



## PRECIS OF EVIDENCE - PROFESSOR MARY-LOUISE MCLAWS

22 July 2020

### Background

#### 1. Current roles and qualifications:

- a. Mary-Louise McLaws DTPH MPH (hospital epidemiology) PhD (epidemiology)
- b. Professor, Epidemiology, Healthcare Infection and Infectious Diseases Control, School of Public Health and Community Medicine, Faculty of Medicine, UNSW Sydney
- c. Deputy President - UNSW Academic Board
- d. Water-Health Lead - UNSW Global Water Institute
- e. Currently advisor World Health Organization (WHO)
  - i. Health Emergencies Program Experts Advisory Panel for Infection Prevention and Control Preparedness, Readiness and Response to COVID-19
  - ii. Infection Prevention and Control Guidance Development Group for COVID-19
- f. Currently Consultant to WHO Western Pacific Regional Office (WPRO)
  - i. Surveying national Healthcare Infection Prevention and Control Programs in Member countries
  - ii. Developing contents for Member countries to consider the Future of Health Services in their region by 2050

### COVID-19

#### *COVID-19 introduction – what the virus is, methods of transmission*

2. The disease COVID-19 is caused by the virus SARS-CoV-2. It is an envelope virus meaning it is relatively easy to inactivate from contaminated hard surfaces with detergent and water, alcohol based hand rub (ABHR) (at least 75% isopropanol or 80% ethanol) or a bleach solution. The difficulty is when a patient is shedding the virus the high-touch surfaces, hands and uniforms of carers continue to become contaminated. The virus is predominantly spread by 'direct' spread (i.e. person-to-person) via droplet size particles expelled from the airways of an infected person in saliva, coughing, sneezing, singing, possibly breathing and speaking. After exposure to SARS-CoV-2 on average 15% (range 12%-18%) will not develop symptoms (asymptomatic). Therefore, 85% will develop symptoms by days 3-5 after exposure. Droplets from a positive person can remain suspended in the air for many seconds.
3. SARS-CoV-2 ribonucleic acid (RNA) has been recovered from patients 1-3 days before they develop symptoms suggesting they are infectious. It is currently believed that when patients become symptomatic, they are at a peak for shedding SARS-CoV-2. Asymptomatic cases test positive for SARS-CoV-2 RNA for 1-2 weeks while symptomatic cases with mild to moderate disease test positive at least 3 weeks and severe cases for longer than 3 weeks. This has implications for infection prevention for staff and prevention of transmission to residents, amount of personal protection equipment (PPE) required, required dedicated staff and continued environmental cleaning.

4. COVID-19 is acquired mostly by direct contact with the virus entering the alveoli or epithelial cells in the lower airway and residing in the ACE2 receptor sites of the lungs. It is hypothesised that children under 18 years of age either do not have the required number of mature ACE2 receptor sites to develop COVID-19 or that their initial immune response in their upper airways is superior to adults and this prevents entry of the virus to the receptor sites.
5. COVID-19 is an inflammatory response disease with onset of symptoms ranging from none (average 15%; range 12%-18%) to mild symptoms that include fatigue, headache, muscle pain, cough, fever, runny or congested nose, loss of smell, loss of taste, stomach cramps, and diarrhoea. Moderate symptoms include shortness of breath or difficulty in breathing and patients may experience a range of severe clinical responses resulting from a cytokine storm (cytokine release syndrome) that may cause respiratory distress syndrome, sepsis, stroke, and organ failure. Patients 80 years and over have the highest risk of death, followed by 60-79 years old.

### *How COVID-19 differs from other infectious outbreaks encountered in the aged care context*

6. Gastro caused by viral infections can also be life threatening and are not readily preventable. Influenza is life threatening for residents. The risk of death has been reduced in residential aged care facilities with mandatory influenza vaccination uptake by health workers and carers. The majority of deaths in Australia associated with influenzas occur in Australians 65 and older. Between January and July 2020, there have been 36 deaths associated with influenza, 28 have been in the elderly. Screening visitors on entry to the facility including temperature checking has limited value because both COVID-19 and influenza are believed to be transmissible from 48 hours prior to development of symptoms, including fever.
7. As with influenza, it is believed that patients with COVID-19 can be infectious up to 2 days prior to developing symptoms. Additionally, COVID-19 symptoms can mimic both gastro and respiratory infections, and staff are unlikely to identify those residents who are infected with COVID-19 unless residents and staff are routinely screened. In the early pre-symptomatic phase and during early 'minor' symptoms, carers, general practitioners making a house call to the facility and visitors can all pose a risk for residents to acquire COVID-19, or residents in the early phase can transmit the disease to health workers. Persons with minor symptoms or presymptomatic phase place other residents in the shared spaces at risk of acquiring disease.
8. An examination of over 75,000 COVID-19 cases in China found 78%-85% cases were found to occur in family clusters outbreaks.<sup>1</sup> In South Korea 69% of secondary cases occurred in household clusters and similar conclusions were reported in Singapore. Keeping COVID-19 family members at home inevitably spreads to all family members because it is difficult to separate infected family members from uninfected family member especially when a dwelling has a shared bathroom. Victorian family cluster numbers are at 341 cases in various public housing towers in North Melbourne, Carlton and Flemington. Keeping the spread of COVID-19 from other residents is difficult when the number of residents to care staff ratio is high and residents use shared bathrooms. Recently, 50 cases in ACFs across Victoria have involved at least seven facilities.<sup>2</sup>
9. All COVID-19 positive residents must be admitted to hospital while complying with their Advance Care Plan during admission. Removing residents to hospitals where the built environment is designed to contain the spread of infection and where the staff have been trained in infection prevention and control is the only logical way to prevent the transmission of COVID-19 to other residents, staff and visiting clinicians.
10. Specific measures include:

<sup>1</sup> <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>.

<sup>2</sup> <https://www.dhhs.vic.gov.au/coronavirus-update-victoria-19-july>.

- a. Mandatory wearing of mask or face shield by all workers, visiting clinicians and all visitors to all ACFs.
- b. Rapid identification for rapid containment will require screening of all new staff and residents, weekly routine COVID-19 screening of all workers and visiting clinicians, and residents.
- c. Twice daily cleaning of all high touch areas to remove dirt followed by detergent wipe (in bathrooms and kitchens this should be followed by bleach).<sup>3</sup>
- d. Carers working across several ACFs increases the risk of them acquiring COVID-19 and transmitting it to multiple residents and other staff. Staff must either be restricted from working across multiple facilities or increasing their working hours or hourly rate to compensate the restriction.

*What PPE is required for aged care staff to perform duties safely during COVID-19, including when it should be worn and how often and in what circumstances it should be changed*

11. Best practice I have witnessed during SARS: hospital has clean and contaminated zones; the health workers don (put on) the personal protective equipment (PPE) in a 'clean' corridor and step through the anteroom into the patient's room. On leaving the patient's room the health worker doffs (removes) PPE in the anteroom before stepping into the 'clean' corridor zone without contaminated PPE. Hospitals in Australia usually have health workers don and doff in the anteroom when there is one or corridor for patients with a multiple antimicrobial resistant pathogen (which is not the same level of pathogenicity as COVID-19).
12. To protect each carer from a COVID-19 positive resident's body fluids during a care event, the staff is required to wear PPE that includes a pair of non-sterile gloves, full arm plastic apron and a medical grade mask. In an intensive care unit (ICU) the medical mask would be replaced with a respirator plus face shield so the staff are ready to perform a procedure that could produce small aerosolised particles. In an ICU the health worker would sit at the end of the patient's bed donned with all PPE meaning potentially fewer changes of PPE are made because the ratio of patient-nurse is 1:1. On a non-ICU hospital ward for COVID-19 patients, the health worker replaces all their PPE on leaving the ward and between caring for each patient. Care staff in ACFs must be dedicated to one COVID-19 resident because the care staff are not sufficiently skilled in infection prevention and control techniques to care for both COVID-19 positive and negative residents with a breach in protocol.
13. Specific PPE guidance for aged care facilities:
  - a. Care staff in ACFs must remove gloves and apron on leaving the COVID-19 positive resident's room. The mask should be replaced on leaving the room. Although the World Health Organization (WHO) understands that when the supply is limited the same mask could be 'extended', that is, the same mask is worn for an extended period, the situation is different as there are usually multiple COVID-19 positive patients on a ward.
  - b. Care staff leaving the resident's room must remove the mask because they are stepping into a 'clean' zone and so should have clean PPE and replace the mask with a new mask.
  - c. If the care staff is responsible for more than one COVID-19 positive resident in the same room, the staff must replace their apron and gloves between the two positive residents because their gloves and apron can pick up multiple resistant pathogens and contaminate the other patient.
  - d. Each time the care staff wish to leave the COVID-19 positive resident's room, the staff must remove all PPE (apron and gloves) and dispose of all items prior to entering a clean zone (the corridor), then hand hygiene. Stepping into the corridor the staff doffs a

<sup>3</sup> See WHO cleaning guidelines <https://www.who.int/publications/i/item/cleaning-and-disinfection-of-environmental-surfaces-in-the-context-of-covid-19>

- mask and performs hand hygiene and dons a clean mask. The rationale for leaving the mask on and stepping into the 'clean' zone of the corridor with the mask before replacing it with a new mask is that the air in the resident's room is contaminated with COVID-19 droplet and droplet nuclei.
- e. Best practice is to not have a COVID-19 negative resident located near or adjacent to the COVID-19 patient.
  - f. The care staff mask must be replaced when it is damp or when it has been inadvertently touched by the staff gloved hands.

### *Viability of national infection control standards, including who would be appropriate body to set and govern the standards*

14. ACF guidelines underappreciate the variety of the built environment across all ACFs and the associated problems of accommodating the required guidelines isolating COVID-19 positive residents from the rest of the residents.
15. The positive resident required a dedicated bathroom. This is not always easy in shared accommodation arrangements.
16. In hospitals, negative patients are not in adjacent rooms and are usually located at the end of a corridor or dedicated isolation room with negative air pressure (so contaminated air does not escape into the 'clean' corridor) and a HEPA filter that filters the contaminated air.
17. There are few explicit instructions to ACFs on how to prepare their limited built environment into isolation and non-isolation zones with 'clean' and 'contaminated' zone associated with a room with a COVID-19 patient. The ACF needs a clean donning PPE zone outside the room and an area inside the room to doff and dispose used PPE needs to be in the room away from the clean corridor zone. There needs to be a waste bin and sink or alcohol based hand rub to use prior to removing the mask and replacing it with a clean mask.
18. All masks, aprons and gloves must be stored close to the positive resident's room but ensured not to be contaminated when the door opens as there is no HEPA filter or negative air pressure in the room to keep staff on the outside safe.
19. Because of the built environment in a hospital, staff are unlikely to be anywhere near a positive ward. All staff in the ACF not caring for positive residents must not be allowed near the room and corridor. Posters must be placed so staff not caring for the resident do not come close to the room.
20. All cleaning solutions must remain in the room.
21. During SARS, doffing PPE would take place with an observer to ensure this is performed correctly.
22. In an Australian hospital, health workers are trained and would not be allowed to care for COVID-19 patients unless they were proficient in donning and doffing.
23. The ratio of staff-to-resident cannot always be complied.

### *Aged care response to pandemic*

#### *The effectiveness of enhanced 'lock down' measures, for example restricted visitation*

24. 'Lock-down' can only be made humane if visitors are given a roster, routinely screened and wear a face shield (so the elderly residents can see their families and assist with hearing them), and perform hand hygiene then are placed behind a Perspex screen for visitations in a well ventilated room or outside (weather permitting). An alternative given to residents is the choice of moving into their family's household.

### *The appropriateness of transferring COVID-19 positive aged care residents to hospital*

25. Transfer to hospital is the only appropriate solution that may improve their survival rate and reduce the risk of infection in the remainder of residents. Even with expert clinical care brought into the ACF, it has been impossible to prevent 'clusters' as experienced in China, Singapore and USA. To date, 181 cases in ACFs have been documented in Australia.<sup>4</sup>

### *Lessons the aged care sector can learn from and apply in preparation for future pandemics*

26. Currently, the responsibility for safety of ACFs is under the ACQSHC and staff are usually shared between hospital, dental and ACF programs. But ACF requires deep knowledge of the unique problems and risk of shared homes required to meet guidelines. A new ACF Commission staffed by experts and dedicated to infection prevention and control in ACFs and quality and safety should be developed to continually focus of the many risks associated with ACFs.
27. Improve the salary and resident-to-staff ratio to reduce the current practice of working across facilities.
28. Build ACFs that can accommodate an unexpected outbreak safely with improved air change, ability to have HEPA filter in each room, single rooms with bathroom, architectural design so that residents can be kept safe from 'red' (positive residents) zone rooms during e.g. influenza.

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<sup>4</sup> <https://www.health.gov.au/resources/covid-19-cases-in-aged-care-services-residential-care>.