However, incursions into green zones during low prevalence periods (e.g. via asymptomatic patients) and the limited capacity to isolate patients with Covid-19 during significant community outbreaks, have hampered airborne disease control, placing staff at considerable risk. The precautionary approach would dictate that whenever there is community transmission in progress, the entire indoor environment of any healthcare setting should be considered a red zone.

Vaccines

While vaccination reduces the likelihood of severe disease and death, transmission risk from SARS-CoV-2 persists. Double-vaccinated individuals can still become infected and can infect others. Studies also show that immunity wanes with time. Within a 96% Pfizer-vaccinated group of health workers and patients in Israel, a large hospital outbreak nevertheless occurred at about the 6-month period after vaccination.

KEY CURRENT PROBLEMS

- There is substantial risk of disease incursion and spread in healthcare settings arising from:
    - a lack of consistent application of infection prevention and control procedures relating to airborne viruses
    - inappropriate and compromised management of confirmed COVID-19 patients;
    - pre-symptomatic and asymptomatic infectious individuals, whether patient, staff or visitor;
    - lack of step up for controls for staff who live in, or who visit areas of community transmission;

- - wide-ranging reach of specialised healthcare workers who frequently move between several healthcare facilities
- Infection in healthcare settings has commonly occurred where aerosol controls, particularly ventilation, are compromised or inadequate, for example, in corridors, stairwells, lifts and shared offices, or where users incorrectly perceive spaces to be safe, such as breakrooms.
- Health sector workers, who were predominantly vaccinated before May 2021, may already have significantly compromised immunity, until they receive a third dose.
- Inadequate guidance on where and when staff should be using personal protective equipment. Healthcare workers, even those in high-risk environments are, in many instances, still being provided inadequate PPE to protect them from infection. There has been restriction of N95/P2 respirators to intensive care units, emergency departments, and COVID-19 wards, with an over reliance on surgical masks elsewhere.
- Where appropriate respiratory PPE is provided, it is not always done with adequate attention to its effectiveness. Fit-testing of respirators, which is essential for the wearer's protection, is still not routinely provided for workers at some sites.
- Potential loss of critical services when staff with specialty training and expertise and on whom multiple healthcare specialties depend, cannot work because they are contacts of cases, become ill, or die due to COVID-19 exposure and infection. Without specific healthcare workers, care for some patients effectively ceases.

Hierarchy of Controls to prevent transmission of SARS-CoV-2

Healthcare facilities are hubs for staff and patients from multiple geographic areas, who mix within confined spaces. A robust system can only be built when additional control measures are introduced for COVID-19 transmission prevention. Hazard control interventions must be multi-layered to be effective.

OzSAGE recommends a "Vaccines PLUS" strategy. The 'PLUS' of Vaccines PLUS refers to safe indoor air ventilation, widespread respirator use (fit-tested for staff) and well fitted medical mask/ respirators for patients and visitors and administrative controls.

Figure 1: Layers of the Hierarchy of Control

RECOMMENDATIONS

Elimination: Based on the *Hierarchy of Control*, the first and most effective way to reduce the risk of infection to all who use and work in the health sector is to remove as many potential sources of infection entering the healthcare site as possible. Note that many of these measures also conserve PPE supply.

Offsite:

- Telehealth options should be accessible where feasible and their use should be encouraged
- Develop and evaluate models for safe selection, monitoring and treatment of those with milder infection at home and in-reach services
- Patients considered for In-Home-Care should be assessed for its safety and suitability (ability to self-care, call for help, effectively self-isolate and use digital monitoring and telehealth systems)
- Use 'phone ahead' within and across healthcare networks to reduce patient transfer into compromised (overloaded) health facilities
- Ask staff to work from home wherever possible, including part-days.
- Conduct meetings online rather than face-to-face
- Limit patient visitors to a nominated few

Outside:

- Arrange for deliveries to occur in outside air, using contactless transaction where practical.

Other Hierarchy of Control Measures

Exposure to virus-contaminated air is the dominant source of COVID-19 infection risk for everyone using or working in the health sector. Limiting the degree of viral contamination in the air (using source control options such as respirators), refreshing used air through natural and mechanical ventilation, and limiting the movement of contaminated air, and using HEPA filtration when needed, as guided by CO_2 monitoring, are crucial measures.

Exhaled contaminated air from infectious people is not, however, the only source of aerosolised SARS-CoV-2. Coronavirus has been shown to persist with very few symptoms in the gastro-intestinal system and viable virus is shed in stools for many weeks post-infection. Human faeces must be treated as a biohazard, and the fluid processes associated with *toilet flushing* eject significant contaminated *aerosol* into the surroundings.

The final infection pathway that requires mitigation is the one that is most familiar, despite its relatively minor role, and that involves the transfer/*ingestion/inhalation of viral material from contaminated surfaces*, managed through hygiene controls.

The following measures are intended to manage the risks associated with each of these infection pathways

Facility-Level Measures

- *Situation and context awareness*
  - It is essential to monitor the waxing and waning of disease prevalence in the State, region, and patient and staff catchments. This will provide crucial information for assessment of disease incursion risk, staffing needs, triggers for additional protocols and priorities (such as rapid antigen testing), and resourcing pressures.
  - Members of health networks should communicate with partners and any emergency management groups that are overseeing system load, to maintain awareness of constraints within the network that may impact the safety and quality of care, for example, when considering the transfer of patients.

- Facilities should conduct regular education, work health and safety audits to understand the effectiveness of infection control measures and the functioning of supply chains. If there is no community transmission consider conducting exercises to explore scenarios and assess systems resilience
- Vaccination:
  o This should be mandatory for all patient-facing staff and any staff entering site sharing same air zone as patient facing staff
  o Maintain up to date records of staff vaccination status, types and dates (with evidence) to inform safer placement and the timing of booster doses (6 months from a second dose) to combat waning immunity
  o Ask staff to complete a voluntary personal risk assessment indicating whether the worker has particular vulnerability to COVID-19. Use an Occupational Health Physician to assist with safer placement, for example, where staff are unvaccinated, unable to wear PPE, or have significant underlying health conditions.
  o Monitor variants in circulation to guide re-assessment of adequacy of controls
  o Deploy unvaccinated (or unknown status) staff carefully, avoiding vulnerable services (e.g. transplant, chemotherapy, geriatrics) and high risk zones
- Respiratory protection to be worn at all times, applied before entering shared indoor space and to remain on including in work areas, shared areas and bathrooms
- Rapid Antigen Testing (RATs)
  o Rapid antigen testing is best deployed as early as possible with regard to community prevalence giving consideration to pre-test probability and the likelihood of false positive results.
  o **Patients**: use pre-entry testing of patients and visitors and in admission
  o **Staff**: where practical, employ daily testing of staff working in high risk ('red' or 'amber', i.e., confirmed or suspected COVID-19 patient) zones prior to their accessing the building or service. For staff working in lower risk ('green') zones (provided in separate air zone with other layers of controls), testing can be guided by epidemiological risk (mindful of community prevalence). For some staff home testing performed as part of a workplace screening program may be appropriate and prevent workplace exposure. However, a testing program should continue on site as well
  o There are considerable logistics in deployment of rapid testing in the workplace and the program should align with Therapeutic Goods Administration (TGA) and public health guidance. Provide priority PCR testing for unwell staff. Timely PCR testing to confirm any RAT-positive results can help prevent unnecessary disruptions due to false positives.
- QR Codes
  o Ensure QR codes are usable and readily available. Advise staff to participate to enable identification of close contacts

- ***Environmental Management***

  - Ventilation & Clean Air
    o See OzSAGE document 'Safe Indoor Air (Ventilation)'
    o Perform ventilation assessments in conjunction with engineers / occupational hygienists to assess air exchanges throughout facility including mapping predominant airflow directions under varying conditions. Identify areas of concern and close, or mitigate
    o Install permanent CO_2 monitors (as soon as practicable) connected to a central monitoring and alarm system, to monitor adequacy of ventilation in real time and warn of zone overcrowding (readings relate to areas without adequate supplementary HEPA filtration)

- Use negative pressure containment where feasible, and ensure air flows toward the highest risk zones before extraction to outside
- Ensure adequate ventilation and air exchange in confined areas, particularly toilets, change rooms, bathrooms and utility areas. Consider constant extraction fans (must be designed and safety checked for this purpose to avoid motor overheating). Where this is not possible install air purifiers with a HEPA filter that are appropriately sized for the space.
- Mechanical ventilation systems to be reviewed and adjusted as required by a qualified mechanical engineer
- Consider use of patient personal ventilation hoods that have proven experience and safety, particularly useful for shared spaces or vulnerable patients
- Where fresh air exchange ventilation is inadequate use HEPA air filtration, e.g. in lifts, near entry/exit points or high traffic areas
- Humidification has some support provided building structures are not affected

- Sewerage
  - Ensure pipes and water traps functional.
  - Close lid prior to flushing
  - Close toilets if possible if in same air zone as showers or limit entry to one use
- Cleaning & Disinfection
  - Cleaning means physically removing germs, dirt, and organic matter from surfaces. Disinfecting involves use of chemicals or steam to kill germs on surfaces. It is important to clean before disinfecting because organic matter and dirt can reduce the ability of disinfectants to kill germs
  - Make sure the room is well ventilated and/or filtered, and unoccupied for as long as practical prior to entry to minimise infection risk
  - Use the following principles:
    - Clean before disinfecting
    - Clean from high to low reach surfaces (finishing with the floor), from clean-to-dirty areas/elements using separate cloths, leaving the toilet until last.

- *Policies & Protocols*

- Designate external (shaded but not enclosed, heated/cooled as appropriate) zones for:
  - rapid antigen testing (near entrances)
  - receipt of goods, loading, unloading
  - donning and doffing of PPE
  - dining and staff break areas (involving removal of respirators)
  - staff-patient-visitor meetings (note: speaking greatly increases air contamination)
- Within the facility designate zones as high risk ('red', for active treatment of COVID-19 patients), and moderate risk ('amber', close contacts of positive cases). If a lower risk ('green', assessed as no risk or cleared of disease) zone is defined, staff and patients should be made aware that, despite constant efforts to protect it, viral contamination may be present, and precautions should be implemented.
- Ensure staff are reminded to maintain the integrity and protection of zones, and routinely question patient (and staff) movements that could violate zone boundaries.
- During periods of community transmission, there are no zones 'safe' from COVID incursion and protocols best operate as for red zone.

- For those staff who work across multiple facilities, minimise zone-crossing within each facility, and employ frequent testing.
- Ensure that all staff don and doff PPE in designated areas (reserved for zones), preferably outside buildings.
- Develop and supervise protocols for red/amber/green separation and use of:
  - lifts
  - toilets
  - change rooms
  - breakout areas
  - food preparation.
- Plan, prepare and coordinate necessary red zone patient movements in advance
  - preferably, bring the service (e.g., portable x-ray) to the patient rather than move a confirmed or suspected COVID-19 patient
  - if possible, allocate times each day when corridors are closed and cleared, and safe air ventilation is confirmed, to facilitate necessary movement of red zone patients
- Patient/Visitor Services
  - Minimise time spent face-to-face by providing online in advance, or facility-dedicated iPads or similar to enable completion of forms etc
- Signage: clear, consistent and ubiquitous messaging to
  - reinforce wearing of masks (and N95/P2 respirators for staff)
  - reinforce infection prevention and control procedures and practice
  - reinforce 'no eating/drinking' anywhere but designated areas
  - inform of zone areas and boundaries, and permitted movements
  - provide directions to zone-specific toilets, lifts, food/drink access, dining, meeting rooms
    - separate toilets for visitors (not shared with staff or patients)
  - inform of capacity limits and required separations in each area

- ***Allocating Staff***

  - Allocate staff to zones, and minimise potential cross-contamination from staff movements
    - Movement 'up' (green-to-amber, amber-to-red or green-to-red) is permissible
    - Movement 'down' (red-to-amber, red-to-green, or amber-to-green) must be prevented or carefully managed
    - Staff working in higher risk zones must undergo rapid antigen testing, and wait for an appropriate incubation period before being allowed to work in lower risk zones
    - If staff must be moved 'down' (red-to-amber etc), they should continue to wear N95/P2 at least until the next PCR-confirmed negative result, and enrolled in a RAT program
    - Staff may be reassigned to lower risk zones after leave, during which days away from site, PCR and rapid testing should be used to increase safety
  - Staff from hotspots not to be assigned to vulnerable green zones (chemotherapy, transplant medicine etc.) and to be substituted whenever possible from roles that may impact multiple health facilities (or limited to one health facility). If staff so specialised that they must work across zones, then attention to balance of risk and all controls is imperative.
  - Staff should not work at more than one location if avoidable. Staff who must work at multiple sites to be prioritised for vaccination, testing, and to have high frequency RAT testing
  - Assign staff to a 'bubble', pod or team. Try not to mix staff across teams to reduce exposure numbers in case of an exposure. Limit staff rotation.

- *Infection Reporting & Assistance for site outbreaks*

  - Ensure rapid, centrally-administered, computer-mediated reporting of Health Care Worker and patient COVID-19 infections.
  - Any case involving transmission of COVID-19 infection at work should be rapidly investigated as a health and safety incident to establish the cause and learnings to be applied.
  - Set up an outbreak team that includes an Occupational Health Physician to review staff infections, arrangements and worksite hazard controls. Occupational Nursing and Occupational Hygienist or ventilation engineer assistance may also be required. Findings should be transparent and publicised to the workforce and for similar facilities to learn from.
  - National reporting of healthcare acquired COVID-19 infections in patients and staff is recommended.
  - Provided all levels of hazard control are adequate, consider staff that are in full fitted airborne PPE as fit to continue work with ongoing testing surveillance
  - No staff member identified as a close contact, for example from a community setting or when exposed with no respiratory PPE, should be asked to work. However furlough loss may be minimized through considering balance of risk for lives with specialised absent staff and the percentage positivity of furloughed staff over time (if zero likely shows that there are adequate controls in place)
  - Consider back up services for essential non-Covid related medical services (for example back up dialysis site, back up chemo site etc.)
  - Develop, provide, and inform staff of programs of support:
    - with opportunities to debrief and discuss concerns (as well as employee assistance programs). Engage professional help (e.g. Occupational Health Physician/Occupational Nurse) as needed
    - with time off, if they feel unwell, for testing and isolation awaiting results
      - sufficient to remove temptation to attend work while unwell
      - include casual staff and visiting staff
    - with financial assistance if they cannot work due to sickness
      - contractors must have an equivalent support package, or given access to support packages available to regular staff
    - with temporary accommodation for staff whose home arrangements may put others at risk

- *Resources and Supplies:*

  - Ensure adequacy, accessibility and stockpile maintenance of
    - N95/P2 respirators (tested, and of more than one brand), TGA approved Powered Air Purifying Respirators/Elastomerics and the replacement filters/parts
    - Face shields, one-piece suits, gloves...
    - Hand hygiene products
    - Cleaning and disinfection products (the TGA has list of such products)
  - Encourage staff to report shortages of PPE and other resources
- *Workers' compensation:*
  - Ensure that health workers and hospital staff have automatic access to workers compensation if they become infected with COVID-19.
  - The burden of proof of the source of infection should be with the workplace to prove that infection was NOT acquired at the workplace. Health workers should not have to prove the source of their infection. This is essential to ensure retention of skilled health workers in the health system.

Patient Management

- *Arrival*

- apply clinical triage assisted with rapid antigen testing, preferably in an external reception zone prior to entering the building
- provide patients with N95/P2 respirator (before entry)
- allocate to red or amber [or green?] as appropriate
  - RED: rapid antigen positive on presentation or PCR positive.
  - AMBER: for PCR testing, rapid antigen negative AND symptoms indicative of COVID-19 OR at higher epidemiological risk such as quarantine/contact with known case/part of institutional outbreak (e.g. prisons/care facilities)
  - GREEN: no symptoms or signs of COVID-19 and no high-risk factors on history (e.g. recent contact with an exposure site, quarantine) AND rapid antigen test negative
  - Green and amber zones are to assist patient safety using cohorts.
- crowding, or the use of non-respiratory PPE such as surgical masks, to be precluded
- move patients to treatment areas in planned, coordinated and supervised manner (as in above policies)
- *In treatment*
  - In preference order, use negative pressure rooms for COVID-19 patients where capacity allows, or
    - use single patient rooms, or
      - cohort wards
  - ensure patient's curtains are drawn and separator doors are closed whenever feasible
  - patients should wear respirators as much as tolerated when in their own clinical area
  - Even though patients may be negative on testing on arrival, this can change and a system for nursing to review symptomatology and a program of repeat testing is recommended
  - where patients are to be moved, use pre-arranged, coordinated and supervised timings and pathways to limit air sharing
    - patients are not to leave their clinical area without staff escort and pre-planning
    - protocols and extra staff may be required to assist patients with a tendency to wander
- *Discharge*
  - all instructions to be given verbally and in writing (use translator as needed)
  - provide low-risk waiting areas for family/visitors collecting patients, and transfer the patient to them
  - consult with public health if patient lives in a multi-occupancy building (apartment blocks, student accommodation etc.) for consideration of transfer to Special Health Accommodation
  - transport home should be provided by the hospital in a fit for purpose vehicle (separate compartments for driver and passenger recommended, open windows recommended, fresh air intake to be switched on).
  - transport driver to use fit tested N95 or greater respiratory protection.
  - same controls for site and care measures for "In-Home Care" patients where-ever feasible or consideration of alternatives

Staff

- *Educate and train (include mental health)*
  - education of staff and service users and visitors is important to improve and maintain controls. One example of effort in education is this chart of controls for GP practices
  - highly recommend setting up an education and accreditation program for workers to use and care for reusable respirators
  - ongoing education programs for infection prevention and control including assessments for maintenance and care of reusable equipment

- ensure adequate training and regular reassessments of staff in use of PPE
- ***Policies and Protocols***
  - triage staff should wear full airborne level PPE with N95/P2 respiratory protection and eye protection at all times regardless of disease prevalence
  - Red and Amber zone staff to wear full airborne precautions (N95/P2 respirators (minimum), face shields/goggles, gowns, gloves, hair-cover) at all times regardless of disease prevalence
  - Green zone clinical staff to wear N95/P2 respirator (or reusable elastomeric if available) and eye protection as part of a minimum set of PPE whenever the health setting is in a community transmission area, or receiving cases from such areas or potential areas (eg sewerage detection
  - every staff member to be assigned a buddy on shift to ensure the well-being of the other. In particular ensuring co-worker gets breaks on time and is not suffering physical exhaustion from demands of PPE and workload and to check on co-workers' welfare
  - allow longer breaks to give time for safe doffing and donning of respiratory PPE for break.
    - break every 4 hours at a minimum.
    - consider shorter shifts if staffing allows.
  - to minimise exposure risk
    - don/doff respirators and masks in designated areas prior to entering the building
      - consider providing some disposable respirators to be taken home and donned prior to entry to the facility
      - respiratory protection should be donned prior to entering the shared air space/building and therefore needs to be accessible as such. If the donning/doffing area for respiratory protection is indoors, then fastidious care must be taken to ensure clean air. Consider 6-12 ACH and the use of HEPA filtration (URUVGI use in this area may be beneficial but remains under review at this time)
      - where possible extended wear of respirators should be practiced to preserve supplies and to prevent contamination during donning and doffing, accidental exposure due to aerosol escape, as well as staff to staff transmission
      - in special circumstances where respirators may become heavily soiled such as during aerosol producing surgical procedures, or dentistry, the respirator should be shielded from heavy contamination using a face shield if possible and may need to be changed between each patient. Access to a safe outdoor area (or indoor area as described above) must be provided to facilitate this
    - use PPE spotters in all donning and doffing areas, plus mirrors and adequate space
    - keep doors and curtains closed when unmasked stepped down from clinical care in own office area, and only if there is safe air zone
    - ensure standard contact precautions including hand hygiene are observed
    - do not eat/drink outside designated dining areas (avoid speaking at these times)
    - do not share food, avoid team cakes for birthdays etc
    - do not remove a patient's own respirator if clearly marked as such unless clinically indicated
      - if their mask must be removed, ensure all protection protocols are used (all layers of hazard control)
      - where aerosol-generating procedures occur (e.g., intubation, assistance with toileting, movement of bedpans, 'dirty utility rooms' etc) full protection (as in triage) to be used
    - consider use of full one-piece aerosol impermeable suit, particularly in mass casualty scenarios where environmental contamination can be severe
    - where protections are compromised strengthen other hazard controls to compensate, and ask for Occupational Health Physician opinion

- *Cleaning Staff*
  - cleaning staff to wear fit-tested respirators
  - standard contact precautions including hand hygiene to be maintained
  - take care not to re-aerosolise contaminants (from linen, body fluids or toilets) by using HEPA filtered vacuum cleaners and damp dusting
  - on completion, remove PPE and perform hand hygiene before making up the room for the next patient

Visitors

- limit numbers, limit times, set conditions e.g. PPE, limitation of movement
- ensure screening and entry protocols are observed (e.g. vaccination status, recent test results etc)
- don respiratory protection (respirator preferred) prior to entry.
  - If unable to wear a respirator, then a medical grade mask. These should be supplied by the hospital if needed
- review suppliers for their Covid Safe plan adherence and staff vaccination and testing arrangements
- ensure visitors are informed of protocol compliance and where they will find toilets, lifts etc

Disclaimer

This position statement has been written with the best available evidence and was last updated on date 15 November 2021. No liability is accepted for the outcomes associated with the implementation of the advice contained herein. OzSAGE strongly recommends continuous quality assurance activities and ongoing adaptation to the circumstances