

# Children's Anaesthetic 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, the Children's Surgical Services module and the Perioperative Services module.

This module primarily addresses the provision of *elective* children's anaesthetic care services. The following information refers to children undergoing general anaesthetic, local anaesthetic and major regional anaesthetic/analgesia or sedation (to be collectively described as *anaesthesia*) for diagnostic or therapeutic procedures, and must be interpreted in conjunction with other professional documents of the Australian and New Zealand College of Anaesthetists (ANZCA).

**Note:** Where emergency/trauma anaesthetic services are provided for children, please refer to the Royal Australasian College of Surgeons' Australasian Trauma Verification Program<sup>1</sup> and the Children's Emergency Services module.

Anaesthetic services are a *hospital-wide* service. Children's anaesthetic services are provided by a multidisciplinary anaesthetic and anaesthetic assistant workforce with specialist expertise in the management of children requiring procedural and/or operative anaesthesia, pre- and post-procedural/operative anaesthetic care, acute pain management services, and specialist services such as children's intensive care and trauma care. Therefore, children's anaesthetic services can be provided in many locations outside the operating theatre complex. However, for the purposes of this module, providing children's anaesthetic services applies predominantly to *procedural/operative anaesthesia*.

Children's anaesthetic services commence at Level 3 and progress to Level 6. The different service levels address the interaction between the anaesthetic risk (i.e. the physical status of the patient) and the procedural/surgical complexity. The American Society of Anesthesiologists' (ASA) physical status scale describes the alignment of the physical status of the child with the level of anaesthetic risk (Table 1).

For children's post-anaesthetic care services, please refer to the Perioperative Services module, Section 4, Post-Anaesthetic Care Services.

Table 1: ASA scale for anaesthetic risk and physical status in paediatrics<sup>2</sup>

ASA score	Anaesthetic risk	Physical status
ASA 1 (P1)	<b>LOW</b>	Healthy child
ASA 2 (P2)		Child with mild systemic disease and no functional limitation
ASA 3 (P3)	<b>MEDIUM</b>	Child with severe systemic disease and definite functional limitation
ASA 4 (P4)	<b>HIGH</b>	Child with severe systemic disease that is a constant threat to life
ASA 5 (P5)		Moribund child not expected to survive 24 hours with or without surgery
ASA 6 (P6)		Declared brain-dead child whose organs are being removed for donor purposes
E		Completely healthy emergency child (ASA I) who has just received a severe trauma. The addition of E to the classification means that the patient requires an emergency procedure and the risk to the patient is no longer determined by their previous ASA status

Adapted from the physical classification system of the American Society of Anesthesiologists' Manual for Anesthesia Department Organization and Management 2001. ASA, 520N Northwest Highway, Park Ridge, Illinois 60068-2573. Physical status levels adapted in consultation with the CSCF Children's Anaesthetic Advisory Group 2009

It is recognised that the ASA scale for anaesthetic risk is an imperfect system, and for the purposes of this module the scale is used only for patients *above the age of 1 year*.<sup>2</sup> Children below the age of 1 year form a specific risk group as recognised by the ANZCA Professional Standard PS 29. When using the ASA scale for children less than 1 year of age, the following measures should be considered to ensure safe care is delivered from Level 4 services and above:

- anaesthetic is performed within a suitable environment using relevant paediatric-specific equipment that must be in accordance with ANZCA PS29
- registered medical practitioners work within their credentialed scope of practice.

The ASA scale is not used for risk stratification but has been used in this module as a surrogate measure. This consideration is not meant to be a replacement for sound clinical judgment. There should also be consideration for the ex-premature infant in regard to perioperative risk. A detailed children's elective surgical service provision matrix (Appendix 1) relevant to children of all ages directs clinical management of anaesthetic and surgical services. The matrix combines surgical complexity with the anaesthetic physical status to ascertain the service level required for the child; however, the matrix refers to *elective* surgery only. Age-appropriate intensive care services that are capable and prepared to accept and admit a child, if required, following a surgical procedure (Appendix 2) must also be available.

Where services provide anaesthesia for children, anaesthesia should be recognised as a subspecialty. Medical staff providing anaesthesia to children must have credentials and a scope and currency of practice that enables them to provide anaesthesia to these patients. This must be noted on each registered medical specialist's privileging document. Registered medical specialists administering anaesthetics to children must have relevant training, competencies, credentialing and experience or be supervised, and should participate in the

maintenance of their qualifications within their professional college and/or a professional training program.

In circumstances where specialist anaesthetists may not be available or present in sufficient numbers to provide a complete service, registered medical practitioners (general practitioners or rural generalists) who have successfully completed an Advanced Rural Training module in Anaesthesia, and who have approval to practise by the Joint Consultative Committee on Anaesthesia (JCCA), may provide specific anaesthetic services.<sup>3</sup>

In accordance with the JCCA, endorsement for elective paediatric anaesthesia for children as young as 2 years of age may be granted on an individual-practitioner basis after demonstration of assessment/accreditation and competency by regional representatives of the JCCA. Such endorsement is to be related to the individual's documented training in paediatric anaesthesia for this age group.

Staff performing the role of assistant to the anaesthetist must have experience and training in the care of children.<sup>4,5,6,7,8,9</sup> Anaesthetic services, operating suites, procedure rooms, radiology suites and all areas where anaesthetics (including sedation) are administered should fulfil the Australasian Healthcare Facilities Guidelines and be compliant with ANZCA T1.

Pre-anaesthetic consultation for elective surgery is mandatory for all patients and must be provided in accordance with ANZCA PS7.

A medical assessment of the patient prior to anaesthesia ensures:

- the patient is in an optimal state of health for the planned procedure
- anaesthetic management is planned
- informed consent for the anaesthetic is given.

Recovery from anaesthesia occurs in a post-anaesthetic recovery area where services are equipped and staffed as per ANZCA PS20 and PS4, and Australian College of Operating Room Nurses (ACORN) S19.

The main factors affecting anaesthetic service levels are the interaction between the anaesthetic risk (i.e. physical status of the patient with complicating medical comorbidities) and the procedural/surgical complexity. Additional high-risk categories of children with significant comorbidities exist (e.g. obese children where these children require combined paediatric-medical specialist team care prior to a procedural intervention). Considerations for children should include the post-operative plan and care needs and requirements. Geographical location, transfer of the child and distance from specialist services should be carefully considered and safely planned prior to performing any procedure.

There are varying anaesthetic service capability levels where similar support services and staffing are required to provide a safe anaesthetic and surgical service. With children there are higher risks in perioperative care related to age and history of prematurity. The specialist anaesthetist providing anaesthetic services in younger age groups requires specialisation of training and experience. Therefore the children's elective surgical service provision matrix has defined anaesthetic risk as low, medium and high based on ASA levels (Table 1).

In addition, children less than 1 year old with ASA levels of 1 and 2 will have an increased anaesthetic risk within the matrix due to the actual age of the child and any prematurity history.<sup>5</sup> The following definitions are used in the Children's Anaesthetic Services module:

- a *premature infant* is less than 37 weeks gestation at birth<sup>10</sup>
- a *premature infant with comorbidities* is an infant less than 37 weeks gestation at birth with additional conditions (e.g. less than 37 weeks gestation at birth with anaemia)<sup>10</sup>
- a *neonate* is an infant in the first 28 days of life

- *postconceptional age (PCA)* is the gestational age plus postnatal age (in weeks)
- *credentialed specialist anaesthetist* is a registered medical specialist with credentials in anaesthesia as credentialed by the facility
- *credentialed specialist paediatric anaesthetist* is a registered medical specialist with credentials in anaesthesia who spends the majority of their workload providing paediatric anaesthesia.

When surgery is to be performed where the risk is greater than the anaesthetic service level capability, alternatives such as transfer or retrieval to a service that can provide patient care by more experienced staff should occur as long as the service level requirements are fulfilled. Various terms relating to surgical complexity as it relates to children (Appendix 3) have been used within the Children's Surgical Services module.

Children requiring the provision of anaesthesia may arrive from a variety of locations. Anaesthetic services must have close and direct relationships with various clinical and support services including, but not limited to, emergency, intensive care, maternal foetal medicine, medical imaging, perioperative and surgical services.

## Service networks

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

- children's anaesthetic services must meet the requirements of the relevant clinical module where maternity, paediatric and trauma services are provided
- access to teleconferencing facilities.

## Service requirements

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

- links with emergency services and involvement in the development of emergency anaesthetic services, where applicable to that service
- all equipment needed for children requiring anaesthetic/anaesthesia readily available and must be in accordance with ANZCA PS29, compliant with the relevant Australian and New Zealand standards, Drugs and Therapeutics standards and should be in accordance with ANZCA Guidelines
- access to the operating suite must be controlled with only authorised staff entering to ensure security of drugs, equipment and maintenance of infection control requirements (other staff and visitors must report to reception prior to entry).

## Workforce requirements

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

- drugs used for conscious sedation must be prescribed by registered medical practitioners or registered medical specialists with appropriate training in paediatrics and in the administration of conscious sedation
- conscious sedation can only be performed by a registered medical practitioner who is also the proceduralist under the following conditions:
  - propofol and other anaesthetic agents must not be used

- another suitably trained registered medical practitioner is immediately available within the procedural suite
- the proceduralist has training in sedation and paediatrics
- the proceduralist has airway and paediatric resuscitation skills
- an assistant is present during the entire procedure
- the assistant is appropriately trained in the observation and monitoring of sedated paediatric patients, and in paediatric resuscitation skills
- the assistant must be immediately available to manage the patient
- the assistant's primary duty is to monitor the level of consciousness and cardiorespiratory status of the patient throughout the entire procedure
- the assistant may, if appropriately trained, administer sedative and/or analgesic drugs under the direct supervision of the medical practitioner
- when conscious sedation is performed using propofol or other anaesthetic agent/s, an appropriately trained registered medical practitioner other than the proceduralist must be in attendance and is solely responsible for the administration and monitoring of the conscious sedation
- conscious sedation must be administered by a registered medical practitioner or registered medical specialist with appropriate training in paediatrics and in the administration of conscious sedation
- anaesthesia must be administered by a registered medical specialist with training in anaesthesia and paediatrics
- registered medical practitioners undertaking training in anaesthesia may provide anaesthesia under supervision with restrictions on their practice and supervision arrangements determined by the health facility Credentials and Clinical Privileges Committee or equivalent including:
  - anaesthetic specialists on the Medical Board Register (full or deemed)
  - doctors on the Medical Board Register without specialist registration but who are:
    - in training and under the supervision of a recognised credentialed anaesthetic provider
    - an international medical graduate partaking in a formal upskilling program
    - a rural generalist or general practitioner who has advanced skills in anaesthesia
    - a general medical practitioner who has undergone basic training in anaesthesia, continues to be credentialed, and works within a supervised and oversight practice (e.g. a senior house officer)
- the anaesthetist responsible for the anaesthetic must be in attendance at all times while the patient is undergoing an anaesthetic (ANZCA PS8) and if the anaesthetist needs to leave the operating theatre, handover to a registered medical practitioner occurs as per ANZCA PS10
- assistant to medical staff administering sedation/anaesthesia (anaesthetic assistant) must be exclusively available to the practitioner at induction of and emergence from sedation/anaesthesia and during the procedure, as required
- anaesthetic assistant/s must have appropriate training and competency in the care of children
- anaesthetic assistants undertaking rotational training or upskilling must be appropriately supervised at all times by a fully qualified anaesthetic assistant with recent practice
- nursing staff must be trained and educated commensurate with the roles defined by the level of service and procedures being performed, and have completed annual

competency in accordance with ACORN's Perioperative Nursing Roles—Anaesthetic Nurse (NR1) or equivalent document(s)

- where a number of anaesthetic assistants are employed, an appropriately trained and experienced senior member of the group must be designated as the supervisor.

## Level 3 Children's Anaesthetic Service

### Service description

A Level 3 service provides care for children with low anaesthetic risk receiving local anaesthetics with sedation and general anaesthetics. Level 3 services may be undertaken in a day hospital or inpatient facility. This service provides all types of sedation including caudal blocks, neuraxial blocks and regional blocks.

Where these procedures are performed, the anaesthetic may be administered by:

- a registered medical specialist with credentials in anaesthesia
- a registered medical practitioner (general practitioner) with credentials in anaesthesia
- a registered medical practitioner undertaking training in anaesthesia under supervision
- other credentialed practitioners.

This level of service may be provided to children above the age of 4 years by a registered medical practitioner (general practitioner) with credentials in anaesthesia, but who may be credentialed for children as young as 2 years of age on an individual basis in accordance with JCCA guidelines. For specific training and education refer to the ANZCA PS29. This level of service manages:

- surgical complexity II procedures with low anaesthetic risk
- surgical complexity III procedures with low anaesthetic risk for a child who is:
  - greater than 2 years of age with a registered medical specialist with credentials in anaesthesia or facility-credentialed registered medical practitioner
  - greater than 4 years of age with a registered medical practitioner with credentials in anaesthesia
- surgical complexity III with low anaesthetic risk (day surgery facilities – Specialist Paediatric Surgery) for a child greater than 1 year of age, with anaesthesia performed by a registered medical specialist with credentials in anaesthesia and paediatrics.

Level 3 services must have access to a Level 4 children's intensive care service and be capable of providing immediate resuscitation and short-term cardiorespiratory support until patient transfer. This access must include documented processes for transfer and acceptance of patients between public and licensed private services and the Queensland Ambulance Service. Selection of patients and surgical procedures in these facilities should ensure that intensive care admission would be an unexpected and rare event.

### Service requirements

As per module overview, plus:

- at least one procedure room
- access to Level 4 children's intensive care services
- where service is provided 24 hours a day, registered medical practitioners available
- immediate access to emergency equipment, drugs and oxygen required for ventilation as per The Australian Resuscitation Council guidelines for infants, children and adolescents
- immediate access to a registered medical practitioner with credentials in anaesthetics who can attend emergencies during hours of operation
- emergency post-anaesthetic care services available

- emergency anaesthetic services may be available
- elective anaesthetic services provided during business hours
- elective post-anaesthetic care services generally provided during business hours.

## Workforce requirements

As per module overview, plus:

### Anaesthetic workforce

- credentialed registered medical practitioners (general practitioner) with advanced rural generalist training and anaesthetic qualifications
- access via telephone to a registered medical specialist with credentials in anaesthetics who assists in assessing and advising on all types of anaesthesia and patient types undergoing anaesthetic
- registered medical specialist with credentials in anaesthesia and paediatrics to administer anaesthetic to children between 1 and 2 years of age in the category of surgical complexity III with low anaesthetic risk
- registered medical practitioner on-site until the patient is discharged from the post-anaesthetic care unit

### Anaesthetic assistant workforce

- assistant/s to medical staff administering sedation/anaesthesia must be dedicated anaesthetic assistant/s with appropriate training and demonstrated ongoing competency, in accordance with ANZCA PS8.

## Support service requirements

A Level 3 service requires:

Service	On-site	Accessible
children's intensive care		4
medication	2	
perioperative (relevant section/s)	3	

## Level 4 Children's Anaesthetic Service

### Service description

A Level 4 service occurs in a broad range of facilities including high-level day surgery services offering different levels of clinical perioperative expertise on-site. Unlike Level 3 surgical services, Level 4 services will have regular daily elective surgical operating lists performed by surgical specialists and specialist anaesthetists with integrated fully functioning perioperative services. Although the facility may have dedicated paediatric close observation care areas, there is no on-site neonatal intensive care unit. There are documented processes to Level 4 and higher level intensive care services. As in all levels, the ability to provide safe, appropriate perioperative care matched to the proposed surgical procedure and the age of the child is the main consideration.

The complexity of anaesthesia provided in a Level 4 children's anaesthetic service depends on the standard of paediatric-specific post-anaesthetic facilities and specialised paediatric medical staff. In addition to the anaesthetic service provided at Level 3, this level service manages:

- surgical complexity I with high anaesthetic risk
- surgical complexity II with medium anaesthetic risk
- surgical complexity III with low and medium anaesthetic risk and surgical complexity IV with low anaesthetic risk for a child who is:
  - greater than 1 year of age, with anaesthesia performed by a registered medical specialist with credentials in anaesthesia
  - greater than 6 months of age with no comorbidities for specific surgical and diagnostic procedures in a facility with an allocated children's area for post-surgical nursing management. A registered medical specialist with credentialing in the provision of paediatric anaesthesia and specialised paediatric nursing staff on-site during the time of service. These particular procedures have low perioperative risks and medium to high post-anaesthetic care requirements due to age, such as:
    - nasal cautery
    - removal of foreign body from nose and ear
    - insertion of grommets
    - insertion of cochlear implant
    - examination of ears or eyes under general anaesthetic
    - tear duct probing
    - circumcision
    - other similar procedures
  - a term infant aged 44 weeks PCA (T44) or more, and a well ex-premature infant with no other comorbidities aged 52 weeks PCA or more in a facility with an allocated children's area for post-surgical nursing management and specialised paediatric nursing staff on-site during the time of service. These particular procedures have low perioperative risks and medium to high post-anaesthetic care requirements due to age, and are performed by registered surgical and anaesthetic specialists with recognised training and credentialing in paediatric subspecialisation
- surgical complexity IV with medium anaesthetic risk due to age or history of prematurity with ASA 1 or 2:

- only in facilities with designated paediatric close observation care beds and a children's ward, and only when performed by a registered medical specialist with credentials in paediatric surgery, and a registered medical specialist with credentials in anaesthetics with competency and scope of practice in paediatric anaesthesia
- only for specific paediatric surgical procedures, such as inguinal hernia repair and pyloromyotomy
- there must be a registered medical specialist with credentials in paediatrics available for on-site consultation 24 hours, and a registered nurse competent in providing advanced paediatric life support or experience to equivalent standard and scope of practice to care for the child. Must have full facilities for provision of extended apnoea monitoring
- for term infants (T) and for well, ex-premature infants with no other comorbidities who are aged 44 weeks PCA or more
- surgical complexity IV with ASA 3:
  - only in facilities with designated paediatric close observation care beds and a children's ward and only when performed by registered surgical and anaesthetic specialists with recognised training and credentialing in paediatric subspecialisation
  - there must be a registered medical specialist with credentials in paediatrics available for consultation on-site 24 hours, and a registered nurse competent in providing advanced paediatric life support or experience to equivalent standard and scope of practice to care for the child
  - for T44 and ex-premature infants who are aged 52 weeks PCA or more.

A Level 4 service has documented processes with higher level services ensuring access to information related to the latest evidence-based care and treatments.

Day surgery facilities providing Level 4 anaesthetic services must provide the perioperative clinical expertise and facilities as described above during their hours of operation as stipulated in the service requirements below.

Registered medical practitioners providing anaesthesia must have credentials and a scope of practice that enables the provision of anaesthesia to children. They must demonstrate currency of practice and it must be noted on their privileging document.

## Service requirements

As per Level 3, plus:

- clinical services available 24 hours
- emergency anaesthetic services provided—medical services provided on-site or in close enough proximity to provide a rapid response at all times
- separate appropriately equipped post-anaesthetic recovery area
- dedicated post-anaesthetic recovery staff available 24 hours
- surgical and/or subspecialty (paediatric) area
- access to children's close observation care area/s
- facilities providing surgical complexity IV procedures must have designated paediatric close observation care surgical beds available to relevant specialty with associated workforce either available in the intensive care unit or in a designated area of the surgical/subspecialty ward
- access to Level 4 children's intensive care services

- outreach services may be provided with specialist services/functions being provided on a visiting basis.

## Workforce requirements

As per Level 3, plus:

### Anaesthetic workforce

- registered medical specialists with credentials in anaesthetics and scope of practice in paediatric anaesthesia suitable for age of child and anaesthetic complexity
- registered medical practitioners training or with experience in anaesthetics
- where registered medical practitioners (registrars) are undertaking training in anaesthetics in a credentialed teaching post, they must be supervised by a registered medical specialist with credentials in anaesthetics as per ANZCA Guidelines
- in facilities providing surgical services for term infants and well, ex-premature infants (>52 weeks PCA ), the registered medical specialists providing anaesthesia or surgery must have recognised training, currency of practice and credentialing in paediatric subspecialisation, and this must be noted on their privileging document

### Anaesthetic assistant workforce

- as per Level 3 service.

## Support service requirements

A Level 4 service requires:

Service	On-site	Accessible
children's intensive care		4
medication	4	
perioperative (relevant section/s)	3	

## Level 5 Children's Anaesthetic Service

### Service description

A Level 5 service, including a post-anaesthetic care service, is provided in a designated hospital or general hospital facility for adults and children. This level of service provides anaesthetic services for neonates and children whose condition does not require on-site Level 6 superspecialties.

A Level 5 anaesthetic service must have on-site Level 5 children's intensive care services. In addition to the anaesthetic and post-anaesthetic care service provided at Level 4, this level of service manages:

Neonates:

- surgical complexity I and II with low to medium anaesthetic risk

Children (over T44 and ex-premature infants who are more than or equal to 52 weeks PCA):

- surgical complexity I to IV with high anaesthetic risk
- surgical complexity V with low and medium anaesthetic risk.

This level of service has documented processes with public or licensed private health facilities to support patient referral and transfer to/from both lower and higher levels of service. Increased levels of risk will be managed until transfer to the highest level of service is arranged.

The service is part of a service network but must have access to information related to the latest evidence-based care/treatments.

### Service requirements

As per Level 4, plus:

- specific protocols and policies in place for the management of emergency and elective patients
- planned provision for intensive care services for children and adolescents requiring post-operative ventilation
- on-site Level 5 children's intensive care service
- access to Level 5 neonatal services (NICU)
- may have access to specialist children's ward areas (e.g. paediatric orthopaedics)
- may have links with emergency services and involvement in the development of emergency anaesthetic services
- may provide outreach services in a shared-care model
- may be involved in the planning of anaesthetic services for future needs of the facility.

## Workforce requirements

As per Level 4, plus:

- dedicated on-site medical and nursing staff available to attend operating room and post-anaesthetic recovery area 24 hours a day

### Anaesthetic workforce

- access—24 hours—to a registered medical specialist with credentials in anaesthetics
- access to registered medical specialists with credentials in anaesthetics who assist and guide assessment, treatment, case management and case review
- may have access to a registered medical specialist with credentials in anaesthetics and subspecialty in paediatrics
- may provide some specialist anaesthetic services/functions on a visiting basis that is within the capability of the host service

### Anaesthetic assistant workforce

- as per Level 3 service.

## Support service requirements

A Level 5 service requires:

Service	On-site	Accessible
children's intensive care	5	
medication	5	
neonatal		5

## Level 6 Children's Anaesthetic Service

### Service description

A Level 6 service is a specialist, statewide and (where applicable) interstate service. This level of service manages the highest level of anaesthetic risk in conjunction with the most complex surgical and medical presentations where anaesthetics are required. A Level 6 service is supported by a wide range of medical and surgical subspecialties and support services.

A Level 6 service provides general anaesthesia for children of all ages. Medical and nursing staff must demonstrate knowledge, competency and experience in subspecialties of anaesthesia (i.e. neonatal anaesthesia, complex anaesthesia and anaesthesia for superspecialty procedures).

Staff at a Level 6 service possess a critical mass of expertise and provide statewide leadership in clinical management to service providers. A statewide consultation and liaison service may be provided. A Level 6 service may be a provider of telehealth. This level service may also be involved in the development of teleporting services.

### Service requirements

As per Level 5, plus:

- provides procedures that have a high level of complexity and magnitude of risk to patients with an extensive range of comorbidities requiring specialist staff
- procedures performed on patients with high risk potential for intra- and post-operative complications (e.g. advanced chronic disease that may not be well controlled)
- specialist medical, nursing and surgical services available on-site with many staff having subspecialty training and/or experience
- manages children of all surgical complexities and anaesthetic risk
- usually a major provider of teleconferencing facilities and coordinator of these services
- statewide provider of outreach services
- documented processes and protocols for skill enhancement for staff across the state
- may have combinations of operating theatres, endoscopy units and day surgery units
- may be involved in a statewide approach to anaesthetic risk management.

### Workforce requirements

As per Level 5, plus:

- may have lead clinicians responsible for clinical governance of services in both medical and nursing fields
- may be medical and nursing staff with subspecialty qualifications in post-anaesthetic care
- provision for registered medical practitioners and registered nurses to relieve in rural and remote areas as the need arises

## Anaesthetic workforce

- designated lead clinician responsible for clinical governance of paediatric anaesthetic services who is a registered medical specialist with credentials in anaesthesia with a subspecialty in paediatrics
- registered medical specialists with credentials in anaesthesia, anaesthetic subspecialties and pioneering procedures in anaesthetics and post-anaesthetic care
- registered medical specialists with credentials in anaesthesia with a responsibility for the training, supervising and upskilling of medical staff
- demonstrated knowledge, competency and experience in subspecialties of paediatric anaesthesia (e.g. neonatal anaesthesia, complex anaesthesia and anaesthesia for paediatric superspecialty procedures)

## Anaesthetic assistant workforce

- as per Level 3 service.

## Support service requirements

A Level 6 service requires:

Service	On-site	Accessible
children's and/or neonatal intensive care	6	
medication	5	
neonatal	6	

## 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 what is outlined in the Fundamentals of the Framework and the Preamble to Children's Services, the following are relevant to children's anaesthetic services:

- Australian and New Zealand College of Anaesthetists, The Royal Australian College of General Practitioners, and Australian College of Rural and Remote Medicine (Joint Consultative Committee on Anaesthesia). Advanced Rural Skills: Curriculum Statement in Anaesthesia. ANZCA, RACGP, ACRRM; 2003. [www.racgp.org.au/](http://www.racgp.org.au/)
- Australian and New Zealand College of Anaesthetists. Professional, Technical, Training and Educational Standards, Guidelines and Professional Documents.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS1: Recommendations on Essential Training for Rural General Practitioners in Australia Proposing to Administer Anaesthesia. ANZCA; 2002. [www.anzca.edu.au/resources/professional-documents/](http://www.anzca.edu.au/resources/professional-documents/)
- Australian and New Zealand College of Anaesthetists. Professional Standard PS2: Statement on Credentialling and Defining the Scope of Clinical Practice in

Anaesthesia. ANZCA; 2006.

- Australian and New Zealand College of Anaesthetists. Professional Standard PS4: Recommendations for the Post Anaesthesia Recovery Room. ANZCA; 2006.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS7: Recommendations on the Pre-Anaesthesia Consultation. ANZCA; 2008.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS8: Recommendations on the Assistant for the Anaesthetist. ANZCA; 2008.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS10: Guidelines on the Handover of Responsibility During an Anaesthetic. ANZCA; 2004.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS16: Statement on the Standards of Practice of a Specialist Anaesthetist. ANZCA; 2008.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS20: Recommendations on Responsibilities of the Anaesthetist in the Post-Anaesthesia Period. ANZCA; 2006.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS26: Guidelines on Consent for Anaesthesia or Sedation. ANZCA; 2005.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS28: Guidelines on Infection Control in Anaesthesia. ANZCA; 2005.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS29: Statement on Anaesthesia Care of Children in Healthcare Facilities Without Dedicated Paediatric Facilities. ANZCA; 2008.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS31: Recommendations on Checking Anaesthesia Delivery Systems. ANZCA; 2003.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS42: Recommendations for Staffing of Departments of Anaesthesia. ANZCA; 2006.
- Australian and New Zealand College of Anaesthetists. Professional Standard PS45: Statement on Patients' Rights to Pain Management and Associated Responsibilities. ANZCA; 2010.
- Australian and New Zealand College of Anaesthetists. TE1: Recommendations for Hospitals Seeking College Approval for Vocational Training in Anaesthesia. ANZCA; 2005.
- Australian and New Zealand College of Anaesthetists. TE3: Policy on Supervision of Clinical Experience for Vocational Trainees in Anaesthesia. ANZCA; 2006.
- Australian and New Zealand College of Anaesthetists. TE5: Policy for Supervisors of Training in Anaesthesia. ANZCA; 2003.
- Australian and New Zealand College of Anaesthetists. Technical Standard T1: Recommendations of Minimum Facilities for Safe Administration of Anaesthesia in Operating Suites and Other Anaesthetising Locations. ANZCA; 2008.
- Australian College of Operating Room Nurses. ACORN Standards for Perioperative Nurses: Guideline G2 Management of the Perioperative Environment. ACORN; 2008.
- Australian College of Operating Room Nurses. ACORN Standards for Perioperative Nurses: Guideline G4 Management of Postanaesthesia Recovery Unit. ACORN; 2008.
- Australian College of Operating Room Nurses. ACORN Standards for Perioperative Nurses: Nursing Roles NR1 Anaesthetic Nurse. ACORN; 2008.
- Australian College of Operating Room Nurses. ACORN Standards for Perioperative Nurses: Nursing Roles NR6 Post Anaesthetic Recovery Nurse. ACORN; 2008.
- Australian College of Operating Room Nurses. ACORN Standards for Perioperative Nurses: Position Statement PS6 Ensuring Correct Patient, Correct Site, Correct

Procedure. ACORN; 2008.

- Australian College of Operating Room Nurses. ACORN Standards for Perioperative Nurses: Standard S19 Staffing requirements. ACORN; 2008.
- Australian College of Operating Room Nurses. Standards for Perioperative Nursing for Registered and Enrolled Nurses in Australia. [www.acorn.org.au/](http://www.acorn.org.au/)
- Australian Day Surgery Nurses Association. Best practice guidelines for ambulatory surgery and procedures. Perth: Cambridge Publishing; 2009.
- Australian Society of Anaesthetic and Paramedical Officers. Standards and guidelines. [www.asapo.org.au/education/education.html](http://www.asapo.org.au/education/education.html)
- Royal Australasian College of Surgeons. Implementation Guidelines for Ensuring Correct Patient, Correct Side and Correct Site Surgery. RACS; 2006. [www.surgeons.org/](http://www.surgeons.org/)

## Reference list

1. The Royal Australasian College of Surgeons. The Australasian trauma verification program manual. Melbourne: RACS, 2009. [www.surgeons.org](http://www.surgeons.org)
2. American Society of Anesthesiologists. Standards, Guidelines and Statements. Park Ridge, IL: ASA; 2008.
3. Australian and New Zealand College of Anaesthetists. Professional Standard PS1: Recommendations on Essential Training for Rural General Practitioners in Australia Proposing to Administer Anaesthesia. ANZCA; 2002. [www.anzca.edu.au/resources/professional-documents/](http://www.anzca.edu.au/resources/professional-documents/)
4. Australian and New Zealand College of Anaesthetists. Professional Standard PS8: Recommendations on the Assistant for the Anaesthetist. ANZCA; 2008.
5. Australian and New Zealand College of Anaesthetists. Professional Standard PS29: Statement on Anaesthesia Care of Children in Healthcare Facilities Without Dedicated Paediatric Facilities. ANZCA; 2008.
6. Australian College of Operating Room Nurses. ACORN Standards for Perioperative Nurses: Standard S19 Staffing requirements. ACORN; 2008. [www.acorn.org.au/](http://www.acorn.org.au/)
7. Australian College of Operating Room Nurses. ACORN Standards for Perioperative Nurses: Nursing Roles NR1 Anaesthetic Nurse. ACORN; 2008. [www.acorn.org.au/](http://www.acorn.org.au/)
8. Australian College of Operating Room Nurses. ACORN Standards for Perioperative Nurses: NR6 Post Anaesthetic Recovery Nurse. ACORN; 2008.
9. Queensland Nursing Council. Scope of Practice: Framework for Nurses and Midwives. QNC; 2008. [www.qnc.qld.gov.au](http://www.qnc.qld.gov.au)
10. Walther-Larsen S, Rasmussen LS. The former preterm infant and risk of post-operative apnoea: recommendations for management. Acta Anaesthesiol Scand. 2006 50(7):888-893.
11. Australasian Health Infrastructure Alliance. Australasian Health Facility Guidelines (AusHFG). AHIA; 2010. [www.healthfacilityguidelines.com.au/guidelines.htm](http://www.healthfacilityguidelines.com.au/guidelines.htm)

## Appendix 1: Children's elective surgical service provision matrix

Surgical complexity	Anaesthetic type	Anaesthetic risk and physical status								
		LOW (ASA 1 – 2)			MEDIUM (ASA 3)			HIGH (ASA ≥4)		
		Modifiers	Minimum surgical service level	Minimum children's intensive care service level	Modifiers	Minimum surgical service level	Minimum children's intensive care service level	Modifiers	Minimum surgical service level	Minimum children's intensive care service level
I	Local anaesthetic	e.g. sutures, dental, eye/ENT exam	Level 2	Access to Level 4		Level 2	Access to Level 4		Level 4	Access to Level 4
II	Local anaesthetic with sedation	e.g. fractures, dental, radiology, interventions	Level 3	Access to Level 4		Level 4	Access to Level 4	>T44 <sup>c</sup> and ex-prem infants (≥52 weeks PCA) with credentialed specialist paediatric anaesthetist	Level 5	Level 5 on-site
II	Local anaesthetic with sedation	<b>Neonate</b> with credentialed specialist paediatric anaesthetist	Level 5	Level 5 on-site and access to Level 5 Neonatal Service	<b>Neonate</b> with credentialed specialist paediatric anaesthetist	Level 5	Level 5 on-site and access to Level 5 Neonatal Service			
III - V	General anaesthetic	<b>Neonate</b> with credentialed specialist paediatric anaesthetist	Level 6	Level 6 on-site and/or Level 6 Neonatal Service on-site	<b>Neonate</b> with credentialed specialist paediatric anaesthetist	Level 6	Level 6 on-site and/or Level 6 Neonatal Service on-site	<b>Neonate</b> with credentialed specialist paediatric anaesthetist	Level 6	Level 6 on-site and/or Level 6 Neonatal Service on-site

For key please refer to footnotes on page 21.

## Appendix 1: Children's elective surgical service provision matrix (cont'd)

Surgical complexity	Anaesthetic type	Anaesthetic risk and physical status								
		LOW (ASA 1 – 2)			MEDIUM (ASA 3)			HIGH (ASA ≥4)		
		Modifiers	Minimum surgical service level	Minimum children's intensive care service level	Modifiers	Minimum surgical service level	Minimum children's intensive care service level	Modifiers	Minimum surgical service level	Minimum children's intensive care service level
III	Local anaesthetic with sedation and general anaesthetic	<b>&gt;1 year of age</b> with credentialed specialist anaesthetist <b>&gt;2 years of age</b> with credentialed specialist anaesthetist or facility credentialed non-specialist anaesthetist <sup>a</sup> <b>&gt;4 years of age</b> with non-specialist anaesthetist <sup>a</sup>	Level 3	Access to Level 4	<b>&gt;1 year of age</b> with credentialed specialist anaesthetist <b>&gt;6 months of age<sup>d</sup></b> and <b>no comorbidities</b> with credentialed specialist paediatric anaesthetist and allocated children's area for post-surgical nursing management <b>T44<sup>c</sup></b> or <b>well ex-prem</b> and <b>no comorbidities (≥52 weeks PCA)</b> with credentialed specialist paediatric anaesthetist and allocated children's area for post-surgical nursing management	Level 4	Access to Level 4	<b>&gt;T44<sup>c</sup></b> and <b>ex-prem infants (≥52 weeks PCA)</b> with credentialed specialist paediatric anaesthetist	Level 5	Level 5 on-site

For key please refer to footnotes on page 21.

## Appendix 1: Children's elective surgical service provision matrix (cont'd)

Surgical complexity	Anaesthetic type	Anaesthetic risk and physical status								
		LOW (ASA 1 – 2)			MEDIUM (ASA 3)			HIGH (ASA ≥4)		
		Modifiers	Minimum surgical service level	Minimum children's intensive care service level	Modifiers	Minimum surgical service level	Minimum children's intensive care service level	Modifiers	Minimum surgical service level	Minimum children's intensive care service level
IV	General anaesthetic and regional anaesthetic	>1 year of age with credentialed specialist anaesthetist >6 months of age <sup>d</sup> and no comorbidities with credentialed specialist paediatric anaesthetist <b>T44<sup>c</sup> or well ex-prem and no comorbidities (≥52 weeks PCA)</b> with credentialed specialist paediatric anaesthetist	Level 4	Access to Level 4	<b>Medium risk children (ASA 1-2) due to age or history of prematurity, including ex-prem infants ≥T44<sup>c</sup> PCA</b> , with credentialed specialist paediatric anaesthetist and designated paediatric close observation care beds and children's ward <b>&gt;T44<sup>c</sup> or ex-prem infants &gt;52 PCA (ASA 3)</b> with credentialed specialist paediatric anaesthetist and designated paediatric close observation care beds and children's ward	Level 4	Access to Level 4	<b>&gt;T44<sup>c</sup> and ex-prem infants (≥52 weeks PCA)</b> with credentialed specialist paediatric anaesthetist	Level 5	Level 5 on-site
V	General anaesthetic	>1 year of age with credentialed specialist anaesthetist >6 months of age <sup>d</sup> with credentialed specialist paediatric anaesthetist <b>&gt;T44<sup>c</sup> and ex-prem infants (≥52 weeks PCA)</b> with credentialed specialist paediatric anaesthetist	Level 5	Level 5 on-site	>1 year of age with credentialed specialist anaesthetist >6 months of age <sup>d</sup> with credentialed specialist paediatric anaesthetist <b>T44<sup>c</sup> or well ex-prem and no comorbidities (≥52 weeks PCA)</b> with credentialed specialist paediatric anaesthetist	Level 5	Level 5 on-site			

Adapted from the physical classification system of the American Society of Anesthesiologists' Manual for Anesthesia Department Organization and Management 2001, in consultation with the CSCF Children's Surgical, Anaesthetic and Intensive Care Advisory Groups 2009.

**Key:**

<sup>a</sup> **non-specialist anaesthetist** refers to a registered medical practitioner (general practitioner) with credentials in anaesthesia. In accordance with the JCCA, endorsement for elective paediatric anaesthesia for children as young as 2 years of age may be granted on an individual practitioner basis after demonstration of assessment/accreditation and competency by regional representatives of the JCCA. Such endorsement is to be related to the individual's documented training in paediatric anaesthesia in this age group.

<sup>b</sup> **T** refers to a term infant (that is greater than or equal to 37 weeks gestation at birth).

<sup>c</sup> **T44** refers to a term infant who is greater than or equal to 44 weeks postconceptional age.

<sup>d</sup> refers to children with medium to high post-anaesthetic care requirements due to age only, but no associated severe systemic disease, having particular procedures with low perioperative risks, such as nasal cautery, removal of foreign body from nose and ear, insertion of grommets, examination of ears or eyes under general anaesthetic, tear duct probing, circumcision and other similar procedures, performed by registered surgical specialists with appropriate subspecialty credentialing and scope of practice.

<sup>e</sup> **PS** refers to specific procedures such as inguinal hernia and pyloromyotomy performed only by registered medical specialists with credentials in paediatric surgery.

The following definitions are used in the Children's Anaesthetic Services module:

- *a premature infant* is less than 37 weeks gestation at birth<sup>10</sup>
- *a premature infant with comorbidities* is an infant less than 37 weeks gestation at birth with additional conditions (e.g. less than 37 weeks gestation at birth with anaemia)<sup>10</sup>
- *a neonate* is an infant in the first 28 days of life
- *postconceptional age (PCA)* is the gestational age plus postnatal age (in weeks)
- *credentialed specialist anaesthetist* is a registered medical specialist with credentials in anaesthesia as credentialed by the facility
- *credentialed specialist paediatric anaesthetist* is a registered medical specialist with credentials in anaesthesia who spends the majority of their workload providing paediatric anaesthesia.

## Appendix 2: Access to age-appropriate intensive care services

Service level/Type	Descriptor
Level 4 children's intensive care service	<ul style="list-style-type: none"> <li>• can support children greater than 12 years of age for an indefinite period</li> <li>• can support children 12 years of age and younger with consultation and collaboration with a Level 6 paediatric intensive care service (PICU) and early transfer to a higher level service, where appropriate.</li> </ul>
Level 5 children's intensive care service	<ul style="list-style-type: none"> <li>• capable of supporting all children (not infants &lt;52 weeks PCA) and providing mechanical ventilation for a period of up to 7 days</li> <li>• more complex cases provided in consultation with a Level 6 paediatric intensive care service</li> <li>• planned elective surgical admissions for infants &lt;52 weeks PCA who can be admitted for no longer than 24 hours</li> <li>• consultation with a Level 6 paediatric intensive care service beyond this 24 hours to occur.</li> </ul>
Level 6 paediatric intensive care service	<ul style="list-style-type: none"> <li>• is the only designated paediatric intensive care service and provides the highest level of intensive care support to infants, children and adolescents.</li> </ul>
Level 6 neonatal service	<ul style="list-style-type: none"> <li>• provides continuous life support to premature and ex-premature infants</li> <li>• neonatal surgery may be performed at this level.</li> </ul>

### Appendix 3: Children's surgical complexity characteristics

Complexity	Characteristics
Surgical Complexity I (SCI)	<p>This level of surgical complexity:</p> <ul style="list-style-type: none"> <li>• ambulatory/office surgery/procedure</li> <li>• requires local anaesthetic, but does not require sedation</li> <li>• does not require an operating theatre, but does require a procedure room, aseptic technique, and sterile instruments</li> <li>• has access to resuscitation equipment</li> <li>• does not require a recovery room, but does require an area in which patients can sit</li> <li>• no planned post-operative stay or treatment required</li> <li>• requires no support services other than removal of sutures or post-operative check.</li> </ul>
Surgical Complexity II (SCII)	<p>This level of surgical complexity:</p> <ul style="list-style-type: none"> <li>• does not require the application of general anaesthesia, but requires local anaesthesia or peripheral nerve block and may require some level of sedation</li> <li>• requires at least one operating room or procedure room and a separate area for recovery (as per the Australasian Health Facility Guidelines [AusHFG])</li> <li>• most procedures can be undertaken as an ambulatory or day-stay patient, or in an emergency department.</li> </ul>
Surgical Complexity III (SCIII)	<p>This level of surgical complexity:</p> <ul style="list-style-type: none"> <li>• usually requires general anaesthesia and/or regional anaesthesia</li> <li>• must have at least one operating room or procedure room and requires separate area for recovery (as per AusHFG)<sup>11</sup></li> <li>• is likely to be performed as a day-stay patient</li> <li>• intensive care admission would be an unexpected event</li> <li>• must have access to overnight beds, if required.</li> </ul>
Surgical Complexity IV (SCIV)	<p>This level of surgical complexity:</p> <ul style="list-style-type: none"> <li>• usually requires general anaesthesia as above</li> <li>• surgical procedures with potential for perioperative complications may be performed as an overnight case or an extended day case</li> <li>• has on-site access to close observation areas.</li> </ul>
Surgical Complexity V (SCV)	<p>This level of surgical complexity:</p> <ul style="list-style-type: none"> <li>• provides the most complex surgical services</li> <li>• requires specialist clinical staff, equipment and infrastructure</li> <li>• requires extensive supporting services</li> <li>• involves surgery and anaesthetic risk that has the highest potential for intra- and post-operative complications</li> <li>• must have on-site intensive care services relevant to the surgery being performed.</li> </ul>

Developed by the CSCF Surgical, Perioperative and Anaesthetic Services Advisory Groups 2009 and adjusted specifically for children's services by the CSCF Children's Surgical and Anaesthetic Services Advisory Groups 2009.