

## Module overview

Please note: This module must be read in conjunction with the Fundamentals of the Framework (including the glossary and acronym list), Children’s Services Preamble and 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 provide specialist expertise and facilities for the support of children and their families, using the skills of medical, nursing and other staff qualified and experienced in the management of critically ill children. 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.<sup>1</sup>

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.<sup>1</sup>

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:

- provide relevant clinical indicator data to satisfy accreditation and other statutory reporting obligations
- 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:

- adequate supply of suitably trained workforce with credentials and competencies to provide evidence-based, safe, high-quality intensive care practice,<sup>1</sup> with guidance for staffing requirements in ICUs outlined in various documents.<sup>1,2</sup>

## Intensive Care Services - Children's

	Level 4	Level 5	Level 6
Service description	<ul style="list-style-type: none"> <li>primarily an adult intensive care service capable of providing comprehensive critical care, including multisystem paediatric life support, to:               <ul style="list-style-type: none"> <li>children greater than 12 years of age for indefinite period.</li> <li>children 12 years of age and younger requiring intensive care-specific intervention and/or invasive monitoring with:                   <ul style="list-style-type: none"> <li>these children being managed in consultation and early collaboration (within 12 hours of admission) with paediatric intensive care specialist if it is anticipated admission will be for more than 24 hours</li> <li>children's intensive care service collaborating with local registered medical specialists with credentials in general paediatrics within 12 hours of admission.</li> </ul> </li> </ul> </li> <li>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 paediatric intensive care</li> </ul>	<ul style="list-style-type: none"> <li>capable of providing high standard of general intensive care for children in general ICU, including complex multisystem children's life support.</li> <li>capable of providing invasive ventilation and invasive cardiovascular monitoring for period of up to 7 days (more complex medical care and treatment should be provided in consultation and early collaboration with paediatric intensive care specialist within 12 hours of admission).</li> <li>all children admitted to Level 5 service must have on-site paediatric consultation within 12 hours of admission.</li> <li>referrals for children likely to require transfer due to complexity of care or subspecialty availability must be managed in collaboration and consultation with paediatric intensive care specialist within 24 hours of admission.</li> </ul>	<ul style="list-style-type: none"> <li>only designated PICU and highest level of service for children requiring paediatric intensive care.</li> <li>capable of providing comprehensive critical care (including complex, multisystem paediatric life support to children for 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.</li> <li>access—24 hours—to on-site laboratory and medical imaging to support Level 6 referral role.</li> <li>access—24 hours— to appropriately staffed and equipped retrieval service.</li> </ul>

	Level 4	Level 5	Level 6
	<p>specialist if it is anticipated admission will be for more than 24 hours, and close observation care beds may be provided within Level 4 intensive care service.</p> <ul style="list-style-type: none"> <li>children up to 16 years of age with complex social issues or significant comorbidities needing combined care with specialist paediatric medical team.</li> </ul>		
<b>Service requirements</b>	<p>As per module overview, plus:</p> <ul style="list-style-type: none"> <li>all patients admitted to unit must be referred for management to rostered registered medical specialist taking responsibility for unit at time of admission.</li> <li>number of available beds based on demand, with flexibility to meet increased admissions.</li> <li>daily consultation with higher level ICU for all patients ventilated for more than 24 hours and/or with multisystem failure; however, if Fellow of College of Intensive Care Medicine (CICM) is in charge of unit, this provision may be unnecessary, except to facilitate access to subspecialty services outside ICU.</li> <li>ventilation and simple, invasive cardiovascular monitoring for children 12 years of age and younger until transfer to higher level paediatric intensive care</li> </ul>	<p>As per Level 4, plus:</p> <ul style="list-style-type: none"> <li>typically can accommodate at least four ventilated children at one time with access to paediatric-appropriate equipment capable of managing ventilated infants, children and adolescents.<sup>1</sup></li> <li>paediatric bed space supports physiological and psychological needs of child and family.</li> <li>access—24 hours—to a paediatric radiologist.</li> </ul>	<p>As per Level 5, plus:</p> <ul style="list-style-type: none"> <li>typically can accommodate at least six ventilated children at one time with access to paediatric-specific intensive care beds and equipment capable of managing ventilated infants, children and adolescents.<sup>1</sup></li> <li>access to on-site specialty child protection service.</li> <li>documented processes with children's subspecialties.</li> <li>access to designated resuscitation coordinator and education program.</li> <li>access to paediatric-specific modalities (e.g. simulation).</li> <li>must meet standards for accreditation as CICM training unit.</li> </ul>

	Level 4	Level 5	Level 6
	<p>service if it is anticipated admission will be for more than 24 hours.</p> <ul style="list-style-type: none"> <li>• collaborative decision to keep patients made by on-site registered medical specialist with credentials in paediatrics and local registered medical specialist with credentials in intensive care medicine, in consultation with registered medical specialist with credentials in paediatric intensive care medicine.</li> <li>• management of children in general intensive care service in line with Level 4 children's medical service.</li> <li>• intensive care beds occupied by children must have age-appropriate equipment and staff who can meet needs of children.</li> </ul>		
Workforce requirements	<p>As per module overview, plus:</p> <ul style="list-style-type: none"> <li>• when children admitted, must be medical/nursing staff trained in advanced paediatric life support.</li> </ul> <p><b>Medical</b></p> <ul style="list-style-type: none"> <li>• lead clinician with responsibility for clinical governance of service is registered medical specialist with credentials in intensive care medicine, anaesthetics, emergency or general medicine.</li> </ul>	<p>As per Level 4, plus:</p> <p><b>Medical</b></p> <ul style="list-style-type: none"> <li>• lead clinician with responsibility for clinical governance of service who is Fellow of CICM and registered medical specialist with credentials in intensive care medicine.</li> <li>• registered medical specialist with credentials in intensive care medicine, anaesthetics, emergency or general medicine must be rostered and</li> </ul>	<p>As per Level 5, plus:</p> <p><b>Medical</b></p> <ul style="list-style-type: none"> <li>• designated lead clinician with responsibility for clinical governance of service who is registered medical specialist with credentials in paediatric intensive care medicine and Fellow of CICM, and has clinical practice predominantly in paediatric intensive care medicine.</li> <li>• all registered medical specialists with credentials in paediatric intensive care</li> </ul>

Level 4	Level 5	Level 6
<ul style="list-style-type: none"> <li>• support available to unit from registered medical specialist with experience in intensive care medicine; however, if registered medical specialist is simultaneously rostered for second clinical area (e.g. operating suites), second registered medical specialist with intensive care medicine experience must be identified to support ICU in event duty specialist unable to attend.</li> <li>• in addition to registered medical specialist, at least one on-site registered medical practitioner with appropriate level of experience, exclusively rostered to unit and immediately accessible 24 hours.</li> <li>• Access-24 hours- to registered medical specialist with credentials in paediatrics.</li> <li>• telephone access—24 hours—to registered medical specialists with credentials in paediatric intensive care medicine who are Fellows of CICM.</li> <li>• identified local registered medical specialist with credentials in paediatrics to act as local paediatric expert and provide assistance in patient care until transfer to higher level service.</li> </ul> <p><b>Nursing</b></p>	<p>accessible exclusively to cover ICU at all times.</p> <ul style="list-style-type: none"> <li>• in addition to duty specialist, at least one registered medical practitioner with paediatric intensive care experience, exclusively rostered and predominantly present in unit at all times.</li> </ul> <p><b>Nursing</b></p> <ul style="list-style-type: none"> <li>• nursing staff available to ensure patient–nurse ratio greater than 1:1 for patients requiring complex management.</li> <li>• ideally all nursing staff with, or working towards, recognised qualification in intensive care or clinical specialty of unit.<sup>2</sup></li> <li>• registered nurse with paediatric experience rostered on at all times when children admitted to unit.</li> </ul>	<p>medicine must be Fellows of CICM or deemed specialists in paediatric intensive care medicine.</p> <ul style="list-style-type: none"> <li>• at least one registered medical specialist with credentials in paediatric intensive care medicine rostered to either single ICU or up to maximum of 12 beds.</li> <li>• accessible ratio of specialist-patient not exceeding 1:12.</li> <li>• specialist on-call roster ratio at maximum of 1:5.</li> <li>• in addition to registered medical specialist with credentials in paediatric intensive care medicine, must be at least one registered medical practitioner with paediatric intensive care experience exclusively rostered to unit.</li> </ul> <p><b>Allied health</b></p> <ul style="list-style-type: none"> <li>• access—24 hours—to allied health professionals, including identified physiotherapist and social worker, as required.</li> </ul>

	Level 4	Level 5	Level 6
	<ul style="list-style-type: none"> <li>• suitably qualified and experienced nurse manager (however titled) in charge of unit.</li> <li>• suitably qualified and experienced registered nurse in charge on each shift.</li> <li>• minimum nurse-patient ratio of 1:1 for ventilated and similarly critically ill patients.<sup>2</sup></li> <li>• additional supernumerary registered nurse providing assistance to bedside nurses for every four patients requiring one-to-one nursing.<sup>2</sup></li> <li>• all unit nursing staff responsible for direct patient care are registered nurses.</li> <li>• minimum of two registered nurses present in unit at all times when patient admitted to unit.</li> <li>• all registered nurses trained in advanced life support.</li> <li>• access to support and nursing advice from Level 5 and 6 children’s intensive care nursing services.</li> <li>• access to registered nurse with paediatric nursing experience for expert guidance and /or assistance when child admitted to service.</li> </ul> <p><b>Allied health</b></p> <ul style="list-style-type: none"> <li>• access—during business hours—to allied health professionals including identified</li> </ul>		

	Level 4	Level 5	Level 6
	<p>dietician, occupational therapist, pharmacist, social worker and speech pathologist, as required.</p> <ul style="list-style-type: none"> <li>access—24 hours—to physiotherapist on request.</li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>access to technical support staff (e.g. biomedical engineers and scientific officers), as required.</li> </ul>		
<b>Specific risk considerations</b>	Nil	<p>In addition to what is outlined in the Fundamentals of the Framework, specific risk management requirements include:</p> <ul style="list-style-type: none"> <li>with regard to lead clinician, acknowledgement by CICM recruitment of Fellows to rural/regional units may be difficult and College supports designation of Level 5 for regional ICU if this were only deficiency, genuine attempts had been made at recruitment of suitable personnel<sup>1, 2</sup> and, under such circumstances, appropriately trained and registered medical specialists (e.g. anaesthetists, general physicians, emergency medicine specialists) were able to provide required medical / specialist coverage.</li> </ul>	Nil



## Support service requirements for children’s intensive care service

	Level 4		Level 5		Level 6	
	On-site	Accessible	On-site	Accessible	On-site	Accessible
<b>Children’s anaesthetic</b>	4		4		6	
<b>Children’s medical</b>	4		4		5	
<b>Children’s surgical</b>	4		4		6	
<b>Medical imaging</b>	4			5	5	
<b>Medication</b>	4		5		5	
<b>Mental health (child &amp; youth)</b>		4		4		5
<b>Nuclear medicine</b>					5	
<b>Pathology</b>		4	4		5	
<b>Perioperative (relevant section/s)</b>	4		5		6	

Table note: On-site means staff, services and/or resources located within the health facility or adjacent campus including third party providers.

Accessible means ability to utilise a service (either located on-site or off-site) or skills of a suitably qualified person (who may be either on-site or off-site)—without difficulty or delay—via various communication mediums including but not limited to face-to-face, telehealth, telepharmacy, and/or outreach.

# Legislation, regulations and legislative standards

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

## Non-mandatory standards, guidelines, benchmarks, policies and frameworks

(not exhaustive & hyperlinks current at date of release of CSCF v3.2)

In addition to the Fundamentals of the Framework and Children's Services Preamble, 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\\_standard\\_crit\\_ill.pdf](http://www.acem.org.au/media/policies_and_guidelines/min_standard_crit_ill.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](http://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\\_resusV2.pdf](http://www.acccn.com.au/images/stories/downloads/adult_paediatric_resusV2.pdf)
- Australian Council on Healthcare Standards. Intensive Care Indicators. ACHS; 2010.  
[www.achs.org.au](http://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; 2011. [www.cicm.org.au/cms\\_files/IC-2%20Intensive%20Care%20Specialist%20Practice%20in%20Hospitals%20Accredited%20for%20Training%20in%20Intensive%20Care%20Medicine%20Current%20September%202011.pdf](http://www.cicm.org.au/cms_files/IC-2%20Intensive%20Care%20Specialist%20Practice%20in%20Hospitals%20Accredited%20for%20Training%20in%20Intensive%20Care%20Medicine%20Current%20September%202011.pdf)
- 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/cms\\_files/IC-4%20The%20Supervision%20of%20Vocational%20Trainees%20in%20Intensive%20Care%20Medicine.pdf](http://www.cicm.org.au/cms_files/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. [www.cicm.org.au/](http://www.cicm.org.au/)
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](http://www.acccn.com.au/images/stories/downloads/staffing_intensive_care_nursing.pdf)