

Children's Intensive Care Services

Module overview

Please note: This module must be read in conjunction with the Fundamentals of the Framework (including the glossary and acronym list), the Preamble to Children's Services and the Intensive Care Services module.

The availability of, and access to, children's intensive care services is vital to the health of children. Children's intensive care services are pivotal components of the hospital as they support the delivery of acute care and post-operative recovery from major surgery.

A paediatric intensive care unit (PICU) is a specially staffed and equipped, separate and self-contained section of a hospital for the management of children with life-threatening (or potentially life-threatening), reversible (or potentially reversible) organ failure.¹ Children's intensive care services provide specialist expertise and facilities for the support of children and their families, using the skills of medical, nursing and other staff who are trained and experienced in the management of critically ill children.

The level of intensive care services available should support the levels of other clinical services provided within a particular facility. The role of a children's intensive care service will vary depending on staffing expertise, facilities and support services, as well as the severity of illnesses and number of patients admitted.¹ The service requires on-site access to the emergency department (if present), operating theatres and organ imaging.

Children's intensive care service levels commence at Level 4 and progress to Level 6. A Level 4 or 5 children's intensive care service will have a mix of adult and paediatric patients. A Level 6 paediatric intensive care service is an intensive care unit (ICU) dedicated to paediatric service only.

Service requirements

In addition to the requirements outlined in the Fundamentals of the Framework, specific service requirements include:

- active participation in the Australian and New Zealand Paediatric Intensive Care (ANZPIC) patient database regarding all paediatric admissions
- specific guidelines to facilitate appropriate and timely referral to local child protection services, in addition to health workers demonstrating knowledge of pathways for child protection.

Workforce requirements

In addition to the requirements outlined in the Fundamentals of the Framework, specific workforce requirements include:

- an adequate supply of a suitably trained workforce with credentials and competencies to provide evidence-based, safe, high-quality intensive care practice,¹ with guidance for staffing requirements in ICUs outlined in various documents, including:
 - College of Intensive Care Medicine *Policy Document Review IC-1* (2010)¹
 - Australian College of Critical Care Nurses *Staffing Position Statement* (2003).²

Level 4 Children's Intensive Care Service

Service description

A Level 4 service is primarily an adult intensive care service capable of providing comprehensive critical care, including multisystem paediatric life support, to:

- children greater than 12 years of age for an indefinite period
- children 12 years of age and younger requiring intensive care-specific intervention and/or invasive monitoring with:
 - these children being managed in consultation and early collaboration (within 12 hours of admission) with a Level 6 paediatric intensive care service if it is anticipated that the admission will be for more than 24 hours
 - the children's intensive care service collaborating with local registered medical specialists with credentials in general paediatrics within 12 hours of admission
- children 12 years of age and younger requiring close observation, with these children managed in consultation and early collaboration (within 12 hours of admission) with a Level 6 paediatric intensive care service if it is anticipated that the admission will be for more than 24 hours, and close observation care beds may be provided within a Level 4 intensive care service
- children up to 16 years of age with complex social issues or significant comorbidities needing combined care with a specialist paediatric medical team.

Service requirements

As per module overview, plus:

- all patients admitted to the unit must be referred for management to the rostered registered medical specialist taking responsibility for the unit at the time of admission
- a number of available beds based on demand, with significant flexibility to meet increased admissions
- daily consultation with a higher level ICU for all patients mechanically ventilated for more than 24 hours and/or with multisystem failure; however, if a Fellow of the College of Intensive Care Medicine (CICM) is in charge of the unit, this provision may be unnecessary, except to facilitate access to subspecialty services outside the ICU
- mechanical ventilation and simple, invasive cardiovascular monitoring for children 12 years of age and younger until transfer to a higher level paediatric intensive care service if it is anticipated that the admission will be for more than 24 hours
- a collaborative decision to keep patients is made by the on-site registered medical specialist with credentials in paediatrics and the local registered medical specialist with credentials in intensive care medicine, in consultation with a registered medical specialist with credentials in paediatric intensive care medicine
- management of children in a general intensive care service is in line with a Level 4 children's medical service
- intensive care beds occupied by children must have age-appropriate equipment and staff who can meet the needs of the children.

Workforce requirements

As per module overview, plus:

- when children are admitted to the service, there must be medical/nursing staff who are competent in providing advanced paediatric life support

Medical

- a lead clinician with responsibility for clinical governance of the service who is a registered medical specialist with credentials in intensive care medicine, anaesthetics, emergency or general medicine
- support always available to the unit from a registered medical specialist with experience in intensive care medicine; however, if the registered medical specialist is simultaneously rostered for a second clinical area (e.g. operating suites), a second registered medical specialist with intensive care medicine experience must be identified to support the ICU in the event that the duty specialist is unable to attend
- in addition to the registered medical specialist, at least one on-site registered medical practitioner with an appropriate level of experience, exclusively rostered to the unit and immediately available 24 hours
- a registered medical specialist with credentials in paediatrics available to attend 24 hours
- telephone access—24 hours—to registered medical specialists with credentials in paediatric intensive care medicine who are Fellows of the CICM
- an identified local registered medical specialist with credentials in paediatrics to act as a local paediatric expert and provide assistance in the care of the patient until transfer to a higher level intensive care service

Nursing

- a nurse manager (however titled) with or working towards postgraduate qualification in management and/or intensive care nursing
- a designated, supernumerary senior registered nurse in charge on each shift
- a minimum nurse:patient ratio of 1:1 for ventilated and similarly critically ill patients²
- an additional supernumerary registered nurse to provide assistance to bedside nurses for every four patients requiring one-to-one nursing²
- all nursing staff in the unit responsible for direct patient care are registered nurses
- a minimum of two registered nurses present in the unit at all times when there is a patient admitted to the unit
- all registered nurses must be competent in providing advanced paediatric life support
- access to support and nursing advice from Level 5 and 6 children's intensive care nursing services
- access to a registered nurse with paediatric nursing experience for expert guidance and/or assistance when a child is admitted to the service

Allied health

- access—during business hours—to allied health professionals, as required, including an identified dietician, occupational therapist, pharmacist, social worker and speech pathologist
- access—24 hours—to a physiotherapist, as required

Other

- access to technical support staff (e.g. biomedical engineers and scientific officers), as required.

Support service requirements

A Level 4 service requires:

Service	On-site	Accessible
children's anaesthetic	4	
children's medical	4	
children's surgical	4	
medical imaging	4	
medication	4	
mental health (child and youth)		4
pathology		4
perioperative (relevant section/s)	4	

Level 5 Children's Intensive Care Service

Service description

A Level 5 service is capable of providing a high standard of general intensive care for children in a general ICU, including complex multisystem paediatric life support. This level service is capable of providing invasive ventilation and invasive cardiovascular monitoring for a period of up to 7 days. More complex medical care and treatment should be provided in consultation and early collaboration with a Level 6 paediatric intensive care service (within 12 hours of admission).

All children admitted to a Level 5 service must have an on-site paediatric consultation within 12 hours of admission. Referrals for children who are likely to require transfer due to complexity of care or subspecialty availability must be managed in collaboration and consultation with a Level 6 service within 24 hours of admission.

Service requirements

As per Level 4, plus:

- a minimum of four staffed and equipped intensive care beds with access to paediatric-appropriate equipment capable of managing ventilated infants, children and adolescents¹
- the paediatric bed space supports the physiological and psychological needs of the child and family
- access—24 hours—to a paediatric radiologist.

Workforce requirements

As per Level 4, plus:

Medical

- a lead clinician with responsibility for clinical governance of the service who is a Fellow of the CICM and is a registered medical specialist with credentials in intensive care medicine
- a registered medical specialist with credentials in intensive care medicine, anaesthetics, emergency or general medicine must be rostered and available exclusively to cover the ICU at all times
- in addition to the duty specialist, at least one registered medical practitioner with paediatric intensive care experience, exclusively rostered and predominantly present in the unit at all times

Nursing

- nursing staff available to greater than 1:1 ratio for patients requiring complex management
- a minimum 50 percent of nursing staff with, or working towards, a recognised qualification in intensive care or clinical specialty of the unit²
- a registered nurse with paediatric experience rostered on at all times when a paediatric patient is present

Allied health

- as per Level 4 service

Other

- as per Level 4 service.

Support service requirements

A Level 5 service requires:

Service	On-site	Accessible
children's anaesthetic	4	
children's medical	4	
children's surgical	4	
medical imaging		5
medication	5	
mental health (child and youth)		4
pathology	4	
perioperative (relevant section/s)	5	

Specific risk considerations

In addition to risk management outlined in the Fundamentals of the Framework, specific risk management requirements relevant to Level 5 Children's Intensive Care Services include:

- the CICM acknowledges that recruitment of Fellows to regional units may be difficult and, therefore, supports the designation of Level 5 for a regional ICU if this is the only deficiency, and if genuine attempts have been made to recruit suitable personnel.¹ Under such circumstances, appropriately trained and registered medical specialists (e.g. anaesthetists, general physicians, emergency medicine specialists) are able to provide the required medical/specialist coverage.

Level 6 Children's Intensive Care Service

Service description

A Level 6 service is the only designated PICU. This service is the highest level of service for children requiring paediatric intensive care and is capable of providing comprehensive critical care (including complex, multisystem paediatric life support to children for an indefinite period, as well as advanced cardiorespiratory support and monitoring, renal replacement therapy, complex neurological monitoring) and support for complex Level 6 and superspecialty activity. A Level 6 service has access—24 hours—to an on-site laboratory and medical imaging to support the Level 6 referral role.

A Level 6 service needs access to an appropriately staffed and equipped retrieval service 24 hours a day.

Service requirements

As per Level 5, plus:

- a minimum of six staffed and equipped paediatric-specific intensive care beds capable of managing ventilated patients¹
- access to an on-site specialty child protection service
- documented processes with paediatric subspecialties
- access to a designated resuscitation coordinator and education program
- access to paediatric-specific modalities (e.g. simulation)
- must meet standards for accreditation as a CICM training unit.

Workforce requirements

As per Level 5, plus:

Medical

- a designated lead clinician with responsibility for clinical governance of the service who is a registered medical specialist with credentials in paediatric intensive care medicine and a Fellow of the CICM, and has a clinical practice predominantly in paediatric intensive care medicine
- all registered medical specialists with credentials in paediatric intensive care medicine must be Fellows of the CICM or deemed specialists in paediatric intensive care medicine
- at least one registered medical specialist with credentials in paediatric intensive care medicine rostered to either a single ICU or up to a maximum of 12 beds
- an available ratio of specialist:patient not exceeding 1:12
- a specialist on-call roster ratio at a minimum of 1:5
- in addition to the registered medical specialist with credentials in paediatric intensive care medicine, there must be at least one registered medical practitioner with paediatric intensive care experience exclusively rostered to the unit

Nursing

- a nurse manager (however titled)
- designated outreach nursing staff to provide services to Levels 4 and 5

Allied health

- access—24 hours—to allied health professionals, including an identified physiotherapist and social worker 24 hours

Other

- as per Level 4 service.

Support service requirements

A Level 6 service requires:

Service	On-site	Accessible
children's anaesthetic	5	
children's medical	5	
children's surgical	5	
medical imaging	5	
medication	5	
mental health (child and youth)		4
nuclear medicine	5	
pathology	5	
perioperative (section 1 operating suite)	5	

Legislation, regulations and legislative standards

Refer to the Fundamentals of the Framework and the Preamble to Children's Services for details.

Non-legislative standards, guidelines, benchmarks, policies and frameworks

In addition to the Fundamentals of the Framework and the Preamble to Children's Services, the following are relevant to children's intensive care services:

- Australian and New Zealand College of Anaesthetists, Joint Faculty of Intensive Care Medicine, Australasian College for Emergency Medicine. Minimum Standards for Intrahospital Transport of Critically Ill Patients. ANZCA, JFICM, ACEM; 2003. www.acem.org.au/media/policies_and_guidelines/min_stand_intrahosp_crit_ill.pdf
- Australian College of Critical Care Nurses. ACCCN ICU Staffing Position Statement on Intensive Care Nursing Staffing. ACCCN; 2003. www.acccn.com.au/images/stories/downloads/staffing_intensive_care_nursing.pdf
- Australian College of Critical Care Nurses. ACCCN Position Statement (2006) on the Use of Healthcare Workers other than Division 1 Registered Nurses in Intensive Care. ACCCN; 2006. www.acccn.com.au/images/stories/downloads/use_of_healthcare_workers.pdf
- Australian College of Critical Care Nurses. ACCCN Position Statement (2009) on Organ and Tissue Donation and Transplantation: The roles of the critical care nurses and the critical care units and the provision of critical care education. ACCCN; 2009.
- Australian College of Critical Care Nurses. ACCCN Resuscitation Position Statement (2006): Adult and Paediatric Resuscitation by Nurses. ACCCN; 2006. www.acccn.com.au/images/stories/downloads/adult_paediatric_resus.pdf
- Australian Council on Healthcare Standards. Intensive Care Indicators. ACHS; 2010. www.achs.org.au
- College of Intensive Care Medicine of Australia and New Zealand. Intensive Care Specialist Practice in Hospitals Accredited for Training in Intensive Care Medicine. CICM; 2010. www.bonntech.com.au/testing/cicm/cmsfiles/IC-2%20Intensive%20Care%20Specialist%20Practice%20in%20Hospitals%20Accredited%20for%20Training%20in%20Intensive%20Care%20Medicine.pdf
- College of Intensive Care Medicine of Australia and New Zealand. Minimum Standards for Intensive Care Units: Review IC-1. CICM; 2010. www.cicm.org.au/
- College of Intensive Care Medicine of Australia and New Zealand. The Supervision of Vocational Trainees in Intensive Care Medicine. IC-4 CICM; 2010. www.cicm.org.au/cmsfiles/IC-4%20The%20Supervision%20of%20Vocational%20Trainees%20in%20Intensive%20Care%20Medicine.pdf

Reference list

1. College of Intensive Care Medicine of Australia and New Zealand. Minimum Standards for Intensive Care Units: Review IC-1. CICM; 2010.
2. Australian College of Critical Care Nurses. ACCCN ICU Staffing Position Statement on Intensive Care Nursing Staffing. ACCCN; 2003.
www.acccn.com.au/images/stories/downloads/staffing_intensive_care_nursing.pdf