

COVID-19 Guidelines

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Disclaimer: The Australian and New Zealand Intensive Care Society (ANZICS) COVID-19 Guidelines have been developed to assist intensive care clinicians to prepare and plan critical care services in the event of a pandemic, to provide a safe working environment for staff and patients and to give guidance on the identification and treatment of patients with COVID-19 infection. The recommendations have been put together by a team of specialist Intensive Care doctors and nurses, with representative input from the College of Intensive Care Medicine, the Australasian Society for Infectious Diseases, the Australian College of Critical Care Nurses, and the Australian Society of Anaesthetists. The authors have made considerable effort to ensure the information contained within the recommendations is correct at the time of publication. Information provided has been sourced from the best available evidence and expert opinion. Further iterations of these guidelines will be published as new information comes to hand. The Society accepts no responsibility for any inaccuracies, information perceived as misleading, or the success or failure of any of the recommendations detailed in the document. The Australian and New Zealand Intensive Care Society is not liable for the accuracy or completeness of the information in this document. The information in this document cannot replace professional advice.

Welcome to First Nations

The authors acknowledge the First Nations of Australia as the traditional custodians of this land and pay their respects to elders past, present and emerging. The authors acknowledge Māori as tāngata whenua and partners under Te Tiriti o Waitangi in New Zealand.



Foreword

It is with cautious optimism that we follow the evolving COVID-19 pandemic and the containment within Australia and New Zealand following the decisive actions by our respective governments. The information and images emanating from North America, the United Kingdom and Europe are gut wrenching and our thoughts are with those patients, families and our colleagues courageously working to save lives under such challenging circumstances.

Despite the encouraging control to date locally, we in the Australian and New Zealand critical care community, will not become complacent and will continue to prepare for the very real challenges that may well face us as we advance in the COVID-19 Pandemic. In this regard, it is a great pleasure to introduce the latest iteration of the ANZICS COVID-19 Guidelines. It is a remarkable achievement, that through the tireless efforts of our working group, led so effectively by the editorial group, that less than a month after the release of our first guidelines, an updated version has been generated.

Version 2 of the guidelines are uniquely contemporaneous, literally providing the most recent evidence and expert opinion. The guidelines will continue to provide a reliable and an easily accessible source of expert opinion and current best evidence to assist in managing the COVID-19 pandemic in Australia and New Zealand. The revision is the result of the dedicated work of over 50 contributors and collaboration with the College of Intensive Care Medicine and the Australian College of Critical Care Nurses.

The guidelines follow several major themes that provide information for the critical care practitioner in preparing and providing care for the COVID-19 pandemic. The 'Pandemic Planning' section now includes guidance on both rural ICU strategy and rapid response teams. While the 'Staff Safety and Sustainability' section considers the important issue of staff wellbeing. The 'Treatment' section will now provide the reader with a link to the **COVID-19 living guidelines** (severe to critical section): <https://covid19evidence.net.au/>. These guidelines have had significant involvement from ANZICS members in their development and are fully endorsed by ANZICS.

We have adopted a pragmatic approach to ensure that our critical care community has easy access to current, appropriate, reliable and regionally relevant information. We will continue to acknowledge that as we gain experience in dealing with this pandemic, it may be necessary to deliver further iterations of these guidelines. ANZICS will continue, in every possible way, to support our critical care community as we advance into this uncharted territory with the only certainty being the emotional and physical fatigue facing the critical care workforce. This is the time to stand together and serve our communities.

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Introduction

The COVID-19 viral pandemic represents an unprecedented challenge to intensive care services around the world. In Australia and New Zealand, we are fortunate to have world-class intensive care services, with a highly trained and professional workforce who are ready and able to serve their communities at this time. This document aims to provide a series of recommendations and suggestions to ensure continued high-quality clinical care in the setting of a pandemic. High-quality evidence to guide medical decision making is currently lacking in many areas. However, we have drawn on previous pandemic experience and contemporary infection control literature in the Intensive Care Unit (ICU). We have developed a 'living document', which will be revised in an iterative process that will incorporate local and international knowledge as this disease progresses through the community. The most up to date document and all previous iterations will be found on the ANZICS website www.anzics.com.au.

As of today (15th April 2020), Australian and New Zealand ICUs do not have a high burden of patients with suspected or proven COVID-19. The current major challenge centres around preparing our units and staff for the expected surge in caseload, which may be complicated by supply chain issues and workforce challenges. The ANZICS community strongly supports all robust public health measures aiming to reduce community transmission, hence 'flattening the pandemic curve' to prevent intensive care services becoming overwhelmed. This is supported by high-quality evidence and is essential to minimise load on limited ICU capacity for all patients, not just those with COVID-19; and to maintain the health, wellbeing, and sustainability of the intensive care workforce.

This document was originally arranged in three parts to provide guidance to critical care clinicians. The following sections remain:

1 **Planning for a Pandemic** – An Operational Guide **Page 6**

2 **Providing a Safe Working Environment** – Staff Protection and Sustainability **Page 17**

3 **The Identification and Treatment of COVID-19** is now found at covid19evidence.net.au

This section has been removed from Version 2 as ANZICS has partnered with the National COVID-19 clinical evidence taskforce. This taskforce has brought together the peak health professional bodies across Australia to undertake continuous evidence surveillance to identify and rapidly synthesise emerging research in order to provide national, evidence-based guidelines for the clinical care of people with COVID-19. These are living guidelines that will be updated with new research in real-time in order to give reliable, up to the minute advice to clinicians providing frontline care, including critical care physicians.

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1

Planning for a COVID-19 Pandemic

An Operational Guide for Intensive Care Units in Australia and New Zealand

General Considerations in ICU Pandemic Planning

The doctors, nurses, allied health professionals and researchers who comprise the ANZICS membership stand ready to help the Australian and New Zealand communities during the COVID-19 pandemic. Our members provide high quality, compassionate and professional care to the most vulnerable members of our communities every day and this commitment will not change.

ANZICS strongly supports State, National and International efforts to reduce the spread of pandemic illness through effective public health measures (i.e. social distancing). This approach is supported by high-quality evidence and significantly mitigates the impact on Intensive Care Unit (ICU) capacity, which is a finite resource. Such measures will have the greatest positive impact on the health and well-being of our communities.

As seen in previous disasters, the COVID-19 pandemic will further expose pre-existing inequities in chronic health outcomes and health service delivery. We recognise that the Aboriginal and Torres Strait Islanders of Australia and the Māori of Aotearoa New Zealand are over-represented in disadvantaged populations in ways that make them far more vulnerable to pandemic disease e.g. overcrowding. Indigenous communities in Australia and New Zealand have been disproportionately impacted by previous pandemics. We advocate for the best possible access to and provision of critical care support for these groups.

The most important resource in Australian and New Zealand ICUs is experienced Intensive Care staff, who are trained to provide high-quality care for critically ill patients. The delivery of this service must be supported by government policy and community behaviour.

We strongly recommend local ICU pandemic plans should be developed urgently by all healthcare organisations and that all plans should align with jurisdictional health department requirements.

Plans should adopt a phased and tiered response based on the impact of the pandemic on the capacity of the ICU to meet daily operational needs (See example and potential summary guide in Table 1).

Plans should include operational approaches to reduce routine ICU demand (Section 1), identify and increase physical ICU bed space capacity throughout the hospital (Section 2 and 3), and determine associated equipment and workforce requirements (Section 4).

A whole-of-system approach is recommended, involving entire organisations. Partnerships, such as between private and public hospitals, adult and paediatric ICUs, and through telehealth arrangements to support different level ICUs, should be considered to ensure just and equitable delivery of care for all critically ill patients.

Measures to Reduce ICU Demand

The following measures should be considered to reduce the demand for critical care services and should be enacted before demand exceeds capacity:

Deferment or Cancellation of Non-Urgent Elective Surgery

This will vary between sites and may be performed in a staged manner, with initial deferment of minor elective surgery and surgery requiring post-operative ICU/HDU care, escalating to deferment of all elective surgeries/procedures. We **recommend** that planning should involve ICU, surgery, anaesthesia and nursing services, with the establishment of an appropriate process for the deferment of surgery. Decisions to proceed with elective surgery should be made utilising a shared decision-making model involving the ICU.

Development of Cooperative Agreements with Other Health Service

We **recommend** that agreements be created which facilitate the transfer and care of appropriate patients and minimise unnecessary transfers.

Approaches should include:

- Health services with reduced activity, but no pandemic responsibilities (e.g. day-surgery centres), to take on elective minor surgery.
- The provision of telehealth support to sites which can deliver appropriate care to selected patients to reduce the need for transfer.
- Private hospitals to take on urgent elective and non-time critical emergency surgery.
- Opening of additional ICU capacity in sites outside the hospital (e.g. newly built but unfinished hospitals or previously decommissioned hospitals).
- Use of a centralised coordination and retrieval service which connects all ICUs within a region.

Reserving ICU Admission for Patients Requiring ICU-Specific Interventions

We **recommend** that patients who only require monitoring be managed in alternate locations. ICU admission should be prioritised to those who require specific ICU interventions such as mechanical ventilation. This may necessitate the following:

- Extended stays in the theatre recovery.
- Admission to areas capable of HDU level monitoring (e.g. CCU).
- Additional support/supervision for ward staff to manage patients of higher acuity.

'Non-ICU' Involvement in Rapid Response and Medical Emergency Teams

Approaches may include:

- MET call attendance and involvement by home teams.
- Delegation of MET leadership roles to the medical or anaesthetic services, with ICU providing a supervisory role.

Proactive Consideration of Treatment Goals

There should be early consideration of treatment goals to avoid ICU/HDU referrals or admissions in patients who are more appropriately managed on the ward. This may be facilitated by ensuring that all patients have documented goals-of-care or equivalent completed upon hospital admission.

Measures to Increase ICU Capacity (Infrastructure and Capacity)

The following measures should be considered to increase the ICU capacity:

Physical ICU Spaces (Infrastructure)

We **recommend** all clinical areas with the physical infrastructure suitable to care for critically ill patients should be identified. These include (but are not limited to):

- Complex Care Units or other High Dependency Units,
- Perioperative monitoring/recovery areas,
- Coronary care units,
- Uncommissioned or unstaffed ICU bays,
- Decommissioned critical care areas (e.g. 'old' ICUs).

The following criteria are the College of Intensive Care Medicine (CICM) requirements for a high dependency area and may be considered in repurposing an area for the care of critically ill patients:

- Two oxygen outlets,
- One air outlet,
- Two suction outlets,
- Twelve mains electricity outlets,
- Appropriate physiological monitoring.

Hospitals should work with ICUs to develop processes enabling the expeditious repurposing of these areas when needed and establish workforce models that allow critical care staffing of potentially physical disparate locations. The ability to meet the above standards may be limited in the advanced phases of a pandemic, necessitating adjustments based on the clinical needs of the patients and available resources.

Equipment

We **recommend** ICUs should quantify their current stock of equipment (e.g. ventilators, renal replacement therapy, intravenous infusion pumps) including consumables and disposables and assess potential requirements with increasing ICU load. ICUs should also identify available logistic channels for supply, storage, and procurement of additional equipment.

This may include:

- Equipment from operating theatres / perioperative environments,
- Older but functional equipment not presently in use (e.g. old ventilators which can be operationalised by biomedical departments),
- Manufacturers and suppliers,
- Hospital, state or national emergency stockpiles,
- Jurisdictional procurement agencies.

ICU Discharge Facilitation

We **recommend** processes to expedite discharge from ICU should be implemented. These may include additional support for ward staff to manage patients of higher acuity, or rapid decanting of patients to areas with greater clinical oversight (e.g. neurosurgical HDUs).

Coordinated processes need to be established with all stakeholders to ensure ward staff are appropriately supported. Organisation-wide initiatives to optimise patient flow must be adopted, in conjunction with ICU-level efforts.

Measures to Increase ICU Capacity (Workforce and Staffing)

General Principles

Due to potential workforce shortages, it is likely that non-critical care trained medical, nursing and allied health staff will have to assist in the care of intensive care patients. This should occur with the relevant managerial authorisations, and under the supervision of critical care trained staff, utilising a team-based model of care.

Community initiatives should be implemented to support families of health care workers so that they can continue in the workforce. Initiatives to inform the public of the need to support health care workers to remain available to attend work are recommended.

ICUs and hospitals should prioritise meeting the minimum standards for staffing as per the College of Intensive Care Medicine guidelines. However, available resources may change depending on the demand placed upon a health service.

We **recommend** workforce planning should include consideration for pandemic specific requirements, such as additional workload from donning and doffing personal protective equipment (PPE), the need for additional rest days, and the need to allocate staff to key non-clinical duties such as enforcing infection control procedures.

We **recommend** the use of all available resources to optimise workforce capacity, by identifying and potentially redeploying nursing, medical, allied health and other staff (see below).

Nursing

We **recommend** all nursing staff capable of caring for critically ill patients should be urgently identified. These potentially include:

- Nursing staff with formal critical care training or experience, but not currently working in ICU (e.g. redeployed, in administrative or non-clinical roles, recently left workforce),
- Paediatric ICU nursing staff,
- Nursing staff with experience of critically ill patients in other areas of the hospital (e.g. coronary care nurses),
- Nursing staff in departments with reduced clinical activity who are familiar with a critical care environment (e.g. anaesthetic nurses).

We **recommend** a formal rapid orientation and training program is provided, and these nurses should work under the supervision of an experienced ICU nurse.

We **recommend** that all current casual or part-time ICU nursing staff be encouraged to increase hours and that examination of roster patterns occur to maximise workforce availability whilst maintaining staff well-being.

We **recommend** that changes to models of care be explored with increased ancillary and allied health staff to support ICU nurses (e.g. pharmacists assisting with checking and drawing up of medications).

We **recommend**, in addition, nurses without critical care experience may be suitably trained and are redeployed to assist with the following:

- Supervision of staff and visitors donning/doffing of PPE,
- Routine nursing care - turning, washing,
- Re-supply, storage and inventory of equipment,
- Medication delivery and checking,
- Documentation,
- Maintaining bed management and patient flow information,
- Supporting essential pandemic research projects.

Medical

We **recommend** additional medical staffing for the ICU should be sourced by considering:

- Senior medical staff with critical care training, but not currently working in ICU,
- Paediatric ICU medical staff,
- Anaesthetic staff (due to a reduction in surgical activity),
- Junior medical staff with critical care experience,
- Career medical officers with critical care experience.

We **recommend** medical staff should be deployed in a manner that is aligned with their current scope of practice.

- Anaesthetic staff may be deployed as hospital 'resuscitators', making up intubation teams, to lead rapid response teams or to assist in intensive care ideally under the supervision of intensive care specialists.
- Medical staff with critical care training may be deployed to manage HDU patients in repurposed clinical areas physically separate from the ICU, under the supervision of more experienced ICU staff.
- Junior medical staff with little to no ICU training may assist with documentation 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 Intensivist role), this should be at their discretion and with organisational reassurance regarding indemnity coverage as well as adequate supervision.

Allied Health

Physiotherapists with previous critical care experience should be identified by hospitals and facilitated to return to ICU.

Pharmacists with critical care experience should be identified and mobilised to assist the core ICU pharmacy staff.

Social workers may need to be redeployed to assist with families isolated from their critically ill loved ones.

Suitable volunteers with appropriate training and supervision in PPE may also fill appropriate support roles (e.g. assisting at ICU reception, directing families).

Additional Considerations

To ensure a sustainable workforce, we **recommend** the following:

- Streamlining of administrative processes (e.g. electronic health record training) which limit staffing flexibility and onboarding of new staff members.
- Accommodation for staff unable to return home.
- Staff reassurance regarding indemnity coverage for operating beyond their normal scope of practice (in phase 3 or 4 scenario).
- Debriefing and psychological support; staff morale may be adversely affected due to the increased workload, anxiety over personal safety and the health of family members (refer to Staff Protection and Sustainability).
- The cancellation of pre-arranged annual leave during a pandemic should only be considered if absolutely necessary. Maintaining staff morale is imperative.
- Healthcare practitioner credentialing across multiple sites.

Communication Issues

Communication is crucial to the successful delivery of safe and effective clinical services.

Information management plans should be established for effective and consistent dissemination of information to relevant stakeholders. These should include daily situation reports and regular updates on the unit, organisational, regional and state responses.

A variety of information dissemination methods should be considered to account for physical distancing needed for infection control purposes. These may involve video and conferencing, electronic communication and social media platforms.

Effective lines of communication must be established to ensure that stakeholders are apprised of evolving clinical scenarios and changes in clinical practice guidelines and processes. ICU load and capacity must be measured in real-time and communicated to relevant in-hospital administrative and jurisdictional authorities. It is vital to track both patient outcomes and staff well-being. Specific stakeholders and considerations may include:

- Organisational chains of command,
- State and national health authorities,
- Clinical quality registries (e.g. ANZICS CORE),
- Inter-organisation communications (e.g. for transfers),
- Inter-departmental communications,
- Professional organisations,
- Patients and families,
- Staff.

Table 1: Potential Strategies and Examples for a Phased, Tiered ICU Pandemic Plan

Phase	Impact	Strategies to consider
1	<p>Minimal impact on daily operations.</p> <p>Likely to occur when up to 10% of beds are occupied by patients with pandemic illness.</p>	<p>Review and test pandemic response plans, including:</p> <ul style="list-style-type: none"> • Infrastructure and equipment, • Workforce training, planning and support, • Communication plans, • Infection control, • Diagnostics and treatment protocol, • Transport and transfer policies. <p>Review RRT models of care, including:</p> <ul style="list-style-type: none"> • Modified review criteria for RRT activation, • Alternative staffing models for RRT, • Ensure ‘trigger points’ to move to higher level response have been agreed in advance, • Guidelines for non-ICU teams to manage and refer deteriorating patients to ICU, • Therapeutic escalation pathways for ward-based patients. <p>Guidelines for safe transport and controlled intubation in designated area.</p>
2	<p>Moderate impact on daily operations, with ICU at or near maximum capacity.</p> <p>ICU is still able to meet demand for critical care and ventilated patients.</p> <p>Likely to occur when up to 25% beds are occupied by patients with pandemic illness.</p>	<p>Measures to reduce demand and increase physical capacity.</p> <p>Repurpose alternative clinical areas for non-ventilated critical care patients.</p> <p>Address workforce and staffing needs.</p> <p>Defer or divert non-emergent surgery to private hospitals or other services.</p> <p>Review and reduce ICU involvement in non-ICU services (e.g. RRT response, TPN service).</p>
3	<p>Severe impact on daily operations, with overall demand for critical care exceeding ICU capacity.</p> <p>ICU at or near maximum capacity for ventilated patients.</p> <p>Likely to occur when up to 50% beds are occupied by patients with pandemic illness.</p>	<p>Repurpose alternate clinical areas for ventilated patients.</p> <p>Reassess requirements and thresholds for ICU admission and discharge.</p> <p>Consider transfer of patients to other facilities or identify additional resources to be transferred into the hospital to facilitate on-going ICU care.</p>
4	<p>Overwhelming impact on daily operations, with demand for critical care services significantly exceeding organisation-wide capacity.</p> <p>ICU no longer able to meet demand for ventilated patients.</p>	<p>Deliver care of critically ill patients in areas without pre-existing critical care infrastructure.</p> <p>Ongoing liaison with hospital and state health services.</p>

Pandemic planning in remote, rural and regional areas

The remote, rural and regional communities of Australia and New Zealand (ANZ) are a mosaic of diverse and potentially vulnerable populations being served by resident and transient members of a variably skilled health workforce. The different levels of critical care provided in these areas are described in the supplementary appendix 1.

ANZICS strongly **advocates** for geographical equity. Patients living in remote, rural or regional areas of Australia or New Zealand should not be disadvantaged during the COVID-19 pandemic.

Remote, rural and regional health services will face significant challenges in the protracted pandemic response to COVID-19. These include the availability of sufficient resources, in particular equipment and workforce, and timely support for the management of critically ill patients.

We **advocate** for a centralised process to mobilise critical care trained staff to areas of need during the crisis phase of the pandemic.

Anticipated workforce shortages should be identified early and addressed in a proactive manner. Clear lines of communication for support and escalation should be established. This response should occur within and between health services and jurisdictions.

We **recommend** that workforce expansion take place as per **ANZICS Planning for a COVID-19 Pandemic Guideline**, and that remote, rural and regional areas also:

- Plan for staff shortages, and do not rely on short-term fly-in-fly-out (FIFO) services, or the arrival of clinicians who hold fractional appointments across multiple facilities.
- Identify staff with critical care and airway skills to provide 24/7 cover of designated critical care areas.
- Expand the use of telehealth and virtual care services to provide additional support to doctors, nurses and allied health professionals.
- Explore on-call provision from alternative sites to support local intensivists who may have a greater on-call burden from having a more inexperienced junior medical staff pool.
- Identify, facilitate and provide practical support for locum doctors and agency nurses who wish to remain at a regional/rural health centre for a longer period.
- Implement reasonable infection control precautions when FIFOs and rotating doctors/ nurses move from “hot zones” where community or hospital transmission has been identified, into “cold zones” where this has not yet occurred.
- Allow for increased research and data collection support to give patients access to clinical trials and manage reporting requirements for the increased patient load.

In facilitating the care of critically ill patients in remote, rural and regional health services, we **recommend**:

- An emphasis on early, proactive community and hospital-based goals of care discussions, as these may influence decisions to treat locally or seek critical care retrieval.
- Establishing clear lines of communication for clinicians seeking advice or retrieval.
- Timely interhospital transfer for emergency interventions.
- Hospitals support data collection and reporting of daily COVID-19 ICU caseload into the relevant critical care and pandemic surveillance systems.

In planning to expand health service capacity, we **recommend** that:

- Hospitals nominate a local inter-professional COVID-19 critical care leadership group with authority for pandemic critical care portfolios and their delegation.
- Resident intensivists in regional ICUs allocate time to proactively assist local acute wards and smaller hospitals in their planning and training for pandemic critical care.
- Hospitals take a regular inventory of ventilators, ICU equipment, medications, PPE, available clinical areas, and diagnostic services (including COVID-19 testing).

We **recommend** that small rural hospitals provide invasive ventilation:

- In accordance with the principles of the ANZICS COVID-19 guidelines.
- With local and remotely supported education for rapid workforce upskilling.

In health services unable to provide invasive ventilation, we **recommend** that:

- Hospitals make plans to provide HFNO and NIV in accordance with ANZICS COVID-19 guidelines.
- Early retrieval takes place of appropriate critical care patients from facilities unable to provide short term respiratory support.
- Local staff are assisted in the management of patients who are not likely to benefit from retrieval to an ICU.

Rapid Response, Medical Emergency and Code Blue Teams

ANZICS **supports** the recommendations of the International Society for Rapid Response Systems. Modifications to rapid response team (RRT) models of care should align with these guidelines whilst being individualised to the needs and resources of each jurisdiction.

In order to minimise the risk of healthcare staff infection, We **recommend** that:

- Health services review Rapid Response Team (RRT) models of care for ward patients with COVID-19 infection, with consideration given towards the need for enhanced infection control measures.
- All RRT members receive training in donning and doffing of PPE, and that PPE for airborne precautions is readily available to RRT members for relevant patient interactions.
- During a MET call or code blue, entry to a patient's room should be limited to vital members of staff.
- A therapeutic escalation plan be developed for patients with COVID-19, with particular consideration to appropriate infection control measures for various forms of aerosol-generating procedures.
- Where possible, wards should identify appropriate locations for delivery of high-flow nasal oxygen, non-invasive ventilation, and endotracheal intubation.
- If aerosol-generating procedures (AGP) are required, these should ideally be performed in a negative pressure room, however, this needs to be balanced with the safety of transporting the patient.

In order to reduce the demands on ICU staff and facilitate optimal patient management and disposition, we **recommend** that:

- All patients have their goals of care clarified on hospital admission, and that this be communicated clearly to the RRT members on arrival.
- If staffing permits, the ICU will maintain a senior decision-maker for the assessment of patients outside the ICU.
- Alternative non-ICU based MET team staffing models should be considered as part of a phase 3 or 4 pandemic response (see ANZICS guideline Planning for a Pandemic “Measures to reduce ICU demand”). These models may involve RRT staffing by non-ICU staff, but must include appropriate training of members.
- Clinical criteria for MET team activation in COVID-19 patients should pay particular attention to escalating oxygen requirements and respiratory rate, both of which have been associated with adverse outcomes.
- Hospitals identify COVID-19 patients at risk of clinical deterioration and develop a strategy for information sharing with critical care services. This will enhance the clinical visibility of the ward burden of COVID-19 patients and anticipated admissions to ICU. This may also include unique RRT alerts for COVID-19 patients to enhance staff preparedness.

Patient Transport

The following is for transport of patients with COVID-19. If COVID-19 is widespread in the community, surgical masks should be considered as part of healthcare worker protection for ALL patients irrespective of COVID-19 status.

In principle, the movement of patients with COVID-19 should be limited with all efforts made to ensure the patient is initially admitted to the appropriate location.

We **recommend** the following for patient transport:

- All staff must wear airborne PPE.
- Once a patient is admitted to the ICU, transport outside of the ICU should be limited. If transport is required, then coordination at a senior level is mandatory to ensure safety standards are maintained.
- Hallways must be cleared where possible and only essential staff should accompany the patient. Staff not involved in the transfer should not come within 2 metres of the patient.
- Intubated patients should have closed circuits with a viral filter in situ.

In patients requiring intrahospital transport from the ED to the ICU we **recommend**:

- That the shortest and safest transport route be identified.
- Clear agreement on which speciality/ team will be responsible for the intrahospital transport of critically ill patients from ED to ICU.
- That ED staff involved in any prolonged or resuscitative care should ideally not transfer the patient. If they do so they should don fresh PPE.



Aeromedical transports

As with other transports the risk benefit of the transport must be carefully considered with the additional risks of COVID-19 contamination. All agencies involved with the transport as well as the accepting units shall be made aware of the potential/proven infection.

We **recommend** that all agencies responsible for the transport of critically ill patients develop a clear plan for the safe transport of COVID-19 patients.

Facilitating the Emergency Department Management of Critically Ill Patients

ANZICS **recommends** that ICUs co-ordinate with Emergency Departments to support the management and disposition of critically ill patients.

Inter-departmental plans should include the early referral to ICU of patients (both COVID-19 and non-COVID-19) requiring physiological support as a means to optimise patient flow and improve emergency department capacity.

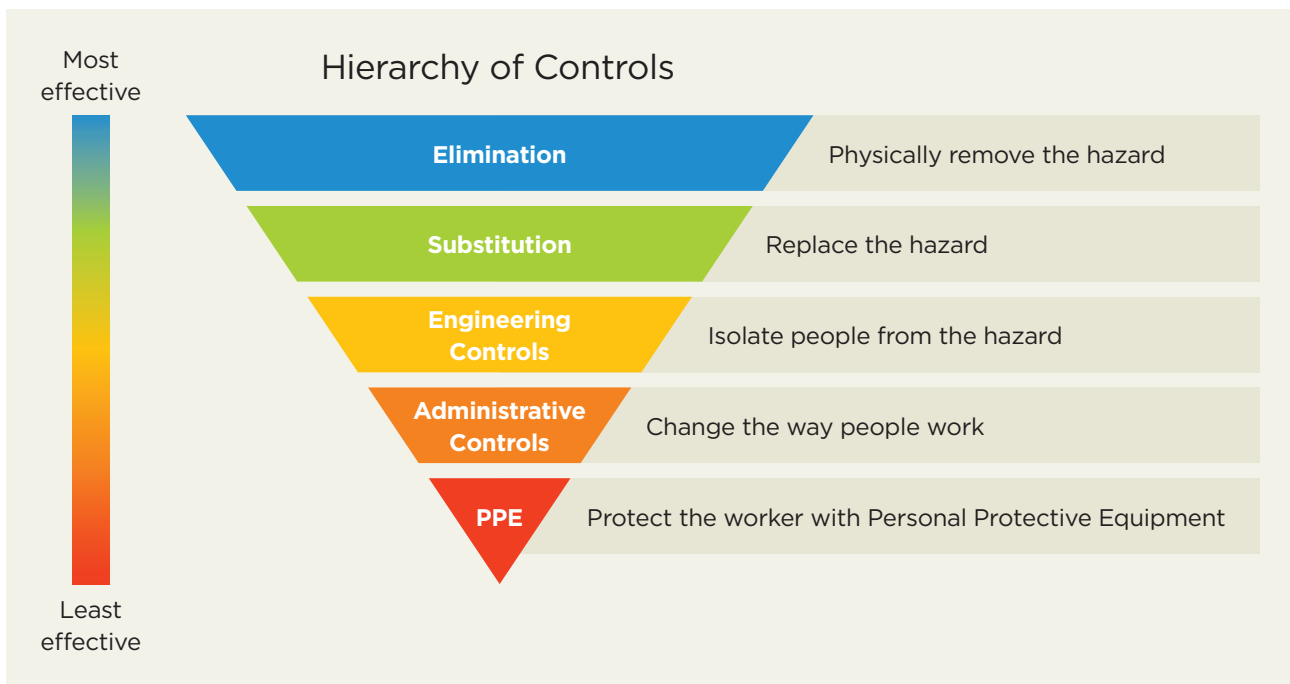
We support the Australian College of Emergency Medicine COVID-19 guidelines and **recommend** they be considered in the development of local policies.

2

Providing a Safe Working Environment Staff Protection and Sustainability

General Principles of Infection Control

Controlling exposure to COVID-19 is the fundamental method of protecting health care workers. This can be represented by a hierarchy of controls. Engineering controls are designed to remove the hazard at the source before it comes in contact with the worker. Administrative controls and Personal Protection Equipment (PPE) are frequently used with existing processes where hazards are not particularly well controlled. Safety of staff is paramount to protect the individual health care worker and to ensure a viable workforce for the duration of the pandemic. In Australia, the national infection control standards are the national standard AS/NZS 1715: 2009 and National Health and Medical Research Council, Australian Guidelines for the Prevention and Control of Infection in Healthcare.



In Australia, the national infection control standards are the national standard AS/NZS 1715: 2009 and National Health and Medical Research Council, Australian Guidelines for the Prevention and Control of Infection in Healthcare (NHMRC, 2019). There are extensive national and jurisdictional COVID-19 guidelines and resources. (Australian Government Department of Health, 2020)

Engineering Controls

Engineering Controls are designed to remove the hazard at the source before it comes in contact with the worker. Patients are placed in higher-order engineering control areas before using lower-order areas. Patient care areas include:

Class N rooms are negative pressure isolation rooms used to isolate patients capable of transmitting airborne infection. A negative pressure room can have a functional anteroom for donning and doffing PPE. Airborne PPE precautions are still required. Doffing is performed in the anteroom. There are a limited number of negative pressure bays and pods and/or rooms across Australia and New Zealand.

Class S rooms are standard rooms which can be used for isolating patients capable of transmitting infection by droplet or contact routes. Class S rooms have no negative pressure capability and therefore no engineering controls. Airborne droplets can remain in the air for up to three hours post procedure.

Open Cohort Areas have no negative pressure and no engineering controls.

We **recommend** COVID-19 patients ideally be treated in a Class N negative pressure single room. If Class N rooms are not available then the preference should be Class S single rooms (with appropriate engineering considerations) with clear areas demarcated for donning and doffing of PPE.

Once all Class N and Class S single rooms are exhausted, patients will need to be cohorted in areas that are physically separate to areas containing non-COVID-19 patients. In an open ICU cohorted area with one or more COVID-19 patients, the whole area is **recommended** to require airborne PPE precautions.

Ventilation systems considerations

We **recommend** that if aerosol-generating procedures (AGP) are performed in Class S rooms, air conditioning should exhaust to an external point and air should not be recycled.

Temporary negative pressure air rooms can be set up with the use of portable negative air units fitted with a high efficiency particulate air (HEPA) filter. We **recommend** engineering support can help advise hospitals on whether this is logistically possible.

Administrative Controls

Administrative controls change the way health care workers work to reduce the risk of COVID-19 infection. These workflows include ways to minimise viral exposure and reduce the risk of HCW and patient infection.

Minimise HCW contact viral exposure with Suspected and Confirmed COVID-19 patients

We **recommend** that all patients are assessed for potential COVID-19 infection. Patient screening should be in line with the latest national recommendations for COVID-19 case definition and should include determination of clinical history, contact and travel history. Patients deemed at risk should be isolated and tested for COVID-19.

We **recommend** that workflows be established that minimise the number of staff and minimise the duration and frequency of entry into a COVID-19 room or area. This may involve the use of bundling activities and the use of video monitoring.

We **recommend** in ICU, that all HCWs not directly involved in patient care (e.g., dietary, administrative staff, students) where possible be excluded. We **recommend** transferring care of patients in the intensive care unit to an admitting intensive care specialist to limit the need for other medical team's attendance within the ICU. We also **recommend** that other medical teams use teleconferencing preferentially and only visit intensive care if absolutely necessary, and with the absolute minimum of staff.

We **consider** that with appropriate and safe PPE usage staff can be rostered between clean and COVID-19 teams. If staffing allows, a dedicated roster to segregate "clean" and isolation teams, and to provide for stand-bys should be explored.

Reduce HCW cross-infection with COVID-19

To reduce cross infection we **recommend** cancelling face-to-face meetings as much as possible. For meetings with operational, clinical or education value we recommend that secure video-conferencing applications are provided and utilised.

As the incidence of COVID-19 increases, there is a risk of a HCW becoming infected while caring for a patient with unrecognized COVID-19 or having contact with an asymptomatic or minimally symptomatic HCW with COVID-19. We **recommend** checking and reporting staff temperatures at the start of each shift. We **recommend** a staff log for COVID-19 room or area entry be maintained to ensure contact tracing controls can be easily established if required

We **recommend** rest and work areas be compliant with social distancing guidelines. In non COVID-19 areas within the intensive care (e.g. clinical areas with no identified COVID-19 patients, simulation centres) where social distancing is difficult to achieve, we **recommend** that staff wear surgical masks. In rest areas where compliance with social distancing is not possible we **recommend** adjusting the physical environment to ensure social distancing.

Avoid COVID-19 HCW infection from the environment

To avoid environmental cross-contamination the following is **recommended** to minimise the risk of contamination of staff via equipment:

- Avoid sharing ICU equipment. Preferentially use only single-use equipment.
- Minimise personal effects taken to the workplace.
- Any personal devices taken into a COVID-19 area are subject to infection control cleaning as per local guidelines.
- Stethoscope use should be minimised.

We **recommend** that:

- Clean scrubs available to change into before each shift.
- Access to change areas and showering facilities.

We **recommend** cleaning of clinical and non-clinical areas complies with national and jurisdictional standards for COVID-19. We **recommend** that staff providing cleaning and ancillary services are provided with appropriate training and supervision in PPE.

Robust visitor screening and management

Given the stress on families with a loved one in intensive care, processes around patient visits must be communicated clearly and compassionately to visitors with an emphasis on the protection of patients, families and staff. All visitors to ICU **must** be screened for potential COVID-19 infection. Criteria should be based on national recommendations and include assessment of clinical history, contact and travel history. At a minimum, visitors with a temperature or respiratory symptoms should not be allowed to attend a patient.

We **recommend** hospitals need to maintain a hospital visitor log to allow for contact tracing and activity mapping of confirmed cases. Communication to families and visitors should include posting visual alerts (e.g. posters) at the entrance and in strategic places (e.g. waiting areas, elevators) advising visitors not to enter the facility when ill.

We **recommend** visitors should be limited as per local guidelines but ideally to no more than two and immediate family for all ICU patients. If visitors are entering COVID-19 areas then we recommend they wear appropriate PPE and observe airborne precautions. As the pandemic progresses it may be appropriate to exclude all visitors to limit the usage of critical PPE and decrease the risk of PPE breach cross-infection. We **recommend** that visitors should not be present during any patient-related procedures.

Personal Protection Equipment (PPE)

Administrative control considerations related to PPE

In ICU there is an increased risk of dispersion of aerosolised virus into the healthcare environment due to the nature of critical illness, higher viral load and the performance of aerosol-generating procedures. Contact and airborne PPE precautions **must** be used to care for all COVID-19 patients in intensive care. An open cohorted COVID-19 intensive care is an aerosol-generating risk area and we would **recommend** airborne PPE precautions. We also **recommend** airborne PPE precautions in any non-ICU room or area where aerosol-generating procedures (AGP) are performed.

We **highly recommend** against the use of improvised, non-standard PPE, as poorly standardised PPE potentially poses a risk to the user.

We **recommend** that all hospitals should keep a record and report staff training in PPE compliance and competency; only staff who have been trained in PPE usage should care for patients with COVID-19. We **recommend** that there is a system in place to ensure compliance with changes in PPE recommendations.

We also **recommend** minimising aerosol generating procedures (AGP). If they must be performed, then they should be completed in a negative pressure room (Class N room). If this is not available, then a single room (Class S) should be used. We **recommend** airborne PPE precautions for HCW's in proximity to AGP. Aerosol generating procedures (AGP) include:

- Intubation,
- Extubation,
- Bronchoscopy,
- High flow nasal oxygen use,
- Nebulised therapies,
- Non-invasive ventilation (particularly with a poorly fitting mask),
- Procedures on screaming children,
- Tracheostomy,
- CPR prior to intubation.

Powered Air Purifying Respirators (PAPR) are above the recommended standard for staff protection against COVID-19. However, in units where their use is already in place and appropriate training is available, they may be considered for AGP such as semi-elective intubations or prolonged continuous care of non-intubated patients. One benefit of PAPR is they do not necessarily rely on a proper seal, thus for those conducting AGP procedures the risks associated with ill-fitting N95 masks are reduced. Although expensive, some can be disinfected and reused. Furthermore, the use of PAPR helmets may free up supplies of face shields and disposable N95 masks. Donning and doffing of these devices may be complex, and the risk of viral dispersal during the doffing process must be weighed against any benefit of the device.

Training in PPE

We **recommend** that all intensive care personnel (medical, nursing, allied health, cleaning and ward assistants) receive training in infection control and personal protection equipment. In order for an N95 mask to offer the desired protection, it is important that there is a correct facial fit. The two distinct procedures used to achieve this are referred to as the 'fit test' and the 'fit check'.

We **recommend** that fit checking for an appropriate mask seal be performed every time a HCW applies a new N95 mask. The variation and supply of N95 mask types will make any recommendation on fit testing difficult to implement from a practical perspective during the COVID-19 pandemic. We **recommend** following jurisdictional advice regarding **fit testing** of N95 masks.

We **recommend** the use of interdisciplinary small group simulation to practice and improve COVID-19 clinical processes and staff training in PPE.

Application of PPE

We **highly recommend** that when a unit is caring for a confirmed or suspected COVID-19 patient that all donning and doffing is supervised by an additional appropriately trained staff member. We **highly recommend** that each shift has a dedicated PPE superuser to supervise all staff in training and application of PPE.

Specific recommendations for airborne precautions should follow national infection control recommendations including fit checked N95 mask, goggles, impervious gown and gloves. In addition, the following can be **considered**:

- Hair cover for AGP,
- Shoes that are impermeable to liquids.

Recurrent use of shoe covers is **not recommended** as repeated removal is likely to increase the risk of staff contamination.

Maintaining the supply of PPE

Any strategy to successfully maintain the supply of PPE during the COVID-19 pandemic needs an understanding of current PPE inventory, current and future supply and rational and appropriate use.

Current PPE inventory

Uncertainty in PPE inventory and supply causes anxiety in the frontline workforce. We **recommend** a national and jurisdictional approach which is transparent. We **recommend** the establishment of a clear PPE governance structure to include transparency on current inventory and supply, an escalation process in the case of critical PPE shortages and decision-making pathways which are responsive to local demand with communication to and from frontline staff.

Coordinate PPE supply chain management mechanisms

Due to increasing international demand, sourcing a reliable supply requires the current strategies of re-establishing previous supply chains, developing new supply chains and increasing local production. We **suggest** that there be public or private buybacks or appeals from other sources such as construction, manufacturing, and veterinary surgery.

Rational and appropriate use of PPE

The same measures to minimise overall staff exposure to COVID-19 also reduce PPE demand. We **recommend** that all facilities implement the previously mentioned measures to minimise overall staff exposure which also **reduce PPE demand** including:

- Excluding HCW not essential for patient care from entering their care area.
- Transferring care to an admitting intensive care specialist to minimise staff entry in the COVID-19 intensive care unit.
- Reducing face-to-face HCW encounters with patients.
- Excluding visitors to patients with confirmed or suspected COVID-1.
- Cohorting patients.
- Maximizing the use of telemedicine,
- Reducing the number of patients going to the hospital or outpatient settings.

We **recommend** prioritisation and rapid testing of intensive care patients with suspected COVID-19 to minimise the use of unnecessary PPE.

We would also **recommend** that the PPE conservation strategies be implemented as listed in table 2. We would **not recommend any local facility policies** to pre-emptively preserve PPE that reduce the occupational health and safety of health care workers.

Table 2: Supported conservation strategies. Adapted from (Centers for Disease Control and Prevention, 2020; Livingston et al., 2020; World Health Organization, 2020)

Strategy	Comments and Suggestions
Monitor and control usage at the bedside	<p>Allocate PPE to HCW at start of shift.</p> <p>Replace PPE in an accountable and easily available manner in the event of contamination.</p> <p>All PPE to be stored in a secure and monitored location.</p> <p>Daily audits and reporting on stock levels.</p>
Reduce patient contact	<p>'Bundling' care interventions on all COVID-19 patients, this can include medication administration, pressure area care, suctioning and other such procedures.</p> <p>Utilise mobile and out-of-room monitoring and device controls, including infusion pumps with extension tubing and some ventilator consoles if feasible.</p> <p>Extended intravenous lines.</p>
Reduce student teaching	<p>No student patient contact unless on a dedicated roster.</p>
Reduce Non-essential HCW to patient contact	<p>Only necessary and minimal HCW to enter the patient area/room, such as one medical staff for patient examination if no other source of information.</p>
Appropriate allocation of PPE	<p>Use of airborne grade PPE for AGP and aerosol generating risk areas.</p> <p>Surgical masks can be used for other care delivery, as per local and national guideline recommendations.</p>
Reduce non-essential services	<p>Cancel elective and ambulatory procedures.</p> <p>Reduce questionable contact and isolation precautions.</p>
Stratify use by patient risk	<p>Cohort patients and reduce PPE use for those at low risk (ideally requires testing to accurately stratify low and high risk). This is particularly important for the emergency department presentations at point of admission.</p>
Cohorting COVID-19 patients	<p>HCW to use the same PPE between patients without the necessity of donning and doffing. Double glove and change outer glove between patients.</p>

Strategy	Comments and Suggestions
Reusable PPE	<p>PAPR masks are a good strategy for reusable equipment.</p> <p>Reusable elastomeric respirators (have exchangeable filter cartridges) that are able to be appropriately cleaned and disinfected between users. They are likely to create a better and more reliable facial seal than disposable N95 masks.</p> <p>Large face pieces may interfere with other PPE items such as face shields.</p>
Reduce PPE use	<p>Masks and goggles to be used for extended time, placing it on at the beginning of the shift and removed and disposed of for breaks or when contaminated. N95 masks can be used for up to four hours without removal, unless soiled or contaminated. Wearing masks for longer than this can lead to considerable discomfort.</p> <p>Mask seal checks should be performed prior to each entry into the patient space.</p>
Reusable goggle & face shield PPE use	<p>Use goggles or face shields that are able to be appropriately cleaned and disinfected between users.</p>

We do not recommend

- Using face mask PPE that has expired beyond its shelf-life.
- Continuous use in consecutive patients of N95 masks with storage in a 'Ziplock' bag for next use.
- Use of repurposed equipment such as:
 - Sewn fabric masks and gowns, home HVAC filter masks,
 - Prefabricated masks such as snorkel and scuba, welder's,
 - Eye and face shields: sports eye protectors, motorcycle helmets with visors,
 - Gowns: plastic ponchos or poly bags, slippery sams.

Gowns, gloves and N95 masks are designed for single use. There is significant global interest in strategies to reuse N95 masks after sterilisation. Currently, due to a lack of evidence, these strategies are **not recommended**.

Metrics for Staff Safety and Sustainability - PPE

PPE Metrics are part of clear communication directly from the hospital, the intensive care and the frontline staff. We **recommend** that intensive care units document their daily usage of (1) N95/P2, (2) surgical face masks, (3) long sleeve impermeable gowns, and (4) face visor/goggles. From this data intensive care PPE burn rate can be calculated. We also **recommend** that each intensive care unit document and report daily PPE on three levels - (1) Use of nonstandard and improvised PPE, (2) Use of standard PPE but with immediate supply concerns and (3) Use of standard PPE and no supply concerns.

We **recommend** hospitals transparently document and report on daily stock levels of N95/P2 face masks, surgical face masks, long sleeve impermeable gowns, and face visor/goggles. We **recommend** that hospitals should, on a daily basis, estimate the number of days of PPE supply that is available for current patient load, aiming to maintain a supply of 3 to 7 days. We **recommend** that if a hospital has a critically low PPE supply anticipated to last less than 2 days, that a jurisdictionally defined alert state be activated, including immediate escalation to the hospital Chief Executive Officer and the relevant State Coordination body. Remote, rural and regional centres will need to factor in extra days for a resupply, as compared to a metropolitan centre.

Special situations for staff safety

Airway Management in COVID-19 patients

We are aware multiple comprehensive guidelines are under development for airway management in COVID-19 patients and local guidelines should also be considered if appropriate. We **recommend** the following principles for intubation of a proven or suspected patient with COVID-19 to minimise HCW infection:

- Intubation should preferentially be performed in a negative pressure room (Class N) or if not available then a single room should be used (Class S).
- We **recommend** airborne PPE precautions for all staff in attendance including:
 - Fit checked N95 mask,
 - Goggles or face shield,
 - Impervious gown,
 - Gloves.

- The procedure should be performed by the most qualified available staff with the minimum number of healthcare personnel present as are required to undertake a safe intubation.
- Video laryngoscopes should be used preferentially.
- In order to minimise aerosol generation staff should consider:
 - Minimising the need for bag mask ventilation,
 - Use of a viral filter on bag mask circuit,
 - Optimising pre-oxygenation to reduce the need for rescue interventions,
 - Post intubation, provision of positive pressure ventilation (either by bagging circuit or ventilator) be initiated only after confirming that the endotracheal tube cuff is inflated and after ensuring that an appropriate filter and waveform capnography device is in place.

Cardiopulmonary resuscitation in COVID-19 patients

Cardiopulmonary resuscitation is an aerosol generating procedure. We **recommend** that:

- Hospitals review their approach to cardiopulmonary resuscitation (CPR) on the ward, for patients with COVID-19, as well as the general ward population during periods of extensive community transmission
- Identify as early as possible any patients with a COVID-19 like illness, who are at risk of acute deterioration or cardiac arrest. Take appropriate steps to prevent cardiac arrest and avoid unprotected CPR.
- Must have clear goals of care (including NFR / intubation status) documented by the treating consultant on admission to the ward.
- **Personal Protective Equipment (PPE) must be made readily available to protect staff during resuscitation attempts.**
- **Do not enter COVID-19 room/area until donning airborne PPE.**
- **It is acknowledged that donning may cause a delay to starting chest compressions, but the safety of staff is paramount.**
- If a defibrillator is readily available defibrillate shockable rhythms rapidly prior to starting chest compressions. The early restoration of circulation may prevent the need for further resuscitation measures.
- **Do not** listen or feel for breathing by placing your ear and cheek close to the patient's mouth. **Do not** perform mouth-to-mouth ventilation or use a pocket mask.
- **Start compression-only CPR** and monitor the patient's cardiac arrest rhythm as soon as possible.
- If the patient is already receiving supplemental oxygen therapy using a face mask, **leave the mask on the patient's face** during chest compressions as this may limit aerosol spread. If not in situ, but one is readily available, put a mask on the patient's face.
- **Restrict the number of staff in the room** (if a single room) with the assistance of a gatekeeper. A mechanical CPR device (e.g. LUCAS) may help to facilitate this during prolonged CPR
- We **recommend** a "buddy check" system to ensure donning and doffing is appropriate. Ideally, every resuscitation will be assigned a "safety officer" whose only responsibility is overseeing the safety of the staff.

Staff Wellbeing

A focus on the care and protection of staff is absolutely vital for staff well-being to ensure a safe, sustainable workforce and to maintain high quality clinical care. It should be recognised that intensive care staff will likely have an increased workload with heightened anxiety both at work and at home.

In periods of social disruption, such as school closures, we **recommend** health care workers are supported by appropriate measures to ensure that they can still attend work. This could include access to additional paid leave being provided to partners of health care workers, shorter shifts to accommodate caring for children or extended care leave if caring for COVID-19 positive family members.

We **recommend** that hospitals have the following available for all staff in intensive care:

- Clean scrubs available to change into before each shift,
- Access to change areas and showering facilities,
- Rest breaks and rest areas compliant with social distancing guidelines,
- Provision of meals and drinks for frontline staff to boost morale and minimise staff and leaving the hospital to seek food.

Staffing

It must be recognised that a rapid upskilling and rostering of non-critically care trained staff carries risk of increased morbidity and mortality. As a risk mitigation strategy, we **recommend** that the intensive care representative bodies ACCCN, CICM and ANZICS lead a relevant stakeholder group to formulate models that enable a surge workforce to deliver safe care.

We **recommend** managers consider creating rosters with shorter shifts or limit exposure to high risk areas for part of shifts. We **recommend** partnering less experienced staff with more experienced staff and for ICU-trained Registered Nurses to be available to supervise non-ICU trained Registered Nurses. We **recommend** rostering adequate time off between shifts. We acknowledge the benefit of team debriefs or huddles at the beginning and end of each shift. We **recommend** measures to reduce fatigue and improve mental health of all ICU staff during this protracted pandemic surge.

Staff Illness

Staff who are ill should follow national guidelines in regard to self-isolation and testing for COVID-19. We **recommend** prioritising testing for COVID-19 in health care workers to minimise the time away from the workforce.

Post Exposure Management

If an exposure or breach of PPE occurs, assessment and risk categorisation of the staff member should be done in accordance with national guidelines and local policy. Based on risk of exposure the appropriate further management should be commenced immediately including a quarantine/ self-isolation period. We **recommend** staff should be provided with funded accommodation if they are unable to self-isolate in their own home.

For either staff illness or post exposure management we **recommend** the provision of adequate psychosocial support for the staff member during quarantine or for the duration of their illness. On return to work a refresher infection control and prevention training should be offered for the staff member.

We also **recommend** that each nosocomial health care worker COVID-19 infection is entered into the local incident management system as a sentinel event and should be managed as per established guidelines. It is recommended each observed breach in PPE usage is recorded in the incident management system as an occupational health and safety risk. ANZICS recognises that breaches will occur despite best efforts and no blame should be apportioned to the individuals involved.

Staff Information and Education

We **recommend** the use of online education courses for upskilling of critical care junior medical and nursing staff.

We **recommend** team debriefs or huddles at the beginning of each shift that include:

- Are you well?
- Check in "Are you OK?"
- Update any changes in workflow, policies and procedures.
- PPE refresher on "donning" and "doffing". This is recommended to be a watch and observe training rather than hands-on assessment.

Staff members at higher risk from COVID-19 infection

The international experience is that mortality is higher in older patients, particularly with comorbidities related to cardiovascular disease, diabetes mellitus, chronic respiratory diseases, hypertension and malignancy. We **recommend** that staff who are judged to be of high risk should not enter the COVID-19 isolation area. This includes staff who are pregnant, have significant chronic cardiac and respiratory illnesses or are immunosuppressed.

Staff member risk decisions should be made on a case-by-case basis by the unit director with the support of the local occupational health and safety unit. We **recommend** that these staff would be reallocated to other roles and not enter COVID-19 areas.

Psychosocial considerations

The COVID-19 pandemic is causing a great deal of uncertainty and fear in our community, as well as amongst ICU staff. The need for ICU staff to recognise stress and burn out in themselves, to look out for colleagues and friends while maintaining mental and psycho-social wellbeing during this time is paramount. Focusing on the psychosocial wellbeing of people who care for the critically ill is fundamental to high performance teams and not just availability of ventilators and beds.

We **recommend** within each intensive care unit there is regular monitoring of staff wellness.

We **recommend** ICU staff have mental health and psychosocial services available to them that can be accessed confidentially and free of charge. Team leaders and intensive care managers should implement start of shift recommendations listed above as well as the following recommendations:

- Emphasise appreciation to ICU staff to protect against chronic stress and poor mental health.
- Offer shorter shifts, particularly for nursing staff covering extra shifts.
- Organise psychological drop-ins in the workplace to check-in with staff.
- Offer well-being checks at home via phone call for staff.
- Ensure good quality communication and regular, accurate information updates, including updates on current PPE supply.
- Ensure staff are aware of where they can access mental health and psychosocial support services.
- Plan for periods of recovery, including debriefing, psychological support and leave for staff once workload in the COVID-19 pandemic settles.

The first step in dealing with the symptoms of anxiety and stress on the frontline is a recognition that they are normal and expected. These symptoms are:

- Being stressed or overwhelmed,
- A loss of order or control, feelings of panic,
- Anxiety, fear, helplessness, moral distress,
- Feeling isolated and withdrawn,
- Having difficulty concentrating or sleeping,
- Having physical symptoms, such as nausea or lethargy,
- Having exhaustion and burnout,
- Comfort eating or lack of appetite.

We suggest a number of strategies to support and care for one's own wellbeing. These strategies are listed in table 3.

Table 3: Strategies to support and care for one's own wellbeing

Understanding the facts	Caring for oneself outside of work	Staying connected
<p>Limit exposure to the constant streams of news.</p> <p>Seek information from trusted and practical resources.</p> <p>Distinguish facts from rumours and misinformation.</p> <p>Beware of dramatic language, this might panic colleagues or reinforce fear in oneself.</p> <p>Keep things in perspective and stay calm.</p>	<p>Maintain one's health, through eating good natural foods, ensuring sufficient rest between shifts and regular exercise.</p> <p>Use strategies to de-stress that have worked for you in the past.</p> <p>Engage in activities that bring joy and are relaxing.</p> <p>Find time to connect with nature, such as fresh air through an open window if you are unable to get outside.</p> <p>Avoid using unhelpful coping strategies such as smoking, alcohol or drugs to alleviate your stress.</p>	<p>Stay connected with your friends and family via email, social media, video conference and telephone.</p> <p>Turn to colleagues, managers or other trusted persons for social support - many may be feeling similarly to you.</p> <p>Treat colleagues with compassion, acknowledge each other's fears and encourage each other to openly discuss vulnerabilities.</p> <p>Try to find joy amidst chaos.</p> <p>Connect with colleagues to share stories of success, rather than focusing on failures and stresses.</p>

Well-being and psychosocial supports for ICU staff working during the COVID-19 pandemic are listed in appendix 3.

We acknowledge that there are concerns over transmission of COVID-19 to those at home. This risk can be reduced by attention to workflows at work and at home as suggested in appendix 4.

Metrics for Staff Safety and Sustainability - Staff wellbeing

We **recommend** that the intensive care unit daily collect and record the number of staff on sick leave due to COVID-19 infection and the number of staff on sick leave due to non COVID-19.

Appendix 1

Levels of Critical Care Capability in Remote, Rural and Regional Areas

Health Care Facility / Hospital	Resources available
<p>Hospitals with an intensivist led/staffed ICU who regularly provide the full range of critical care support but lack on-site access to the full range of sub-speciality support.</p>	<ul style="list-style-type: none"> • ICUs accredited with the College of Intensive Care Medicine.
<p>Hospitals with an ICU led/staffed by non-Intensivists who regularly provide critical care support with the occasional assistance of a larger centre.</p>	<ul style="list-style-type: none"> • Staffed by medical, nursing and allied health critical care personnel with intermittent or regular transient or remote support from a FCICM. • Can extend to intermediate-term ventilatory support capabilities (e.g in Emergency Department, HDU, ICU or operating theatres) depending on clinical space and engineering. • Less variable critical care staffing mix who may or may not have other clinical duties and may require additional external support. • Usual remote critical care support is through established telehealth or critical care retrieval services.
<p>Hospitals with established Emergency Departments, HDUs or theatres who regularly provide critical care on a short term basis.</p>	<ul style="list-style-type: none"> • Staffed by medical, nursing and allied health generalists, including remote area nurses, advanced practitioners, anaesthetists, general practice anaesthetists, emergency department physicians and rural hospital generalists. • Short term ventilatory support capabilities (e.g in operating theatres). • Variable critical care staffing mix on a shift-by-shift basis. • Remote critical care support is usually through critical care retrieval services.
<p>Hospitals with none of the above.</p>	<ul style="list-style-type: none"> • Limited capacity to provide any critical care support.

Appendix 2

Checklist for ANZICS “Planning for a Pandemic” guideline

Minimising ICU Demand	✓
ANZICS recommends	
Deferment or cancellation of non-urgent elective surgery. Protocols and mechanisms should be established for a staged, progressive cancellation of elective surgery.	<input type="radio"/>
Developing cooperative agreements with other health services. Discussions with other health services (e.g. private hospitals) should be held to facilitate the transfer and care of appropriate patients.	<input type="radio"/>
Identifying alternative areas for patient monitoring. Alternate areas capable of providing a higher level of monitoring should be identified.	<input type="radio"/>
Increasing ICU Capacity (space)	✓
ANZICS recommends	
Identifying alternative areas with the physical infrastructure for the care of critically ill patients. Areas with the capability to care for non-ventilated or ventilated patients should be identified early, together with processes to enable expeditious repurposing for ICU utilisation.	<input type="radio"/>
Quantifying stock of equipment, including consumables and disposables, and identifying appropriate channels for procurement and storage.	<input type="radio"/>
Reviewing ICU and Organisational Discharge Processes. Mechanisms and processes should be established to facilitate safe discharge of patients from ICU during a surge in demand, together with organisation-wide efforts to improve patient flow.	<input type="radio"/>
Increasing ICU Capacity (workforce)	✓
ANZICS recommends	
Identifying nursing staff capable of caring for critically ill patients. Nurses from a variety of backgrounds may be redeployed to the ICU under the supervision of experienced ICU nurses.	<input type="radio"/>
Developing a rapid ICU orientation programme for nurses. Nurses being redeployed to the ICU would need to undergo a rapid orientation program in order to facilitate their transition into the critical care environment.	<input type="radio"/>
Identifying medical staff who can be suitably redeployed from other specialties.	<input type="radio"/>
Identifying allied health staff who can be suitably redeployed to the ICU. Additional physiotherapists, pharmacists and social workers would be required to support the care of critically ill patients and their families.	<input type="radio"/>

Increasing ICU Capacity (workforce) (continued)	✓
ANZICS recommends	
Streamlining administrative on-boarding processes.	
Standard protocols need to be rationalised and streamlined to facilitate efficient onboarding of new staff members.	<input type="radio"/>
Preparing strategies to maintain staff morale.	
Providing support through a variety of means (e.g. psychological support, accommodation) is imperative to maintain staff morale.	<input type="radio"/>
Effective communication	✓
ANZICS recommends	
Establishing an information management plan.	
Methods of efficient dissemination of new information should be established, utilising a variety of platforms.	<input type="radio"/>
Identifying and maintaining key lines of communication.	
Key stakeholders and methods of communicating with them must be established to respond rapidly to a surge in clinical demand.	<input type="radio"/>
Developing a strategy for decision-making about ICU admission	✓
ANZICS recommends	
Ensuring ICU medical staff have a shared decision-making model.	
Senior ICU medical staff should have discussions on developing a common approach to decision-making regarding ICU admissions and treatment.	<input type="radio"/>
Rural and Regional ICUs	✓
ANZICS recommends	
Plan for workforce shortages and expand telehealth services.	<input type="radio"/>
Nominate a local COVID-19 leadership group.	<input type="radio"/>
Management of the deteriorating patient	✓
ANZICS recommends	
Reviewing Rapid Response (RRT)/Medical Emergency Team (MET) models.	
Alternative RRT/MET models involving delegation of roles to non-ICU services should be explored.	<input type="radio"/>
Ensuring all patients have a goals of care (or equivalent) form completed with an appropriate plan for escalation of treatment.	<input type="radio"/>
Facilitating Emergency Department Management	✓
ANZICS recommends	
Early referral to ICU to facilitate emergency department flow.	<input type="radio"/>

Appendix 3

Support resources to provide to all intensive care staff

Type	Supports
Departmental Support	Deploy designated “Wellness Champion(s)” to follow up on staff Assign mentors to junior staff
External confidential counselling services via phone/email/video chat	Employee Assistance Program - Converge International www.convergeinternational.com.au
Medical staff support	Drs4Drs Doctors health service providing information for independent state programs WHO Mental Health and Psychosocial considerations during COVID-19 Outbreak (www.who.int/docs/default-source/coronaviruse/mental-health-considerations.pdf)
Other supports	Free mindfulness apps, e.g. Headspace, TREAT, Breathing, CALM Beyond Blue: 1300 224 636 Local GP - mental health plans If emergency assistance is required, dial 000 or call LifeLine on 13 11 14

See the ANZICS website for updated resources.

Appendix 4

Reducing risk of transmission to those at home

We acknowledge that there are concerns over transmission of COVID-19 to those at home. This risk can be reduced by attention to workflows that reduce the risk of inadvertent breaches in PPE. The following practices are suggested to reduce likelihood of transmission to others.

Prior to work.

- Avoid bringing all non-essential items into the clinical work space. This includes: reusable coffee cups, laptops, wallets and unnecessary papers. Consider placing your driver's licence, mobile and credit cards into a clear sealed bag at the commencement of each shift.
- Remove watches, rings and earrings larger than a small stud.
- Essential items include: hospital ID badge, name badge, pen and mobile phone (consider removing case to make cleaning easier).

At work.

- All essential items should be considered potentially contaminated. They should be regularly cleaned with antibacterial or alcohol wipes throughout the shift. Avoid contaminating shared work spaces. Clean all personal items such as stethoscopes, mobile phones and name tags with hospital grade disinfectant.
- Avoid taking a mobile phone out of your pocket while working.
- Avoid contaminating clothing and items that will return home. We recommend travelling to work in personal clothing and changing to hospital-supplied scrubs on arrival.
- Wear shoes that can be cleaned, either leave at work or leave outside when returning home.
- If wearing personal scrubs, change into a new set of clothes prior to going home and put "dirty" scrubs in a plastic bag to take home to wash.
- Maintain hand hygiene and social distancing. This is vital to prevent the spread of COVID-19, but also serves to reassure stressed and concerned staff, patients and visitors.
- Increase frequency of hospital cleaning services to clean commonly touched surfaces such as keyboards, door handles and light switches.

At home. The following actions should precede any interactions with the people you live with:

- Avoid bringing any items into the home that had previously been at work.
- Remove and wash clothing (with hot water). Immediately shower and change into clean clothes.
- Clean frequently touched surfaces in your car, including steering wheel, door handles, mirrors, screens and gear shift.
- Family members or household contacts of HCW involved in the care of suspected or confirmed covid-19 patients should consider sleeping in a separate room and using a separate bathroom, if they belong to a high risk group.
- All members of the household should practice meticulous hand hygiene and wash hands and commonly used surfaces regularly.

Appendix 5

Checklist for Staff Safety and Sustainability

Infection control measures (engineering)	✓
ANZICS recommends	
Developing a plan for patient isolation and cohorting This includes identifying all appropriate Class N and S rooms, and a plan for cohorting of patients once these rooms are exhausted.	<input type="radio"/>
Infection control measures (administration)	✓
ANZICS recommends	
Ensuring all patients are screened and tested in line with national recommendations	<input type="radio"/>
Maintaining a record of PPE training, compliance and competency Only staff who have been appropriately trained should be allowed to care for patients with COVID-19.	<input type="radio"/>
Monitoring health care worker infection and PPE breaches A process for monitoring these sentinel events in infection control should be established.	<input type="radio"/>
Managing ICU visitors A process for limiting and screening visitors and maintaining a visitor log.	<input type="radio"/>
Performing fit-checking for N95, and fit-testing where possible All personnel should be educated in the fit checking of N95 masks.	<input type="radio"/>
Minimising cross contamination and fomite transmission A clear policy on the use of personal effects and other potential fomites should be established.	<input type="radio"/>
Maintaining Staff Wellbeing	✓
ANZICS recommends	
Identifying measures to provide social support to staff Social disruptions such as school closures may affect staff ability to attend work, and measures to mitigate their impact should be considered.	<input type="radio"/>
Addressing food and other issues The availability of scrubs, shower facilities and meals/drinks reduce staff burden, whilst minimising the risk of community spread.	<input type="radio"/>
Developing policies for staff illness, and post-exposure management A protocol for managing and testing staff who may be infected with COVID-19.	<input type="radio"/>
Identifying and redeploying high-risk staff Staff at higher risk of complications from COVID-19 should ideally not enter COVID-19 areas.	<input type="radio"/>
Practicing safe airway management	✓
ANZICS recommends	
Developing a local policy for airway management of patients with COVID-19 Airway guidelines should address the issues how safe airway management can be achieved.	<input type="radio"/>

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