

Queensland Adaptive Model for the Intensive Care Workforce during COVID-19

January 2022

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Introduction

The COVID-19 pandemic has significantly increased the demand on intensive care services, and on workforce requirements. When demand for intensive care services escalates, standard intensive care workforce models will need to adapt to team-based models to ensure ICU expertise is available to a larger number of patients.

This document has been developed to guide Queensland Hospital and Health Services (HHSs) to operationalise workforce surge plans for Intensive Care Units (ICUs), in response to a shortage of trained ICU staff due to increasing demand during the COVID-19 pandemic response.

Purpose

This document aims to support HHSs to adapt workforce models in ICUs in response to the COVID-19 pandemic. It guides facilities to use an “adaptive” model of care within the ICU according to a tiered escalation plan and trigger points. Each model has been planned to be adaptable to meet the needs and demands of ICU care.

The document does not replace existing Queensland Health policy, legislative and regulatory responsibilities. It is a living document and will be updated as new information and learning becomes available.

Assumptions

- QLD ICUs will continue to provide services according to their designated level as per the Clinical Services Capability Framework (CSCF.)
- Local implementation of these strategies will align with existing HHS surge planning.
- HHSs and ICUs will have utilised workforce strategies in lower levels prior to moving to workforce strategies in a higher level.
- ICUs will develop a locally approved workforce plan with their HHS executive teams. Approval to move to a higher level must be sought from the HHS executive team.
- Decanting ICU patients who can be appropriately managed on the ward by upskilling non-ICU staff in ward areas may require ward staff and Hospital in the Home (HITH) staff to manage slightly more complex medical patients than normal – these staff should also be suitably upskilled in preparation.

Principles

- Staff and patient safety are a priority at all levels of care.
- Early load sharing (between hospitals) and load shedding (electives to private) should be implemented as measures to preserve workforce capacity as much as possible.
- No ICU should exceed built capacity until all built capacity across QLD Health facilities is used where clinically appropriate.
- Patients should be treated as close to home as possible where safe to do so.
- Monitor elective surgery cancellation rates as an early sign of system pressure.
- Load balancing with wards – i.e. ensuring COVID wards can take significant numbers of both HFNO and CPAP/ BiPAP – should be considered during decision making about moving up a level.
- Maximise workforce utilisation in a constrained environment. This will include using categories of staff other than nursing for some aspects of care and non-clinical tasks.
- Ability to adapt with planned actions as the situation changes.
- Prioritise the use of expertise and experience where they are needed most.

- Premise of experienced skill mix dilution rather than overall reduction of staff numbers (wherever possible the aim of the model is to maintain 1:1 or 1:2 staff to patient ratio.)
- Services should aim to minimise the duration and dilution of expertise.
- Delegation and supervision should be well supported, with clear lines of reporting and communication.
- The team approach to care (as opposed to individual patient allocation) will support delivery of care as the skill mix is diluted.
- The importance of staff well-being is recognised and supported.

Definitions

The following are definitions of terms, abbreviations and acronyms used in this document.

Term	Definitions
ACCESS nurse	An ACCESS nurse is a registered nurse who provides assistance, coordination, contingency, education, supervision and support as described in ACCCN (2016) Workforce standards for Intensive Care Nursing
BiPAP	Bilevel Positive Airway Pressure - A form of non-invasive ventilation (NIV) therapy used to facilitate breathing.
ECMO	Extracorporeal membrane oxygenation (ECMO) is an advanced form of life support targeted at the heart and lungs to improve oxygenation
Generalist staff	Staff member with a clinical background who does not have ICU or critical care experience
HFNO	High flow nasal oxygen
HHS	Hospital and Health Service
ICU	An Intensive Care Unit (ICU) is a specially staffed and equipped, separate and self-contained area of a hospital dedicated to the management of patients with life-threatening illnesses, injuries, and complications, and monitoring of potentially life-threatening conditions. It provides special expertise and facilities for support of vital functions and uses the skills of medical, nursing, and other personnel experienced in the management of these problems.
ICU1 patient	Patient requiring 1:1 nursing care with 1 nurse allocated to care for 1 patient
ICU 2 patient	Patient requiring 1:2 nursing care with 1 nurse allocated to care for 2 patients
ICU RN	Has experience, education and training in caring for critically ill patients in the ICU
Non-ICU RN	May not have worked in an ICU but have experience in critical care areas including the emergency department, coronary care, anaesthetics, recovery, interventional suites or nurses who have been part of an ICU upskilling program for COVID response
Pod	Refers to a group of co-located ICU beds
Upskilled Physiotherapists	Physiotherapists who undertook ICU upskilling programs for COVID 19

Queensland escalation levels and trigger points

The Statewide Intensive Care Clinical Network (SICCN) has provided modelling of reasonable escalation states with workforce reductions to assist with deploying resources and refocusing the health system. Non-COVID-19 ICU demand was estimated as maintaining all emergency ICU admissions and 50 percent of elective ICU admissions (converted into bed requirements), coming to 149 beds. This is congruent with NSW's trigger points of non-COVID-19 demand taking 50 per cent of usual capacity. The trigger points for Queensland ICU planning on which this adaptive workforce model is aligned are as follows:

Table 1 Escalation scenario trigger points for ICU

Tier	System State	Average new cases per day	COVID ICU admissions / beds	Total ICU admissions / beds	Requirements
2	WITHIN CAPACITY	< 500	< 75	< 225	Public usual capacity (72% occupancy)
3	MEETING CAPACITY	1,100	< 150	< 300	Public usual capacity at 100% occupancy – requires additional support
4	STRETCHED CAPACITY	2,100	< 300	< 450	Requires additional support
5	BEYOND CAPACITY	> 2,100	> 300	> 450	Requires additional support

In addition to the workforce strategies outlined in this document, the following strategies should also be implemented to support load sharing at a local, system and national level:

Tier	System State	Additional Strategies
2	WITHIN CAPACITY	<ul style="list-style-type: none"> If < 20 COVID ICU admissions and no outbreaks: commence preparations for a central operations centre** If > 20 COVID ICU admissions and/or regional outbreak(s) – stand up central operations centre as required.
3	MEETING CAPACITY	<ul style="list-style-type: none"> Stand up central operations centre as business as usual
4	STRETCHED CAPACITY	<ul style="list-style-type: none"> Load sharing of ICU patients with other Queensland Health facilities Load shedding to private facilities, where possible Consider use of negative pressure rooms to protect non-COVID patients Consider the reconfiguration of Medical Emergency Teams
5	BEYOND CAPACITY	<ul style="list-style-type: none"> National load sharing

**The central operations centre would support system visibility and planning for: patients, staff, equipment, consumables, drugs.

Workforce models at each escalation level

Table 1. Workforce tiered strategies to align with the tiered escalation plan.

Level	Impact	Strategies	Triggers to next level
<p style="text-align: center;">2</p> <p style="text-align: center;">WITHIN CAPACITY</p>	Minimal impact on daily operations - ICU skilled staff available	<p>Identify additional staff for level 3-5</p> <p>Establish agreements to enhance ICU staffing availability for level 3-5</p> <p>Train ICU staff and non-ICU critical care staff in key critical care skills prior to there being insufficient staff to meet current demand</p> <p>Establish communication channels for all ICU staff for workforce surge plan enactment</p> <p>Commence orientation and training for non-ICU staff</p> <p>Prepare to commence level 3 workforce strategies</p> <p>Adapt standard ICU processes for level 3-5</p> <p>Prepare for non- ICU surge areas to be staffed and upskilled</p> <p>Practice Level 4 and 5 team care models</p> <p>Upskill support staff in required systems (E.g. CIS etc)</p>	<p>Insufficient staff to meet current demand</p> <p>Level 2 workforce strategies have all been utilised before moving to next level workforce strategies</p>
<p style="text-align: center;">3</p> <p style="text-align: center;">MEETING CAPACITY</p>	Moderate impact on daily operations, ICU at maximum capacity or ICU skilled staff depleted	<p>Commence level 3 workforce strategies</p> <p>Prepare to commence level 4 workforce strategies</p> <p>Provide critical care in non-ICU areas as per local surge plans.</p> <p>Where additional ICU trained nursing staff are not available, facilities might wish to consider the feasibility of allocating one EN to each Access nurse (mini-pod of patients) to assist the Access nurse with some tasks, for example: management of consumables, PPE and pharmaceutical supplies.</p>	<p>Insufficient additional ICU and/or non-ICU staff to meet current demand</p> <p>Level 3 strategies have all been utilised before moving to next level workforce strategies</p>
<p style="text-align: center;">4</p> <p style="text-align: center;">STRETCHED CAPACITY</p>	<p>Severe impact on daily operations</p> <p>Demand for critical care workforce exceeds ICU capacity</p> <p>Team-based care will be required with dilution of critical care expertise</p>	<p>Commence level 4 workforce strategies</p> <p>Prepare to commence level 5 workforce strategies.</p>	<p>Insufficient staff to meet current demand using non-standard staffing models or team workforce models</p> <p>Level 4 strategies have all been utilised before moving to next level workforce strategies</p>

5 BEYOND CAPACITY	<p>Overwhelming impact on daily operations</p> <p>Demand for critical care services significantly exceeds ICU capacity</p> <p>Experienced staff will need to be diluted further while maintaining support and safety</p>	Commence level 5 workforce strategies	
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Staffing mix at each escalation level

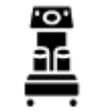
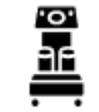
Level	Explanation	ICU RN	Non-ICU RN*	Upskilled Allied Health	Generalist Staff
2 WITHIN CAPACITY	<p>Business as usual</p> <p>Standard workforce model</p>				
3 MEETING CAPACITY	<p>Hybrid model</p> <p>Skill mix remains like for like</p> <p>Utilisation of nursing staff with ICU/Critical care experience or upskilling</p>				
4 STRETCHED CAPACITY	<p>Team care</p> <p>Dilution of skill mix</p> <p>Move to team model of care</p> <p>Increased reliance on upskilled staff and other disciplines</p>				
5 BEYOND CAPACITY	<p>Team care (extended model)</p> <p>Further dilution of skilled staff and upskilled staff</p> <p>Increased utilisation of other Registered nurses and nursing staff, other disciplines</p>				 
Nurse Manager, Team Leader and ACCESS nurse roles in addition					

*Previous experience in critical care &/or upskilled program

Where additional ICU trained nursing staff are not available, facilities might wish to consider the feasibility of allocating one EN to each Access nurse (mini-pod of patients) to assist the Access nurse with some tasks within the EN Scope of Practice.

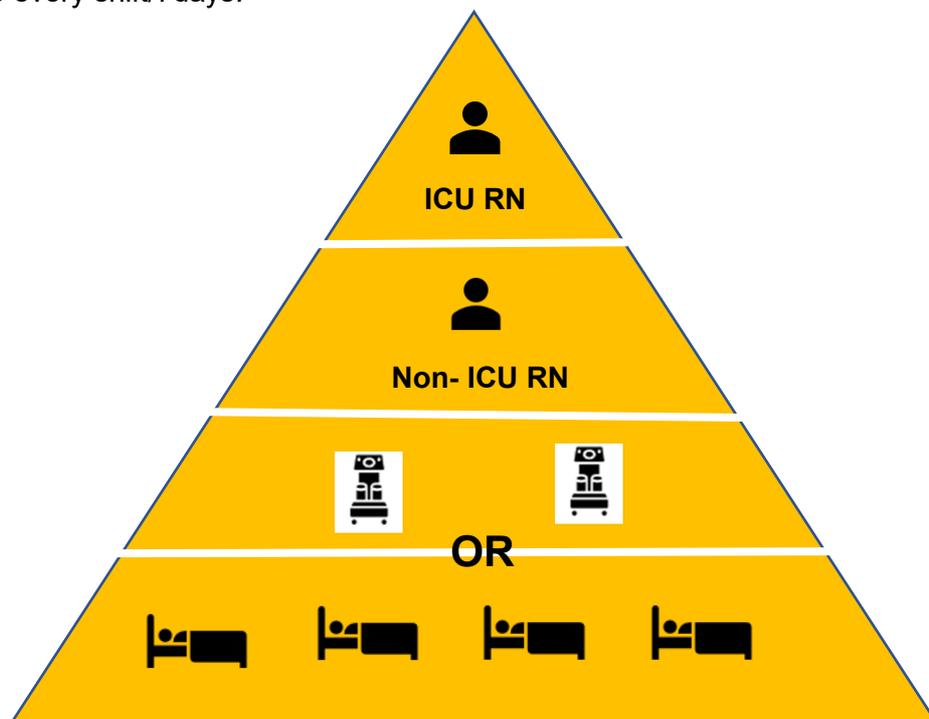
Level 2: Business as usual

- Business as usual – Nursing management, education and non-clinical positions to be preserved
- Patient requiring 1:1 nursing care – one ICU RN allocated per one patient
- Patient requiring 1:2 nursing care – one ICU RN allocated per two patients

Cluster			
ICU RN	ICU RN	ICU RN	ICU RN
			
			

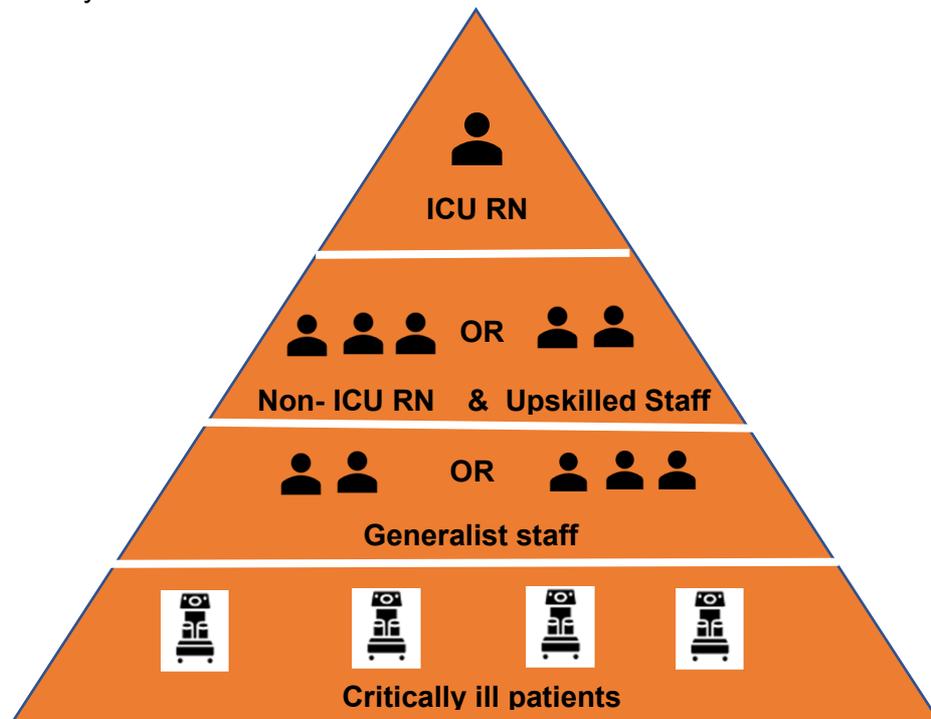
Level 3: Hybrid model

- Utilisation of nursing staff with ICU/Critical Care experience or upskilling
- NUM, CNC and education roles to be preserved. Team Leader (per Pod) and ACCESS nurse available every shift/7days.



Level 4: Team care model

- In Level 4 there is a significant shift from standard ICU models to team models of care
- NUM and education roles to be preserved. Team Leader (per Pod) and ACCESS nurse available every shift/7days.

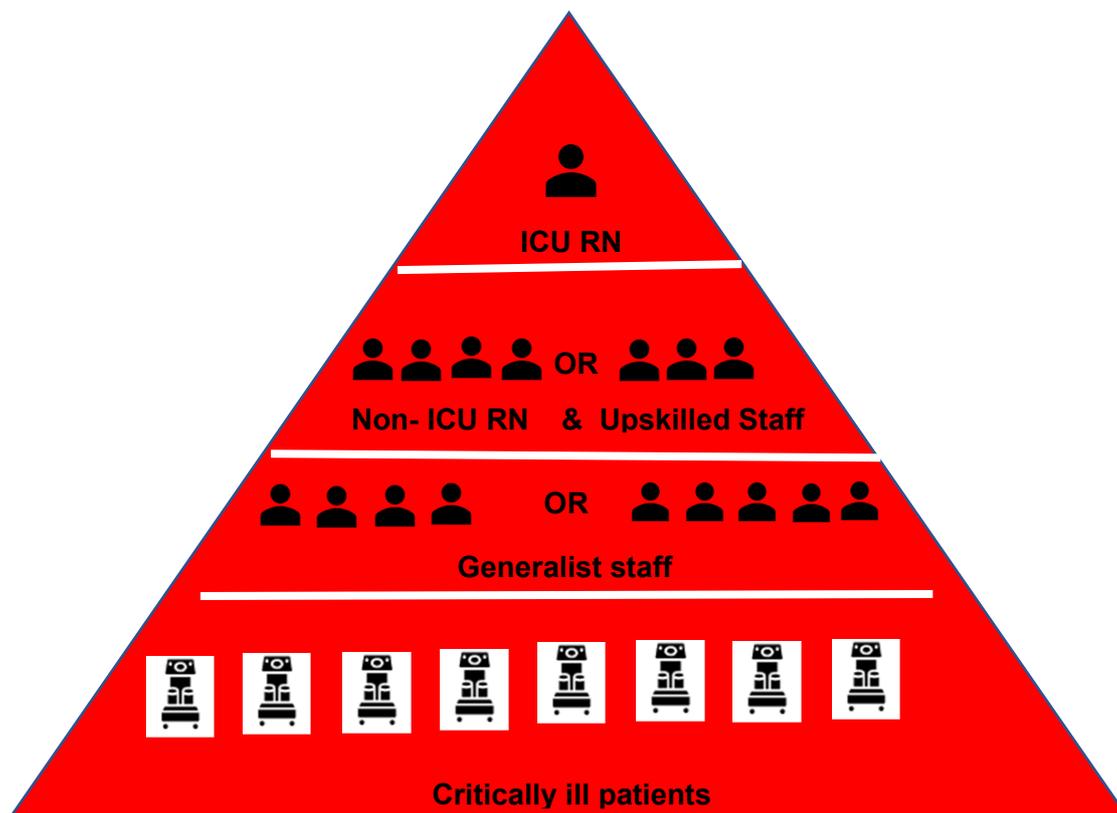


In these examples one ICU RN works with a team of two to three non-ICU RNs and upskilled staff and two to three generalist staff to provide care to one cluster of 4 patients

Level 5: Team care (extended model)

- Team model is extended with increase in utilisation of generalists and other disciplines.

NUM and education roles to be preserved. Team Leader (per Pod) and ACCESS nurse available every shift/7days.



In these examples one ICU RN works with a team of three to four non-ICU RNs and upskilled staff and four to five generalist staff to provide care to one cluster of 8 patients

Medical workforce

Level	Strategies
2 WITHIN CAPACITY	<ul style="list-style-type: none"> • Medical workforce - Business as usual
3 MEETING CAPACITY	<ul style="list-style-type: none"> • Medical workforce - Business as usual • Consider resourcing for outreach / referral roles (e.g. ICU medical staff that support ward areas / smaller hospitals) as a result of increased demand
4 STRETCHED CAPACITY	<ul style="list-style-type: none"> • One intensivist may be allocated to two pods • Two (minimum) medical officers will be allocated to each pod • The number of medical officers will depend on availability and experience. • Consider rostering of in-house SMO(s) after hours <p><i>Examples:</i></p> <ul style="list-style-type: none"> ○ One critical care trainee ○ One anaesthetist and one pre-vocational trainee (PGY1-PGY5) ○ One physician supported by two pre-vocational trainees (PGY1-PGY5)
5 BEYOND CAPACITY	<ul style="list-style-type: none"> • One intensivist may be allocated to two pods • This level will require a higher proportion of more experienced critical care medical officers due to dilution of intensivist expertise across a larger number of beds. • One intensivist may be allocated to a whole of hospital role, or multiple pods • Allocation will depend on local design, facility processes and workforce expertise and availability • One to three medical officers will be allocated to each pod • The number of medical officers will depend on availability and experience • Consider role of interhospital staff transfers (including credentialling) <p><i>Examples:</i></p> <ul style="list-style-type: none"> ○ One to two critical care trainees and one pre-vocational trainee (PGY1-PGY5) ○ One anaesthetist and one pre-vocational trainee (PGY1-PGY5) ○ One anaesthetist, one physician and one pre-vocational trainee (PGY1-PGY5)

Scope of practice and indemnity

All nurses can contribute to team-based care if appropriately supported and directed. Nurses have underpinning education and expertise which can be applied in a variety of clinical settings and are responsible for their own practice. When making decisions and accepting delegations, nurses need to consider whether they are authorised (e.g. legal instruments, local policies and procedures), educated and competent/confident. The Nursing and Midwifery Board of Australia's (NMBA) [Decision Making Framework](#) provides guidance on making practice decisions and delegating professional activities to others.

Staff deployed to work within ICUs will be supported with orientation, education and upskilling as necessary to ensure that they are able to successfully operate within the proposed team-based models of care.

Staff working within these models of care, as employees of Queensland Health, will be indemnified by Queensland Health where they act professionally and in accordance with the mandated guidelines, policy and lawful directions of their employer.

Staff Wellbeing

A focus on staff wellbeing is a critical aspect of effective intensive care unit and team function. The COVID-19 pandemic is likely to heighten staff concerns about their changing work environment and workload can contribute to anxiety and fatigue.

Supporting staff to take meal breaks and providing rest areas away from the clinical environment are important strategies to contribute to staff wellbeing and a sustainable workforce.

Managers should engage with staff to check on wellbeing. There should be opportunities for formal and/or informal debriefing including access to the employee assistance program.

The following resources can assist staff and managers in promoting staff wellbeing:

- Australian Government (DoH) - Coronavirus (COVID-19) – Mental health and wellbeing support for employees during the COVID-19 pandemic
- [Wellbeing COVID-19 response \(health.qld.gov.au\)](https://www.health.qld.gov.au/wellbeing-covid-19-response)
- Local Employee Assistance Programs (EAP) – a list of local service providers is available via [QHEPS](#)

Education and Orientation

Maintaining educational support and resources is essential when implementing and introducing new staff and new models of care. Existing and new staff members should be provided with “just-in-time” training to enable them to safely perform their allocated tasks in the team.

Experienced ICU staff may be working in unfamiliar roles or environments that will require support and education to enable them to learn new skills. Consider rapid orientation or modified orientation processes for staff coming into the ICU or extended ICU environment.

Education and upskilling should also include training in the use of systems and IT that would be required outside of normal duties.

Other considerations

Clinical information systems

HHSs should review electronic medical record documentation processes to ensure contemporary documentation can take place.

HHSs must identify clear processes to document patient care and ensure access and appropriate education is provided for all levels of staff required to document care.

Medical Emergency Team

HHSs may need to consider the reconfiguration of their Medical Emergency Team when Intensive Care Units are functioning at Level 3: Meeting capacity.

Increased demand for other operational staff

Increased demand on other critical operational / support staff should be considered such as (but not limited to):

- Orderlies to manage increased refuse.
- Administration officers to support increased data entry requirements and to assist with the increased need/use of IT systems such as Metavision.

Increased demand for non-clinical supplies

In addition to the demand for clinical equipment and consumables, consideration for increased supplies that support clinical service delivery is also needed. For example, workstations on wheels, other IT support equipment etc.

Supportive technologies to assist staff (e.g. cameras in rooms for communications and additional patient monitoring, donning/doffing cameras etc) should also be made available where possible.

Staff exposure to COVID-19

The Australian Government Department of Health [Work permissions and restrictions framework for workers in health care settings](#) (The Framework) supports safe decision making when determining whether to place work permissions/restrictions, independent of quarantine, on a worker after a COVID-19 exposure in a health care setting in the context of an outbreak and community transmission of COVID-19.

The Framework provides a process and tools to support exposure assessment, work restriction and return to work decision making for workers in health care settings.

References and related policies

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Version Control

Version	Date	Comments
0.1	27 October 2021	Initial draft – Healthcare Improvement Unit, Clinical Excellence Queensland
0.2	5 November 2021	Reviewed by the Statewide Intensive Care Clinical Network (SICCN) and feedback provided (incorporated.)
0.3	18 November 2021	Reviewed by the Office of the Chief Nurse and Midwifery Officer (OCNMO) and feedback provided (incorporated.)
0.4	08 December 2021	Reviewed by Queensland's COVID System Response Group and endorsed, with request to reference the Australian Government Department of Health Work permissions and restrictions framework for workers in health care settings (incorporated.)
0.5	05 January 2022	(Current) Further feedback from Queensland's COVID System Response Group to include version control, author and approval block (incorporated.)

Approval

Approved by: COVID System Response Group (CSRG.)

Date: 08 December 2021