

Paediatric Intensive Care Medicine

Sub-specialty Syllabus

Version 3

Approved by the GMC for implementation from 1 August 2023

This document outlines the syllabus to be used by doctors completing Paediatric Intensive Care Medicine training in the United Kingdom (UK). It accompanies the RCPCH Progress+ curriculum and Assessment Strategy.

This is Version 3. As the document is updated, version numbers will be changed and content changes noted in the table below.

Version number	Date issued	Summary of changes
Version 2	September 2021	<p>Document reviewed as part of the Shape of Paediatrics Training review.</p> <p>'Using the Syllabus with ePortfolio' (page 5) updated.</p> <p>Learning Outcome (LO) 1 amended – 'including paediatric emergencies requiring' added. Key Capability (KC) amended – 'respiratory failure' and 'the septic or shocked patient, those presenting with reduced level of consciousness, those with major trauma,' added (page 9). Illustrations grouped together.</p> <p>New KC added to LO 2 (page 12).</p> <p>New KC added to LO 4 and illustration 15 amended – 'demonstrated by Initial Assessment of Competence Certificate (Royal College of Anaesthetists)' added (page 14).</p> <p>LO 5 replaced with a new LO. Existing KC amended and five new KCs added (page 15).</p> <p>New LO 6 and KCs added (page 16).</p> <p>Assessment Grid updated to reflect the above changes (page 17).</p>
Version 3	August 2023	<p>Updated from Progress to Progress+.</p> <p>Using the syllabus (page 3) updated: reference to Level 1, 2 and 3 removed and replaced with Core and Specialty training.</p>

Introduction



This syllabus supports the completion of the RCPCH Progress+ curriculum and should be used with the curriculum document and Assessment Strategy.

The purpose of the curriculum is to train doctors to acquire a detailed knowledge and understanding of health and illness in babies, children and young people. The curriculum provides a framework for training, articulating the standard required to work at Consultant level, through key progression points during their training, as well as encouraging the pursuit of excellence in all aspects of clinical and wider practice.

The curriculum comprises Learning Outcomes specifying the standard trainees must demonstrate to progress in training and attain a Certificate of Completion of Training (CCT). The syllabi supports the curriculum by providing further instructions and guidance on how the Learning Outcomes can be achieved and demonstrated.

In the context of clinical training and service the term “babies, children and young people” is a common term used by those working in paediatric and child health areas to mean any of those instances in context with clinical training or service. Therefore, in relation to the assessment, the trainee needs to achieve the capabilities for either a baby, child or young person.

Using the Syllabus

Paediatric trainees are required to demonstrate achievement of generic and sub-specialty or General Paediatric Learning Outcomes throughout their training period.

For core trainees (ST1 – 4), there are 11 generic paediatric Learning Outcomes. For specialty training (ST5 – 7), there are a further 11 generic paediatric Learning Outcomes and several additional Learning Outcomes in either General Paediatrics or the sub-specialty to which the trainee has been appointed.

This syllabus contains five interlinked elements, as outlined in Figure 1 which illustrates how each element elaborates on the previous one.

Elements of the Syllabus

The **Introductory Statement** sets the scene for what makes a Paediatric Intensive Care Physician.

The **Learning Outcomes** are stated at the beginning of each section. These are the outcomes which the trainee must demonstrate they have met to be awarded their Certificate of Completion of Training (CCT) in Paediatrics. Progress towards achievement of the Learning Outcomes is reviewed annually at the Annual Review of Competence Progression (ARCP).

Each Learning Outcome is mapped to the General Medical Council (GMC) Generic Professional Capabilities framework. Each trainee must achieve all the Generic Professional Capabilities to meet the minimum regulatory standards for satisfactory completion of training.

The **Key Capabilities** are mandatory capabilities which must be evidenced by the trainee, in their ePortfolio, to meet the Learning Outcome. Key Capabilities are therefore also mapped to the GMC Generic Professional Capabilities framework.

The **Illustrations** are examples of evidence and give the range of clinical contexts that the trainee may use to support their achievement of the Key Capabilities. These are intended to provide a prompt to the trainee and trainer as to how the overall outcomes might be achieved. They are not intended to be exhaustive and excellent trainees may produce a broader portfolio or include evidence that demonstrates deeper learning. It is not expected that trainees provide ePortfolio evidence against every individual illustration (or a set quota); the aim of assessment is to provide evidence against every Key Capability.

The **Assessment Grid** indicates suggested assessment methods, which may be used to demonstrate the Key Capabilities. Trainees may use differing assessment methods to demonstrate each capability (as indicated in each Assessment Grid), but there must be evidence of the trainee having achieved all Key Capabilities.

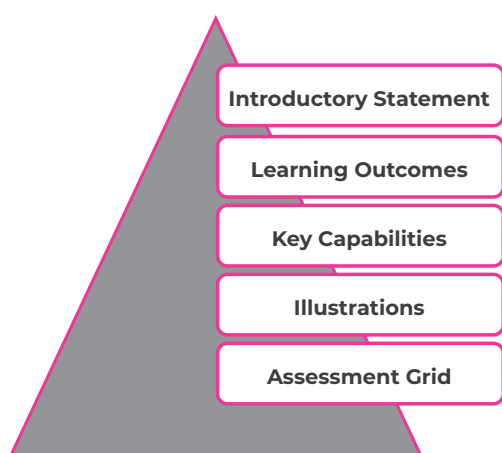


Figure 1: The five elements of the syllabus

Using the Syllabus with ePortfolio

The ePortfolio is used to demonstrate a trainee's progression using assessments, development logs and reflections. Events should be linked to the Progress+ curriculum specifically against the key capabilities at the appropriate level.

Further guidance on using the ePortfolio is available on our website: <https://www.rcpch.ac.uk/resources/rcpch-eportfolio-guidance-doctors>



Paediatric Intensive Care Medicine Introductory Statement

The Paediatric Intensive Care Physician (PICP) is a doctor from a paediatric, intensive care or anaesthetic background who resuscitates, stabilises, transfers and treats critically ill and injured children and young people. They identify those children and young people who need intensive care support and are skilled at the procedures and techniques necessary to deliver that support. They are highly skilled at directing, leading and coordinating both medical and surgical resuscitation, prioritising and responding to new and urgent clinical situations.

The PICP treats children and young people with a wide range of life-threatening pathologies within the emergency, transfer and intensive care settings. They interact with, coordinate, educate and supervise all members of the multi-professional Intensive Care team, understanding the unique interaction of the Intensive Care Unit with every component of the hospital. They work in difficult and challenging environments within the emergency, transfer and intensive care settings. The PICP also coordinates and delivers appropriate care in the setting of a major incident.

PICM Sub-specialty Recognition within Intensive Care Medicine

Paediatric Intensive Care Medicine (PICM) has been approved by the GMC as a sub-specialty of Intensive Care Medicine. The Faculty of Intensive Care Medicine (FICM) sets the training requirements for adult Intensive Care Medicine (ICM). Trainees engaged in a Single or Dual CCT in ICM can undertake sub-specialty accreditation in PICM via the Training Programme.

Single ICM CCT trainees incorporate the PICM training into the exiting programme, which requires no extension of training time. Trainees undertaking Dual CCTs in ICM and a partner specialty (eg Anaesthesia) may also wish to apply for the PICM Sub-specialty Programme. Undertaking Dual CCTs and sub-specialty recognition, however, will result in a significantly prolonged period of training with an additional indicative 24 months required.

The full details of how PICM can be incorporated into the ICM training programme can be found within the FICM's ICM CCT curriculum, available to download below.

https://www.ficm.ac.uk/sites/default/files/cct_in_icm_part_i_-_handbook_2019_v2.4_final.pdf

Sub-specialty Learning Outcomes

Sub-specialty Learning Outcomes	GMC Generic Professional Capabilities
1. Recognises, assesses and manages the full range of both medical and surgical paediatric conditions, including paediatric emergencies requiring intensive care support and the management of safeguarding issues within this environment.	GPC 3, 5, 6, 7
2. Assumes the role of Intensive Care team Leader and liaises with hospital and community specialist teams, effectively managing and coordinating patient flow, staffing, safety and quality in the context of a busy Paediatric Intensive Care Unit (PICU).	GPC 3, 5, 6
3. Resuscitates, stabilises and transfers critically ill children and young people, performing the high-level clinical and technical skills and procedures necessary to carry this out in the paediatric intensive care, emergency and transport environments.	GPC 3
4. Performs high-level technical skills and procedures using the appropriate medications necessary for managing critically ill children and young people, troubleshooting appropriately.	GPC 3
5. Demonstrates expertise in the management of life-threatening and life-limiting conditions across the paediatric spectrum, from the unborn baby, neonate and infant, to the child and young person, providing support and communicate appropriately.	GPC 3, 5, 6, 9
6. Recognises the impact of managing stressful and often complex situations; including multiple bereavements and the risk of burnout specific to paediatric intensive care.	GPC 1, 2, 3, 5

Sub-specialty Learning Outcome 1

Recognises, assesses and manages the full range of both medical and surgical paediatric conditions, including paediatric emergencies requiring intensive care support and the management of safeguarding issues within this environment.	GPC 3, 5, 6, 7
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Key Capabilities

Manages critically ill children and young people with the full range of paediatric conditions, including respiratory failure, pre- and post-operative patients (eg neonatal surgery, cardiothoracic surgery and neurosurgery patients), critically ill cardiac patients, the septic or shocked patient, those presenting with reduced level of consciousness, those with major trauma and both accidental and non-accidental trauma patients, with particular consideration of safeguarding issues.	GPC 3, 5, 6, 7
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Illustrations

A. ICU management of:	
1.	Upper and lower respiratory tract infections (RTIs).
2.	Respiratory failure (in particular, acute asthma and sickle chest).
3.	Cardiovascular collapse, applying the benefits of ventilation.
4.	Hypotension and heart failure.
5.	A child and young person in shock with appropriate use of vasoactive drugs, as required.
6.	Anaphylaxis.
7.	Multi-organ dysfunction, with knowledge of the risks and outcomes.
8.	Systemic inflammatory response.
9.	Acute infections, including meningitis.
10.	Acute respiratory distress syndrome (ARDS).
11.	Occult infection.
12.	Necrotising fasciitis.
13.	Hypoglycaemia, including quantifying the glucose requirement.

14.	Hyperglycaemia, safely and effectively.
15.	Hyperthermia and rhabdomyolysis.
16.	Hyperkalaemia, including the underlying causes and risks.
17.	Raised ammonia, recognising an inborn error of metabolism.
18.	Metabolic disease.
19.	Liver failure, recognising the indications for liver transplantation.
20.	An extremely high white cell count and tumour lysis syndrome.
21.	Oncological conditions presenting to the PICU.
22.	Immunodeficient states.
23.	Haematological disorders (eg sickle cell disease).
24.	Neuromuscular problems, including diagnosis, treatment and support.
25.	Peripheral weakness after critical illness.
26.	Obesity and its impact on the critically ill patient.
27.	Reduced level of consciousness.
28.	Acute neurological emergencies, including status epilepticus.
29.	Diabetic ketoacidosis (DKA) and associated cerebral oedema.
30.	Acute hydrocephalus.
31.	Endocrine abnormalities.
32.	Hepatorenal syndrome.
33.	Major post-operative conditions (eg spinal, airway and neonatal).
34.	Major postoperative risks.
35.	Venous and arterial thromboses.
36.	Postoperative nutrition and the associated risks.
37.	Neurosurgical patient.
38.	Necrotising enterocolitis (NEC), tracheoesophageal fistula (TOF) and congenital diaphragmatic hernia (CDH).
39.	Serious occult injury in any child with suggestive history.
40.	A child with traumatic and non-traumatic head injury.
41.	A child with polytrauma, including primary and secondary surveys.
42.	Most commonly injected or ingested poisons.
43.	Pressure wounds.

44.	The 'blue baby', including advising on the need for prostin.
45.	Congenital heart disease.
46.	Post-cardiac bypass/hypothermia/circulatory arrest.
47.	Myocarditis.
B. ICU management and investigation of child and young person with:	
48.	Suspected poisoning.
49.	Non-traumatic physical injuries.
C. Manages:	
50.	All aspects of upper airway obstruction.
51.	A child and young person with fluid- and inotrope-resistant shock.
52.	And institutes cervical spine immobilisation in any at-risk child.
53.	Acute burn injury and complications (eg airway).
54.	Acute drowning and complications.
55.	Hanging injury and resulting cerebral injury.
56.	Acute spinal injury.
57.	Appropriately identifies and manages diabetes insipidus.
58.	Longer-term complications of severe trauma.
59.	Problems following the successful resuscitation of a patient.
60.	Acute and chronic pulmonary hypertension.
61.	Appropriately identifies and manages diabetes insipidus.
62.	Applies knowledge of the coagulation profile and manages appropriately.
63.	Coordinates a multi-disciplinary team, including the police, to investigate safeguarding concerns.
64.	Produces a report and presents evidence related to a safeguarding case.
65.	Identifies and treats life-threatening injuries using a structured approach.
66.	Applies knowledge of pharmacology and the therapeutic use of commonly used cardiovascular agents in the ICU.
67.	Initiates and monitors the use of anti-hypertensives.
68.	Applies the principles of cardiac transplantation, understanding the outcomes.
69.	Applies knowledge of the principles and application of extracorporeal membrane oxygenation (ECMO).

Sub-specialty Learning Outcome 2

Assumes the role of Intensive Care Team Leader and liaises with hospital and community specialist teams, effectively managing and coordinating patient flow, staffing, safety and quality in the context of a busy Paediatric Intensive Care Unit (PICU).	GPC 3, 5, 6
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Key Capabilities

Proficient in the management of the Intensive Care Team and Unit, working with this team in the management of all patients, including the complex, long-term patient.	GPC 3, 5, 6
Leads a multi-specialty trauma team.	GPC 2, 3, 5

Illustrations

1.	Engages with the multiple specialists involved with clinical patient management and prioritises management goals appropriately for each patient.
2.	Debriefs and supports the Paediatric Intensive Care (PIC) team after a significant event or major incident.
3.	Responds to threats to patient safety in the intensive care environment.
4.	Manages conflict involving staff and families.
5.	Engages in and applies audit, quality improvement (QI) projects and research within the intensive care environment.
6.	Prioritises, organises and manages the Intensive Care and Transport teams when there are multiple, conflicting pulls on resources.
7.	Co-ordinates and leads care of the long-term/recurrent attender with multiple needs.
8.	Assists, troubleshoots and initialises long-term ventilation management, where appropriate.

Sub-specialty Learning Outcome 3

Resuscitates, stabilises and transfers critically ill children and young people, performing the high-level clinical and technical skills and procedures necessary to carry this out in the paediatric intensive care, emergency and transport environments.	GPC 3
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Key Capabilities

Proficient in the resuscitation, stabilisation and transportation of critically ill children and young people (inter-hospital and intra-hospital).	GPC 3
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Illustrations

1.	Performs CPR and leads a resuscitation team.
2.	Applies the principles of temporary pacing and the different modes used.
3.	Recognises and manages the various cardiac rhythms.
4.	Assesses, advises and supports referral teams via telephone/remotely.
5.	Transfers a critically ill child and young person safely within and between hospitals.
6.	Leads a team and integrates with a referral team, providing appropriate feedback following the transport.
7.	Hand ventilates a child and young person with severe respiratory compromise.
8.	Stabilises and appropriately transfers a child and young person with polytrauma.
9.	Prioritises and manages time-critical injuries.
10.	Responds to changes in vital physiological functions during transfer.
11.	Ensures all major injuries are stabilised prior to transfer.
12.	Troubleshoots transport equipment failure.
13.	Recognises and minimises transport risks.

Sub-specialty Learning Outcome 4



Performs high-level technical skills and procedures using the appropriate medications necessary for managing critically ill children and young people, troubleshooting appropriately.	GPC 3
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Key Capabilities

Proficient in the use of different anaesthetic agents, sedatives, muscle relaxants and analgesia, acquiring expertise in airway management, vascular access and monitoring skills.	GPC 2, 5, 6
Effectively prescribes and adjusts medication, including opioids regimens in altered metabolism, organ failure, disease progression and dying patients across the paediatric spectrum.	GPC 2, 5, 6

Illustrations

1.	Uses anaesthetic agents, sedatives, analgesics and muscle relaxants.
2.	Recognises a child and young person requiring airway intervention.
3.	Safely gives general anaesthesia to Anaesthetic Assessment of Competence (ASA) 1–2 patients with spontaneous respirations for uncomplicated surgeries in the supine position.
4.	Performs a rapid sequence induction for ASA 1–2 patients and failed intubation.
5.	Provides perioperative care to ASA 1E–2E patients requiring uncomplicated emergency surgery.
6.	Monitors a child and young person for level of anaesthesia and degree of muscle relaxation.
7.	Applies the principles of and manages regional anaesthesia.
8.	Intubates with c-spine control.
9.	Manages the airway of a child and young person with airway obstruction (eg due to mediastinal mass).
10.	Manages the unanticipated difficult airway safely until help arrives.
11.	Safely employs sedation for procedures during which a child and young person is stable and awake.
12.	Applies knowledge of anaesthetic agents that increase intracranial pressure.

13.	Applies the principles of wide-bore vascular access for rapid fluid resuscitation.
14.	Applies the principles of cardiac monitoring.
15.	Completes Basic Anaesthetic Training demonstrated by Initial Assessment of Competence Certificate (Royal College of Anaesthetists) - a minimum 6 month post in Anaesthetics (See Assessments).

Sub-specialty Learning Outcome 5

Demonstrates expertise in the management of life-threatening and life-limiting conditions across the paediatric spectrum, from the unborn baby, neonate and infant, to the child and young person, providing support and communicate appropriately.	GPC 3, 5, 6, 9
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Key Capabilities

Proficient in managing children and young people with life-limiting conditions and their families within the intensive care environment.	GPC 3, 5, 6
Demonstrates a holistic approach to care for all patients, showing expertise in the philosophy and models of palliative care in paediatric practice within the intensive care environment.	GPC 3, 5, 6
Demonstrates a working understanding of a multidimensional model of human experience (physical, psychosocial, spiritual and/or existential) in managing the child and young person with life-limiting and life-threatening illness.	GPC 3, 6
Demonstrates attributes of integrity, leadership and trust to manage complex human, legal and ethical factors relating to the deterioration and death of babies, children and young people.	GPC 3, 5, 6
Applies knowledge of the scientific basis, trajectory and clinical manifestation of diseases that are life-limiting in childhood.	GPC 3, 6
Applies knowledge, understanding and skills in the management of pain, symptoms and secondary clinical problems due to life-limiting disease, applying the wide range of therapeutic options available for use.	GPC 3, 6

Illustrations

1.	Considers and uses support mechanisms for difficult end-of-life decisions in critically ill children and young people (ie ethics, second opinions, mediation and the law).
2.	Institutes a holistic approach to planning for children and young people with life-limiting illness.
3.	Manages the different cultural and religious influences on the dying child , young person and their family.
4.	Manages the withdrawal of ICU support in a child and young person.
5.	Assesses brain stem function, understanding the legal constraints.
6.	Facilitates organ donation as a routine part of end-of-life care (ie referral to donation services) and manages donation after brain and circulatory death.
7.	Supports a family during the death of their child and through bereavement.
8.	Manages the gathering of pre- and post-mortem specimens for diagnosis.

Sub-specialty Learning Outcome 6

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Recognises the impact of managing stressful and often complex situations; including multiple bereavements and the risk of burnout specific to paediatric intensive care.	GPC 1, 2, 3, 5
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Key Capabilities

Ensures sound personal and organisational practices and support mechanisms are in place to build resilience and reduce the risks of burnout.	GPC 3, 5
Identifies and arranges support for colleagues and for oneself, where appropriate.	GPC 3, 5

Illustrations

1.	Identifies support available (local, regional, national) and how to access these - for example via the RCPCH, Paediatric Intensive Care Society and Intensive Care Society links.
2.	Identifies and aware of processes for referral for self support and how to guide colleagues via organisations, such as the Professional Support Unit.

Assessment Grid

This table suggests assessment tools which may be used to assess the Key Capabilities for these Learning Outcomes. This is not an exhaustive list and trainees are permitted to use other methods within the RCPCH Assessment Strategy to demonstrate achievement of the Learning Outcome, where they can demonstrate these are suitable.

Key Capabilities	Assessment / Supervised Learning Event suggestions									
	Paediatric Mini Clinical Evaluation (Mini-CEX)	Paediatric Case-based Discussion (CbD)	Directly Observed Procedure / Assessment of Performance (DOP/AOP)	Acute Care Assessment Tool (ACAT)	Discussion of Correspondence (DOC)	Clinical Leadership Assessment Skills (LEADER)	Handover Assessment Tool (HAT)	Paediatric Multi Source Feedback (MSF)	Paediatric Carers for Children Feedback (Paed CCF)	Other
Manages critically ill children and young people with the full range of paediatric conditions, including respiratory failure, pre- and post-operative patients (eg neonatal surgery, cardiothoracic surgery and neurosurgery patients), critically ill cardiac patients, the septic or shocked patient, those presenting with reduced level of consciousness, those with major trauma and both accidental and non-accidental trauma patients, with particular consideration of safeguarding issues.	✓	✓								
Proficient in the management of the Intensive Care Team and Unit, working with this team in the management of all patients, including the complex, long-term patient.	✓	✓	✓	✓		✓	✓	✓		
Leads a multi-specialty trauma team.						✓				
Proficient in the resuscitation, stabilisation and transportation of critically ill children and young people (inter-hospital and intra-hospital).	✓	✓	✓	✓		✓		✓		Completion of RCPCH PICM Intercollegiate sub-specialty advisory committee (ISAC) Transport Passport Competencies.
Proficient in the use of different anaesthetic agents, sedatives, muscle relaxants and analgesia, acquiring expertise in airway management, vascular access and monitoring skills.	✓	✓	✓	✓		✓		✓		Basic Anaesthetic Competencies completed in a 6-month (minimum) anaesthetic post.

Key Capabilities	Assessment / Supervised Learning Event suggestions									
	Other	Paediatric Carers for Children Feedback (Paed CCF)	Paediatric Multi Source Feedback (MSF)	Handover Assessment Tool (HAT)	Clinical Leadership Assessment Skills (LEADER)	Discussion of Correspondence (DOC)	Acute Care Assessment Tool (ACAT)	Directly Observed Procedure / Assessment of Performance (DOP/AOP)	Paediatric Case-based Discussion (CbD)	Paediatric Mini Clinical Evaluation (Mini-CEX)
Effectively prescribes and adjusts medication, including opioids regimens in altered metabolism, organ failure, disease progression and dying patients across the paediatric spectrum.									✓	✓
Proficient in managing children and young people with life-limiting conditions and their families within the intensive care environment.			✓		✓		✓	✓	✓	✓
Demonstrates a holistic approach to care for all patients, showing expertise in the philosophy and models of palliative care in paediatric practice within the intensive care environment.					✓				✓	✓
Demonstrates a working understanding of a multidimensional model of human experience (physical, psychosocial, spiritual and/or existential) in managing the child and young person with life-limiting and life-threatening illness.				✓	✓		✓		✓	✓
Demonstrates attributes of integrity, leadership and trust to manage complex human, legal and ethical factors relating to the deterioration and death of babies, children and young people.					✓				✓	✓
Applies knowledge of the scientific basis, trajectory and clinical manifestation of diseases that are life-limiting in childhood.					✓				✓	✓
Applies knowledge, understanding and skills in the management of pain, symptoms and secondary clinical problems due to life-limiting disease, applying the wide range of therapeutic options available for use.									✓	✓
Ensures sound personal and organisational practices and support mechanisms are in place to build resilience and reduce the risks of burnout.					✓					✓
Identifies and arranges support for colleagues and for oneself, where appropriate.					✓					✓

