

COVID-19 intensive care guidance drawn from principles in the NSW Health Influenza Pandemic Plan (PD2016_016)

Key issues:

To date it appears that COVID-19 is likely to have broad spectrum of disease from mild to severe, although the distribution of infections within this spectrum remains unclear. Because COVID-19 is a new virus, a large percentage of the population will be susceptible to disease. This means that demand on services could be high, particularly if the virus co-circulates with seasonal influenza.

Reports of illness in children are so far uncommon. Most cases of severe disease and deaths appear to be in people with pre-existing significant illnesses and the elderly, however due to the number of people naive to the illness, presentations of otherwise healthy people with significant respiratory illness could increase.

Unlike influenza, there is currently no specific treatment recommended to either modify the course of the disease in those who are sick, or to limit the spread of the disease. As such, should the disease develop sustained community transmission people will be encouraged to undertake self-care and self-isolation at home (eg: paracetamol, fluids) and only attend Emergency Departments for moderate to severe disease.

Public health action such as isolation of cases and quarantining of close contacts, promotion of respiratory hygiene messages for the community, and social distancing measures will continue when and if community transmission of COVID-19 is occurring. These measures are evidence based and will slow community transmission to allow the health system to manage the increased presentations.

Modelling data will be provided for a range of possible scenarios. The modelling will be revised and updated with local data as this becomes available. It is prudent to plan for a significant increase in respiratory presentations of up to twice seasonal influenza surge (ie: 200%) over a 10-12 week period (noting the usual peak influenza surge may coincide with this).

The State Pandemic Management Team, chaired by the Secretary, is meeting regularly to review whole-of-Health preparedness and response.

Managing hospital flows and ICU admissions/discharges

NSW Health has made significant investment in the development of near real-time information regarding critical care bed availability and system capacity (the Patient Flow Portal). This allows facility, LHD and MOH staff to monitor whether the health system is coping with increased demand. There are well-established systems for managing system surge as it occurs and usual processes will be followed regarding day to day system management.

Peak Activity Team teleconferences lead by the Deputy Secretary, Patient Experience and System Performance, will be the major channel for communicating surge response. Where significant decisions around scheduling of elective surgery, activation of surge plans, provision of different models of care this will be primary channel of communication. The frequency of these teleconferences will be tailored to meet demand pressure as is usual practice.

Generally, all LHDs need to plan for how they will manage a significantly increased level of critically

ill ICU presentations for respiratory illnesses (up to 200% above usual) over a 10-12 week period (which may coincide with peak influenza season) in all their facilities. Severe disease is documented to include severe pneumonia, ARDS, sepsis and septic shock.

Currently there is no proven treatment to change the course of severe illness in COVID-19. Instead, supportive care is provided - which may include advanced interventions including prone ventilation in those with ARDS, management of ventilation (eg: PEEP settings to optimize outcomes) and the use of extra-corporeal life support via ECMO.

Key to managing demand in critical care will be a facility response which includes:

- Infection control to prevent the spread of disease in the facility and in the ICU
- Team based assessment regarding appropriate admissions and discharges from the ICU (including prompt resumption of care on a non-critical care ward by a usual care team) and ensuring adequate step-down care is available. This may require increasing the staffing and clinical oversight of step-down wards, in light of potentially increased acuity of patients leaving ICU.
- Careful consideration of referrals for care to the ICU, including discussion with families regarding the likely outcomes of such a referral
- Identification of staff with skills appropriate to assist in the management of the critically ill or the equipment used to care for them (eg: anaesthetic technicians, perfusionists, biomedical engineers, clinical research staff) and upskilling of those staff prior to them being required to perform a role when the ICU is under strain
- Open additional beds in existing non-commissioned physical intensive care bed spaces or other non-commissioned ward areas and consider progressively converting appropriately monitored beds to intensive care eg: Coronary Care Units (CCU), Operating Theatres (OT) recovery, Close Observation Units (COUs)
- Manage elective surgery requiring postoperative ICU care (this may include deferring some operations, but in less severely affected areas may include bringing forward activity prior to the epidemic-associated surge).
- Manage elective admissions such that patients can be promptly discharged from ICU and managed elsewhere in the health care facility.
- Ensure maintenance of standard ICU ventilators is timed to not coincide with the period of expected surge
- Identify other ventilation devices that could be used for managing epidemic-related surge (including transport ventilators and those located outside the ICU e.g. OT, Emergency Department). It will be necessary to match patients' conditions with ventilators that are appropriate for their ventilation needs.
- Bring forward purchases of key equipment required such as ventilators
- Use available private hospital ICU capacity, especially for patients requiring more routine post-operative care
- Suspend elective referrals of patients requiring ICU from outside of NSW when capacity in other states for an equivalent service is available
- Facilitate early discussion around the need for inter-hospital transfer for ICU patients, as this requires careful consideration due to consumption of retrieval resources and may not materially improve a patient's outcome if they are already being managed in an ICU. Inter-disciplinary case discussion may be required to facilitate and support decision re inter-hospital transfer.
- Actively monitor and appropriately use disposable equipment, given that there may be supply chain interruptions. This includes ensuring adequate stock is on hand prior to the surge.

- Where available, ensure negative pressure rooms are operational

Triage tools and end of life care

During an epidemic-related surge it will be important that consistent decisions are made regarding both admission to ICU and continuing care when a meaningful recovery is unlikely.

Triage will be enacted at the same level across the state, to promote equity of access of patients to intensive care. It is important that these tools are used for all potential admissions, not just infection-related admissions. Such tools are being refined to promote national consistency.

Assessment of patients being triaged for intensive care should ideally be undertaken prior to the patient being transported to the ICU. Triage should occur in the Emergency Department or referring unit/ward, or other hospital where clinicians need to have effective collaboration between ED/specialty and ICU clinicians to achieve the best outcome for the patient. This may be face-to-face or via telephone or telehealth to connect clinicians to discuss appropriateness for intensive care admission.

Patients with infectious disease-related Adult Respiratory Distress Syndrome often require extensive support for a significant length of time. Whilst capacity for ECMO/ventilator support may not be fully subscribed in the early days of community transmission, careful patient selection is required at the initiation of therapy so that patients in the coming days/weeks who have a high probability of survival are able to access an appropriate level of care.

Appropriate end of life care

Patients must be provided with appropriate end of life care. A surge in requests for assistance for managing symptoms related to end of life may be directed towards palliative/supportive care services. As such, services should also plan for how these services will be delivered. Planning must include appropriate locations for such care to be provided.

Infection Control

A number of resources are available on the CEC website, which will continue to be updated.

<http://www.cec.health.nsw.gov.au/patient-safety-programs/infection-prevention-and-control/novel-coronavirus-2019-ncov>

Notably, the response should be similar to other potentially severe respiratory infections, including decisions to cohort people who have confirmed disease together. It should be noted that there may be both seasonal influenza and the COVID-19 virus circulating simultaneously, which may make it difficult to cohort patients on the basis of presenting symptoms and clinical picture alone.

Particular care in the ICU environment will be required when undertaking procedures such as intubation.

Staffing issues

The intensive care workforce is a highly-skilled resource that will be in high demand. Healthcare facilities should identify staff with skills that can support the ICU response. This may include clinical research staff, anaesthetic technicians and perfusionists. Managing fatigue will be essential for a surge period of potentially many weeks. Staffing in the middle of a COVID-19 related surge would

need to consider a team orientated approach if lesser experienced staff are used in the ICU to support more skilled staff.

It will be important to consider:

- using medical and nursing staff with anaesthetic experience to enhance staffing of critical care units
- using medical and nursing staff with recent experience (within last few years)
- using other medical and nursing staff that have no specific critical care training or experience, to care for patients in critical care units under the supervision of staff with appropriate training.

Where staff are identified as potential surge staff they should be familiarised with the current ICU environment prior to any COVID-19 related surge (eg when community transmission is present in Australia) and undergo appropriate training in the use of PPE.

Influenza prevention

Given the potential for surge in both seasonal influenza and COVID-19-related demand for services, strategies to prevent influenza should be encouraged. This includes staff immunisation and the promotion of influenza immunisation to patients in the LHD with chronic diseases. Early treatment in-hospital of those with influenza may also reduce community transmission and, across the population, reduce some seasonal-influenza related ICU admissions.

General System Preparedness – Principles (from PD2016_016)

Principles guiding the management of demand and capacity within healthcare services include:

- That care given to people will be maximised within the available resources
- Plans should be consistent with the aim of preserving and maintaining essential healthcare services
- Changes to service delivery and clinical protocols should reflect changes in local and/or regional demand where appropriate
- Decisions regarding surge capacity and demand management should be coordinated at a strategic level within the health care service to ensure consistency of approach
- That a phased approach be used in scaling back any healthcare services to ensure demand management reflects the COVID-19 status impact at the time
- Coordination by health system support staff to ensure cross-district consistency of access is maintained.

LHDs and SHNs should consider inter-related elements of healthcare services, including:

- physical aspects of capacity (eg: beds, wards and ventilation equipment)
- hospital staff numbers (eg: of clinical, allied health and administrative staff) and ability for staff to cross over to other areas
- clinical services and protocols (eg: types of services and models of care).

While governance for service delivery changes within LHDs rests with LHD Chief Executives, state-wide agreement will be sought wherever possible for any major changes to services, such as criteria for admission, triage or discharge, or new clinical management guidelines. This will be with the aim of promoting equitable delivery of healthcare across all districts.

Dissemination of information structure to intensive care services

Key information will be disseminated in a number of ways.

1. General clinician updates will be available through the NSW Health website and the ECI website. These will also be distributed through LHD clinical networks.
2. General system management will be through the usual Peak Activity Team teleconferences lead by the Deputy Secretary, Patient Experience and System Performance. Where significant decisions around scheduling of elective surgery, activation of surge plans, or the provision of different models of care, this will be primary channel of communication. The frequency of these teleconferences will be tailored to meet demand pressure as is usual practice.
3. It will be important to consider health facility/Local Health District-wide strategies as part of communications (eg: decisions around deferrals of elective surgery have broader impacts than ICU alone)
4. Information specific to intensive care (eg: specific guidelines for care as the evidence base improves) will be disseminated both generally and specifically through the LHD CEs and the ICNSW Network.