

Adult intensive care workforce report in COVID-19 pandemic

This document provides recommendations to support intensive care unit surge demand during the COVID-19 pandemic, which will be revised as the situation evolves. It should be used to inform local policies and procedures, which should be current and reviewed regularly.

An Intensive Care Community of Practice (ICCoP) has been established by Intensive Care NSW at the Agency for Clinical Innovation (ACI) to support state-wide preparedness and communication. An adult intensive care workforce advisory group was formed with representation from the workforce branch of the Ministry of Health including discipline advisors, the Chief Nursing and Midwifery Office and intensive care clinicians. The advisory group has developed overarching principles, recommendations, strategies and workforce options for a tiered response to meet the COVID-19 surge demand. With consideration of the *ANZICS COVID-19 Guidelines*, recommendations include, increasing intensive care unit (ICU) capacity and workforce and having a multi-tiered response to manage increasing ICU demand, particularly in areas outside of the ICU.¹

ICUs have been requested to expand their physical bed and workforce capacity. Physical bed capacity may be achieved through opening of non-funded beds within the existing ICU, creating an extra ICU unit/pod in recovery, operating theatres, coronary care and ward areas or within a temporary hospital.

The Public Health Workforce Surge Guidelines assist local health districts (LHDs) in understanding when and how to identify, recruit and utilise surge staff in the event of a pandemic.² These guidelines for surging staff in response to an event that exceeds existing capacity should be used in conjunction with local ICU pandemic/disaster policies, with considerations to:

- types of staff required
- potential pools of surge staff
- training needs of surge staff.³

This document refers to ICU staff and critical care staff. ICU staff have training, skills and experience in ICU, whereas critical care staff may not have worked in an ICU but have experience in either the emergency department, coronary care, anaesthetics, recovery, interventional suites or nurses who have been part of an ICU refresher program. Non-ICU or non-critical care staff refer to those outside of these areas or staff with very limited or current ICU experience.

To maximise patient and staff safety, the standard workforce model is used with experienced intensive care staff, according to workforce standards and guidelines.^{4,5} As demand escalates and there is less ICU skilled staff available, team-based workforce models may need to be created. The team-based workforce model groups staff members into roles or experience-based tasks (for example, intubation teams, proning and turning teams, transfer teams, medication teams, IV access teams, hygiene teams or 'expert senior' support teams).

Overarching principles

- To achieve the greatest good for the greatest number of patients.
- To make use of expertise and experience where they are needed most.
- Maintain usual staffing levels for as long as possible.
- Timely consultation and communication of any changes in policy, workflow or other relevant information.
- Care for our patients, ourselves and each other with professionalism and respect.
- Staff safety and wellbeing is prioritised.

Recommendations

Maintaining high quality and safe care of patients

- When considering surge capacity for intensive care patients, consider opening of co-located or adjacent areas prior to opening remote areas.
- Maintaining usual nurse to patient levels for as much as possible with skill mix dilution, not reduction of staffing numbers.^{6,7}
- Risk assessment should be undertaken when staff deployment is being considered. This should be based on the individual staff experience and skill.^{7,8}
- Utilising the nursing pool from critical care areas to supplement intensive care must be done with careful consideration of requirements of the wards and non-ICU areas.
- Enhance clinical support staff, such as physiotherapists and other allied health professions, educators, supernumerary nursing staff to support bedside nurses to continue providing high quality care.
- During a pandemic, hospitals and local health districts will need to provide endorsed policies and guidelines for staff who may be required to work outside the normal minimum workforce standards and guidelines.^{4,5}
- Provide a fast-track orientation program, just in time education and refresher training in the early phases of the pandemic planning (Appendix 2).

Supporting staff wellbeing and a sustainable workforce:

- Provide assurance that when staff are needed

to work beyond their usual scope of practice, they will be indemnified by NSW Health 'where they act professionally and in accordance with the mandated guidelines, policy or lawful directions of their employer'.⁹

- Develop structure to allow staff to be able to work across local health districts through cross credentialing, to support rural and remote hospitals that depend on an itinerant workforce. Standing up the Intensive Care Advisory Service (ICAS) to provide telehealth support to these unit.
- When adopting a team-based model of care, patient safety and staff wellbeing remains a priority.
- Consideration of flexible rostering and shift length to reduce potential fatigue, allow for extended time for meal and hygiene breaks.
- Provide easy access to surveillance COVID screening in the ICU or hospital.
- Monitor staff testing/screening of COVID-19 and absence due to illness, particularly COVID-19 acquired through employment.
- Provide staff access and ability to have the COVID-19 vaccination.
- Accommodation for staff who are unable to return home, supported under state and local health district and speciality network plans.
- Staff have access to food, water and a 'clean or cold zone' where they can have their breaks, according to social distancing guidelines.
- Availability of car parking facility for staff.
- Provision of debriefing and psychological support for staff mental and physical wellbeing.

Escalation phases, strategies and workforce models

Facilities are to plan and escalate their local phased response to workforce surge demand. The surge plans should be triggered locally by each facility's Short Term Escalation Plan (STEP), which is part of the Ministry of Health Demand Escalations Framework 2016 to ensure appropriate support, response and action.¹⁰

Local STEP plans should outline clear processes for escalation, communication and accountability during periods of increased activity and demand. Demand escalation levels are summarised in Table 1. Intensive care staffing levels and workforce models, suggested through demand escalation levels during the COVID-19 pandemic, are listed in Appendix 3.

Table 1. Demand escalation levels

| | |
|----------------|---|
| Level 0 | Business as usual, minimal impact, prepare to surge workforce |
| Level 1 | Moderate compromise and impact on workforce |
| Level 2 | Severe compromise and impact on workforce |
| Level 3 | Extreme compromise and overwhelming impact with local workforce exhausted |

Level 0 – Business as usual, minimal impact, prepare to surge workforce

Physical beds are open as per usual.

A standard workforce model is used with experienced intensive care staff as per workforce standards and guidelines.^{4,5}

Strategies to consider for medical, nursing, allied health and support staff:

- Prepare for expansion of physical bed capacity to non-funded beds or newly created units/pods in non-ICU areas to be staffed for additional admissions and the next demand level.
- Identify ICU staffing availability for levels 1-3 (Appendix 1 describes workforce options for medical, nursing, allied health and support staff).
- Enhance available staff with casual and part-time staff for increased hours in levels 1-3.
- Orientation and basic intensive care training is identified and commenced for increased workforce (Appendix 2).
- Reinforce appropriate PPE training for all staff and develop record keeping for compliance and competency.
- Identify and re-deploy high-risk ICU staff to alternative roles to reduce their exposure to COVID-19.

Level 1 – Moderate compromise and impact on workforce

Depletion of skilled core staff from intensive care unit and the standard workforce model is supplemented.

Medical - Supplement standard ICU workforce model with non-ICU critical care medical officers, such as anaesthetists and medical staff that have previous critical care experience.

Nursing - Supplement standard ICU workforce model with non-ICU critical care staff, for example; anaesthetics, interventional suites, recovery, coronary care units, nurses who have been part of an ICU refresher model.

Allied Health - Supplement standard ICU workforce model with allied health staff with critical care skills. Ensure physiotherapists, social workers, pharmacists, occupational therapists, speech pathologist, radiographers and dietitians are engaged and mobilised to support increased patients.

Support Staff - Supplement standard ICU workforce model with non-ICU staff, for example:

- infection control practitioners
- non-critical care wards staff
- administrative staff
- clinical information systems
- biomed support
- hotel and cleaning staff.

Level 2 – Severe compromise and impact on workforce

The demand for intensive care workforce exceeds ICU capacity. Staff with no ICU training are deployed and supervised by ICU staff. The supplemented standard workforce model may progress to a team-based model.

- Review capacity across other facilities – within and across local health districts.
- Escalate and notify State Health Emergency Operations Centre (SHEOC) of the local requirement to move to a team-based workforce model.

Medical - Team-based model. Intensive care consultants and registrars supervise and coordinate critical care medical officers (MOs), critical care trainees, general medical and surgical practitioners, non-critical care career medical officers (CMOs) and senior resident medical officer (SRMOs).

Nursing - Team-based model. It is important that senior nursing roles are available as supernumerary to supervise and coordinate care providing support. Review nursing staffing and maintain safe standard and coverage.

Allied Health - Team-based model. Critical care allied health staff overseeing and supporting non-critical care allied health practitioners and allied health assistants.

Support Staff - Team-based model for support staff. Supplement level 1 workforce with non-ICU staff to support relatives, transfers and administrative tasks.

Level 3 – Extreme compromise and overwhelming impact with local workforce exhausted

The demand for intensive care services significantly exceeds organisation-wide capacity. Non-health care workers are required to support intensive care service provision under supervision.

There is a significant dilution of skill mix.

- Individual units are responsible for determining an appropriate mix of staffing that supports the skill set of their staff
- This is a situation where the intensive care capacity will be full within the existing unit and other designated areas as per local health district surge plans. This may be intensive care that is in a separate location not close to the current designated intensive care. Experienced staff will need to be diluted further while maintaining support and safety.

Medical - Team-based model.

- A whole of hospital duty intensive care consultant with other medical specialists to support intensive care triage and decision making on resuscitation and goals of care.
- Under the leadership of the intensive care consultants there is supervision and coordination of critical care MOs, paediatric critical care MOs, critical care trainees, non-critical care CMOs and SRMOs.

Nursing - Team-based model.

- Senior nursing roles are maintained to supervise, support and coordinate care.

Allied health - Team-based model.

- Provide a broad range of alternative clinical tasks to their usual scope

Support Staff - Team based model for support staff. Supplement level 2 workforce with non-ICU staff to support relatives, transfers and administrative tasks.

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Appendix 1: Workforce options

Medical

- Additional medical staffing for the ICU should be sourced by considering:
 - senior medical staff with critical care training, but not currently working in ICU
 - anaesthetic medical staff (due to a reduction in surgical activity)
 - junior medical staff with critical care experience
 - career medical officers with critical care experience.
- Anaesthetic staff are likely to be the main support for intensive care medical staff and, where possible, should work under the supervision of intensive care specialists. They may be deployed to ICU, non-ICU areas identified to manage high-acuity patients, rapid response teams and 'intubation teams'.
- Emergency medicine, anaesthetic, and intensive care clinicians should collaborate to form 'intubation teams' to provide emergency airway management.
- Identify and incorporate advanced practice nurses (nurse practitioner).
- Medical staff in departments with reduced clinical activity, who are familiar with a critical care environment (e.g. medical and surgical and Australian Defence Force (ADF) medical staff), may be deployed to ICU or non-ICU areas identified to manage high-acuity patients, junior medical staff and medical students with little to no ICU training may assist with documentation, PPE and non-ICU clinical activities.
- Where medical staff are requested to perform duties outside their scope of practice due to severe workforce shortages (e.g. anaesthetists taking on an intensive care role), they will be indemnified by NSW Health 'where they act professionally and in accordance with the mandated guidelines, policy or lawful directions of their employer'.⁹

Nursing

- All nursing staff capable of caring for critically ill patients should be identified.
- Critical care nursing staff with ventilation expertise:
 - Nursing staff with formal critical care training or experience but not currently working in ICU (e.g. deployed to other services, in administrative or non-clinical roles, recently left workforce).

- Nursing staff in departments with reduced clinical activity who are familiar with a critical care environment (e.g. anaesthetic nurses, operating and recovery nurses, surgical trained nurses and Australian Defence Force (ADF) nurses).
- Nursing staff with experience of critically ill patients in other areas of the hospital (e.g. coronary care nurses).
- Nursing staff with critical care experience may be deployed to ICU, to non-ICU area identified to manage high acuity patients and to rapid response teams.
- Other sources of skilled nursing staff:
 - consider nurses with critical care skills in the private sector
 - retired, non-clinical and on leave staff
 - third year students training to be a registered nurse who have had a critical care rotation previously
 - enrolled nurses
 - assistant in nursing.
- Other nurses without critical care experience or who have been out of the workforce for some time may be suitably trained and deployed to assist:
 - supervision of donning/doffing of PPE
 - routine nursing care - turning, washing
 - re-supply, storage and inventory of equipment
 - medication delivery and checking
 - IV access teams eg IV cannula insertion, IV line changes or CVC removal
 - documentation – vital signs and haemodynamic monitoring.
- Maintaining bed management and patient flow information.
- Act as runners.
- Facilitating communication with relatives using innovative methods such as Skype and Facetime.
- A formal rapid orientation program, refresher training and 'just in time' education should be provided, and all nurses should work under the supervision of an experienced ICU nurse at all times.

Allied health

- Allied health professionals with either critical care experience or those who can be rapidly upskilled should be identified to support ICU staff.
- Physiotherapists with previous critical care experience should be identified by hospitals and facilitated to return to ICU and assist with suctioning, ventilation weaning and prone positioning.
- The allied health intensive care workforce should be increased to reflect recommended staffing levels of physiotherapists, social workers, pharmacists, dietitians and speech pathologists.¹¹
- It is recommended for physiotherapists:
 - one full time equivalent (FTE) physiotherapist will be required for four ICU beds, including in house senior staff with previous ICU experience and expertise.¹²
 - introduce extended hours (10-12 hour shifts), 7-day per week service to support ICU teams and prone positioning.
 - physiotherapists may be required to lead 'proning and turning teams' as nursing/medical workload increases.
 - physiotherapists may be required to assist in suctioning ventilated patients.
- Social workers and psychologists with critical care experience should be identified and mobilised to assist with supporting patients and families isolated due to the COVID-19 restrictions. Staff working in intensive care areas could face mass death, which may affect their wellbeing and mental health. The support of social workers and psychologists is important and would be vital in supporting team debriefing sessions.¹ Extending hours, seven day per week services and on-call services will be required.
- Pharmacists with critical care experience should be identified and mobilised to assist the ICU pharmacy staff. It is recommended to prioritise skilled pharmacy staff to ICU to reduce the risk of medication prescribing and dispensing errors.
- Pharmacy staff may be able to provide support with the preparation and/or administration of medicines
- Dietitians with intensive care experience should be mobilised to support the early delivery of enteral nutrition to critically ill patients:
 - Considering advancing their scope of practice to support medical and nursing staff, where appropriate e.g. post-pyloric tube insertion.¹³

- Ensuring dietitians are able to facilitate nutrition by being competent at pump operation, changing of enteral formula and giving sets to reduce the workload expectation on nursing staff. This should include non-COVID-19 patients within the ICU.¹³

- Speech pathologists should be identified to assist with tracheostomy management and communication with patients.
- Occupational therapists identified to support pressure injury management and as part of the 'proning and turning' teams.
- Utilisation of AHA, where possible, for non-clinical activities within the unit.

Support staff

- During times of increasing demand, provision of sufficient support staff becomes crucial to maximise patient and staff safety, efficiency and staff wellbeing, to support the functioning of the unit in the role of runner.
- Facilitating communication with relatives using innovative methods such as Skype and Facetime.
- Communication should be prioritised during times of high demand. This may be in the form of ensuring interpreter services by using telehealth solutions, to provide patients and their families with information. Telehealth with iPads can be used for virtual visiting to connect patients with their families and clinicians, when visiting is limited.
- Vulnerable communities such as Aboriginal or Torres Strait Islanders must have liaison services provided.
- Support staff to manage enquiries from relatives, allowing clinical staff to continue to care for the critically ill patients at a time of maximal skill dilution.
- Support from equipment officers and biomedical departments will be crucial to ensure equipment is functional and available.
- Increased number of dedicated domestic services staff for cleaning of the intensive care units where there is a high concentration of COVID-19 positive patients to decrease the viral load.
- Develop food service systems to enable electronic or phone meal ordering to minimise food service contact, while enabling patient menu selection and ensuring optimal nutrition delivery.¹³
- The need for enhanced mortuary services.

Appendix 2: Fast-track Intensive care unit orientation program and 'just in time' training delivered at the time of COVID-19 surge response

Key points

- Orientation to the workplace and introduction to other staff
- Description of the pandemic health threat and the anticipated response
- Instruction on the required roles and responsibilities
- Identification of a mentor or buddy (other than the designated supervisor)
- Tuition in specific information management tasks and systems
- Coaching for other specific technical skills related to designated tasks
- Education on actual and perceived personal risk reduction
- Review of the relevant logistical considerations for workforce surge
- Ventilation safety
- Tubes and lines safety
- Basic life support and advanced life support (within scope) competency
- PPE (personal protective equipment) assessment and training as required
- Haemodynamic monitoring
- Fluid administration (within scope) competency
- Medication administration (within scope) competency
- Medical record documentation

Appendix 3: Intensive care suggested staff levels through demand escalation levels of COVID-19 pandemic

| | |
|----------------|--|
| Level 0 | Business as usual, minimal impact, prepare to surge workforce |
| | <ul style="list-style-type: none"> A standard workforce model is used with experienced intensive care staff as per the workforce standards and guidelines^{4,5} |
| Level 1 | Moderate compromise and impact on workforce |
| | <ul style="list-style-type: none"> Supplement standard workforce model with non-ICU critical care staff, (e.g. anaesthetics, emergency, operating theatres, recovery, coronary care units, nurses who have been part of an ICU refresher model) Where possible, maintain 1 FTE physiotherapist for 4 ICU beds and other allied health staffing at recommended levels^{11,12} |
| Level 2 | Severe compromise and impact on workforce |
| | <ul style="list-style-type: none"> The model will move to a multidisciplinary team-based model, which groups staff members into role or experience-based tasks. For example: intubation teams, proning and turning teams, transfer teams, medication teams, IV access teams, hygiene teams or 'expert senior' support teams, etc. It is important that senior nursing roles are available as supernumerary and work in teams to provide support, review nursing management and maintain safe standard. 1 x NM/NUM 24/7 across all unit/pods. Access to NP and/or CNC 24/7 across all unit/pods. 1 x 24/7 CNE per unit/pod and access to NE. 1 x 24/7 ACCESS nurse per unit/pod. 1 x 24/7 ICU RN team leader per unit/pod. 1 x experienced ICU RN to supervise 2 critical care RNs. Critical care RNs to supervise 2 x non-ICU nurses caring for ICU2 type patients. It is important to increase allied health staffing across all professions to accommodate increased demand and maintain multidisciplinary care, where possible. 1 x infection control coordinator across all units/pods. |
| Level 3 | Extreme compromise and overwhelming impact with local workforce exhausted |
| | <ul style="list-style-type: none"> Team-based model 1 x whole of hospital duty intensive care consultant with other medical specialists to support intensive care triage and decision making on resuscitation and goals of care. 1 x intensive care NUM or patient flow coordinator per 28 beds 1 x 24/7 ACCESS nurse per unit/pod 1 x 24/7 ICU RN team leader per unit/pod 1 x senior intensive care nurses per 8 beds 3-4 x anesthetic or refresher ICU nurses per 8 beds 4-5 generalist staff per 8 beds 1 x infection control coordinator across all units/pods |

Source: Adapted from NSW Ministry of Health *Demand Escalation Framework* 2016 and NSW Ministry of Health *Adaptive workforce models for adult intensive care units* 2021.^{9,10}

Glossary

| | |
|--------------------------------|--|
| ACCESS | Assistance, coordination, contingency, education, supervision and support |
| AHA | Allied health assistants |
| CCU | Coronary care unit |
| CMO | Career medical officer |
| CNC | Clinical nurse consultant |
| CNE | Clinical nurse educator |
| CNS | Clinical nurse specialist |
| COVID-19 | Coronavirus disease 2019 |
| Critical care staff | May not have worked in an ICU but have experience in either the emergency department, coronary care, anaesthetics, recovery, interventional suites or nurses who have been part of an ICU refresher model. |
| FTE | Full time equivalent |
| ICCOP | Intensive Care Community of Practice |
| ICU | Intensive care unit |
| ICU1 | Bed status requiring 1 nurse to 1 patient |
| ICU2 | Bed status requiring 1 nurse to 2 patient |
| ICU Staff | Staff who have training and experience in ICU |
| MO | Medical officer |
| NE | Nurse educator |
| NP | Nurse practitioner |
| Non critical care staff | Refers to staff outside of ICU or critical care areas or staff with very limited or current ICU experience. |
| Non ICU staff | Refers to staff outside of ICU or staff with very limited or current ICU experience. |
| NM | Nurse manager |
| NUM | Nurse unit manager |
| NUM1 | Nurse unit manager, level 1 |
| Pod | Refers to a group of 4-14 beds. For example, there may be 4 beds in a level 4 ICU or 5 pods of 8-14 beds in a level 6 ICU. |
| RMO | Resident medical officer |
| RN | Registered nurse |

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