

# Neonatal Medicine Syllabus

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 Neonatal 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 1.2	July 2018	Amendment to learning outcome 1, Key capabilities and illustrations regarding Transport of sick neonates
Version 2	September 2021	Document reviewed as part of the Shape of Paediatrics Training review.  'Using the Syllabus with ePortfolio' (page 5) updated.  Learning Outcome (LO) 1, Key Capability (KC) 5 amended to bullet points.  LO3, KC amended and three additional KC's added.  Assessment Grid updated to reflect changes.
Version 3	August 2023	Updated from Progress to Progress+.  Using the syllabus (page 3) updated: reference to Level 1, 2 and 3 removed and replaced with Core and Specialty training.
Version 3.1	August 2023	Surgical neonate management moved from SLO 2 to 1.

# 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 or 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 Neonatologist doctor.

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.

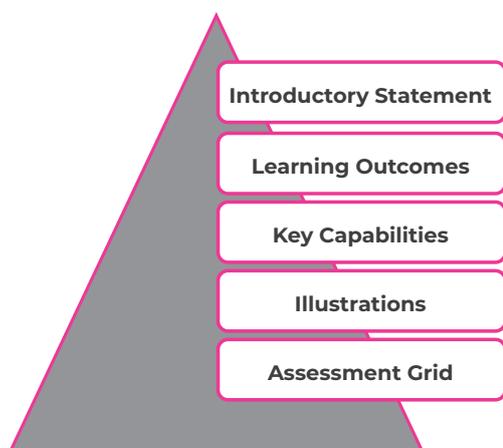


Figure 1: The five elements of the syllabus

## 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>



# Neonatal Medicine Syllabus

## Introductory Statement



A Neonatologist is a doctor providing comprehensive care to a critically ill baby on the neonatal intensive care unit whilst ensuring the care of well term babies on the postnatal ward. The spectrum of clinical conditions and the care required is vast, from the term baby with feeding issues on the postnatal ward to the sick, fragile, extremely preterm baby with multiple problems.

Neonatologists often face difficult discussions with families in the antenatal and postnatal environment regarding counselling about care, management, prognostication and potentially, palliative care. Ethical and medico legal knowledge and its application are central to many of these discussions.

Whilst providing team leadership and clinical and skill training, the Neonatologist is also expected to be able to perform challenging technical procedures.

Long-term follow-up with developmental screening until two years of age is provided in this role and it is the combination of intensive care skills, ethical and emotional support and clinic follow-up that make this a unique specialty.

# Sub-specialty Learning Outcomes

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Sub-specialty Learning Outcomes	GMC Generic Professional Capabilities
1. Provides comprehensive care to the critically ill baby on the neonatal intensive care unit, whilst ensuring the care of well term babies on the postnatal ward.	GPC 2, 3, 6
2. Communicates expertly with parents or carers and other staff in the antenatal and postnatal environment.	GPC 2, 3, 5, 8
3. Demonstrates effective and appropriate follow-up of babies following neonatal intensive care.	GPC 2, 3, 4, 5

# Sub-specialty Learning Outcome 1



Provides comprehensive care to the critically ill baby on the neonatal intensive care unit, whilst ensuring the care of well term babies on the postnatal ward.	GPC 2, 3, 6
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## Key Capabilities

Demonstrates knowledge of the transport process and stabilises a baby in preparation for transport.	GPC 2, 3
Resuscitates neonates with a variety of problems.	GPC 2, 3
Applies knowledge of maternal and fetal pathophysiology in the management of the neonate.	GPC 2, 3
Provides neonatal safeguarding and family care.	GPC 5, 7
<p>Manages neonatal disorders of the following systems:</p> <ul style="list-style-type: none"> <li>• respiratory</li> <li>• cardiovascular</li> <li>• gastrointestinal</li> <li>• neurological</li> <li>• renal</li> <li>• genetic</li> <li>• haematological</li> <li>• metabolic</li> <li>• endocrine</li> <li>• immune</li> <li>• musculoskeletal</li> <li>• neonatal disorders that require surgical interventions.</li> </ul>	GPC 2, 3, 6, 7
Performs advanced neonatal procedures independently, teaches safe practice and supervises others in performing the procedures.	GPC 2, 3

## Illustrations

<b>1.</b>	<b>Transport:</b> <ul style="list-style-type: none"><li>• Liaises by telephone with transport services regarding the transfer of sick neonates</li><li>• Demonstrates involvement in decision making for neonates with complex and severe problems</li><li>• Stabilises a sick neonate in preparation for transfer, anticipating potential emergencies during transport</li><li>• Transfers a sick neonate and recognises and manages emergencies during this process</li></ul>
<b>2.</b>	<b>Procedures and technical skills:</b> <ul style="list-style-type: none"><li>• Performs a lumbar puncture in a neonate (<i>although a core skill, evidence of capability with this procedure should be maintained</i>)</li><li>• Performs a ventricular tap (<i>may be performed by a neurosurgeon in some centres; if so, the procedure will have been observed</i>) or achieves access from a ventricular reservoir</li><li>• Performs a tracheal intubation and proficient in airway management techniques for a neonate with an anticipated difficult airway (eg congenital airway abnormality or acquired airway obstruction)</li><li>• Performs intubation of extremely small and preterm baby</li><li>• Diagnoses and manage a pneumothorax</li><li>• Performs a partial volume exchange transfusion</li><li>• Uses cranial ultrasound in the newborn</li><li>• Inserts a peripherally inserted central catheter (a “long line”)</li><li>• Identifies the correct location for invasive catheters and devices, using appropriate radiological investigations</li><li>• Recognises the place of magnetic resonance imaging (MRI) and computerised tomography (CT) investigations in neonatal care</li></ul>
<b>3.</b>	<b>Fetal and maternal medicine:</b> <ul style="list-style-type: none"><li>• Recognises the impact that abnormal fetal growth and development might have during the neonatal period</li><li>• Recognises the impact of major complications, including prescribed and illegal drug use in pregnancy, on the fetus</li><li>• Recognises how a fetal anomaly is detected</li><li>• Counsels parents regarding congenital anomalies, high-risk pregnancies and extremely preterm birth</li></ul>

<p><b>4.</b></p>	<p><b>Neonatal follow-up:</b></p> <ul style="list-style-type: none"> <li>• Performs a structured neurological assessment in a term baby</li> <li>• Performs a developmental assessment for a child aged two years</li> <li>• Diagnoses and appropriately refers babies with a neurodevelopmental problem detected during follow-up, including cerebral palsy or sensory impairment</li> <li>• Supports and manages the family and baby with feeding difficulties</li> <li>• Discusses the long-term follow-up process and management of babies with significant chronic lung disease (CLD), including those discharged with home oxygen</li> </ul>
<p><b>5.</b></p>	<p><b>Safeguarding and family care:</b></p> <ul style="list-style-type: none"> <li>• Recognises the place of a prebirth conference for at-risk families</li> <li>• Recognises the role of a case conference for at-risk neonates</li> <li>• Understands the pathophysiology of neonates affected by maternal substance misuse</li> <li>• Manages neonates affected by maternal substance misuse</li> <li>• Counsels parents regarding the benefits of breast milk for babies and supports them in their choice of feeding</li> <li>• Engages with multidisciplinary discharge planning for neonates with complex needs</li> <li>• Explains the benefits of developmental care</li> </ul>
<p><b>6.</b></p>	<p><b>Respiratory disorders:</b></p> <ul style="list-style-type: none"> <li>• Manages respiratory distress syndrome (RDS)</li> <li>• Uses surfactant, when indicated</li> <li>• Applies commonly available modes of mechanical ventilation (including high frequency oscillatory ventilation [HFOV] and conventional mechanical) and other non-invasive means of assisted respiratory support</li> <li>• Applies knowledge of the place of sedation and muscle relaxants in babies with severe lung disease</li> <li>• Manages pulmonary haemorrhage and recognises the pathophysiology</li> <li>• Uses pulmonary vasodilators, when indicated</li> <li>• Recognises the pathophysiology and classification of chronic lung disease</li> <li>• Applies the indications for and understands the adverse effects of postnatal steroids</li> <li>• Discusses the long-term respiratory prognosis of chronic lung disease</li> <li>• Participates in the planning process for and post-discharge management of patients requiring home oxygen</li> <li>• Applies knowledge of the indications for respiratory syncytial virus (RSV) prophylaxis</li> <li>• Applies knowledge of the indications for extracorporeal membrane oxygenation (ECMO) therapy and the referral process</li> </ul>

<p><b>7.</b></p>	<p><b>Cardiac disorders:</b></p> <ul style="list-style-type: none"> <li>• Recognises the signs of patent ductus arteriosus (PDA)</li> <li>• Recognises the role of echocardiography in PDA</li> <li>• Manages the treatment options and complications of PDA</li> <li>• Diagnoses and manages hypotension occurring at different gestational ages</li> <li>• Diagnoses and manages heart failure</li> <li>• Investigates and manages neonatal hypertension</li> <li>• Diagnoses and interprets common neonatal arrhythmias on ECG</li> <li>• Distinguishes between cyanotic heart disease and primary pulmonary hypertension</li> <li>• Identifies the place of echocardiographic assessment in congenital heart disease</li> <li>• Diagnoses and manages critical duct-dependent cardiac conditions</li> </ul>
<p><b>8.</b></p>	<p><b>Gastrointestinal disorders:</b></p> <ul style="list-style-type: none"> <li>• Recognises the indications for and complications of long-term parenteral nutrition</li> <li>• Diagnoses and manages neonates with necrotising enterocolitis</li> <li>• Manages the pre- and post-operative care of babies with gastrointestinal and hepatobiliary disease</li> <li>• Discusses the benefits of breast milk, the indications for donor expressed breast milk (EBM) when maternal EBM is not available, as well as the composition of and indications for specialist milk formulae</li> <li>• Recognises the importance of surveillance and interventions for postnatal growth failure in the high-risk baby, in the outpatient setting</li> <li>• Distinguishes between non-significant and significant gastro-oesophageal reflux and initiates appropriate investigations and treatments</li> <li>• Investigates babies with significant gastrointestinal pathology (such as reflux and bowel obstruction)</li> <li>• Investigates and recognises when to refer a baby with hepatobiliary disease</li> </ul>

<p><b>9.</b></p>	<p><b>Neurological disorders:</b></p> <ul style="list-style-type: none"> <li>• Discusses the aetiology of periventricular haemorrhage</li> <li>• Uses the severity scoring system and identifies the short- and long-term implications of periventricular haemorrhage</li> <li>• Identifies the implications and manages post-haemorrhagic ventricular dilatation</li> <li>• Recognises the long-term outcomes and morbidity for neonates with periventricular haemorrhage</li> <li>• Effectively communicates to parents the long-term outcomes and morbidity for a neonate with periventricular haemorrhage</li> <li>• Explains the pathophysiology and long-term implications of periventricular leukomalacia (PVL)</li> <li>• Initiates investigations and management of neuromuscular conditions</li> <li>• Investigates and manages neonatal seizures</li> <li>• Recognises the long-term implications of hypoxic-ischaemic damage</li> <li>• Uses and interprets cerebral function monitoring in the management of hypoxic ischaemic encephalopathy (HIE)</li> <li>• Initiates management to minimise and prevent secondary brain injury</li> <li>• Refers babies at risk of hearing loss for screening tests</li> <li>• Counsels parents of a baby with significant retinopathy of prematurity</li> </ul>
<p><b>10.</b></p>	<p><b>Fluid balance and renal disorders:</b></p> <ul style="list-style-type: none"> <li>• Recognises the causes of hyponatraemia, hypernatraemia and hyperkalaemia</li> <li>• Manages hyponatraemia, hypernatraemia and hyperkalaemia</li> <li>• Anticipates and manages acute renal failure in the neonate, including considering and referring for dialysis</li> <li>• Manages antenatally-diagnosed renal tract disorders following birth</li> <li>• Recognises the indications for appropriate nephro-urology referrals for complicated or urgent renal tract disorder</li> </ul>
<p><b>11.</b></p>	<p><b>Genetic disorders:</b></p> <ul style="list-style-type: none"> <li>• Diagnoses and manages common chromosomal disorders</li> <li>• Counsels parents when a genetic disorder is suspected and obtains consent for genetic testing</li> <li>• Investigates and manages babies with multiple congenital abnormalities</li> <li>• Manages appropriate multidisciplinary referrals in babies with multiple congenital abnormalities</li> </ul>

<p><b>12.</b></p>	<p><b>Haematological disorders:</b></p> <ul style="list-style-type: none"> <li>• Recognises the place of screening for congenital haematological disorders (eg haemophilia) and demonstrates knowledge of their perinatal management</li> <li>• Identifies and manages polycythaemia and hyperviscosity disorders</li> <li>• Manages severe haemolytic disease of the newborn, including rhesus disease and other major blood group incompatibility disorders</li> <li>• Arranges and supervises an exchange transfusion for haemolytic disease</li> <li>• Investigates and manages severe and persisting neonatal thrombocytopenia</li> <li>• Diagnoses and manages major coagulation disorders, including the appropriate use of blood products and coagulation factors</li> </ul>
<p><b>13.</b></p>	<p><b>Metabolic and endocrine disorders:</b></p> <ul style="list-style-type: none"> <li>• Manages the process of screening for and investigation of inborn errors of metabolism</li> <li>• Investigates and treats disorders of carbohydrate metabolism, including transient and refractory hypoglycaemia, hyperinsulinism and hyperglycaemia</li> <li>• Identifies and investigates babies with disorders of sexual differentiation (ambiguous genitalia)</li> <li>• Manages appropriate referrals for babies with disorders of sexual differentiation (ambiguous genitalia)</li> </ul>
<p><b>14.</b></p>	<p><b>Infection and immune disorders:</b></p> <ul style="list-style-type: none"> <li>• Diagnoses and manages the neonate with congenital viral infection</li> <li>• Diagnoses and manages the neonate with early-onset infection</li> <li>• Manages a neonate at risk of perinatal HIV infection</li> <li>• Demonstrates a sound knowledge of infection control measures and applies this in practice</li> <li>• Manages the neonate with multi-resistant infection, including MRSA infection</li> <li>• Diagnoses and manages babies with hospital-acquired and catheter-related infections, including from a central line</li> </ul>
<p><b>15.</b></p>	<p><b>Musculoskeletal and skin disorders:</b></p> <ul style="list-style-type: none"> <li>• Explains the screening process and follow-up of babies with congenital hip dislocation</li> <li>• Manages babies with suspected severe skeletal dysplasia</li> <li>• Diagnoses and treats babies with metabolic bone disease</li> <li>• Recognises the need for referral of babies with neonatal skin conditions</li> </ul>
<p><b>16.</b></p>	<p><b>Neonatal surgery:</b></p> <ul style="list-style-type: none"> <li>• Applies knowledge of the common neonatal surgical conditions and their management (necrotising enterocolitis, spontaneous intestinal perforation, oesophageal atresia / trachea-oesophageal fistula, bilious aspirates, congenital diaphragmatic hernia, gastroschisis)</li> <li>• Resuscitates and manages a neonate with lung hypoplasia, including congenital diaphragmatic hernia</li> <li>• Applies the indications for referral of neonates for vascular access surgery</li> <li>• Uses pain assessment tools</li> <li>• Manages pain in the neonate expertly</li> </ul>

# Sub-specialty Learning Outcome 2

Communicates expertly with parents or carers and other staff in the antenatal and postnatal environment.	GPC 2, 3, 5, 8
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## Key Capabilities

Recognises the incidence and prevalence of conditions affecting the neonate in order to provide effective counselling.	GPC 1, 2, 3, 6, 7
Manages and provides support to families and other team members at the end of a baby's life.	GPC 2, 3, 7

## Illustrations

<ul style="list-style-type: none"><li>• Counsels parents of a child with an antenatally-diagnosed congenital condition</li><li>• Counsels parents of an anticipated pre-term baby</li><li>• Applies the principles of palliative care, including the appropriate use of pharmacologic agents within end-of-life care</li><li>• Manages and supports the family of a dying baby</li><li>• Participates in bereavement follow-up and support of families who have lost a child</li><li>• Counsels and obtains consent for neonatal post-mortem examination</li><li>• Applies knowledge of the major ethical issues in neonatology</li><li>• Refers to the coroner or procurator fiscal</li><li>• Documents the appropriate records following a neonatal death</li><li>• Demonstrates understanding of the local child death review process and of confidential enquiry reports</li></ul>

# Sub-specialty Learning Outcome 3



Demonstrates effective and appropriate follow-up of babies following neonatal intensive care.	GPC 2, 3, 4, 5
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## Key Capabilities

Co-ordinates and leads appropriate follow-up of neonates deemed to be at risk of neurodevelopmental problems, in accordance with national guidelines.	GPC 2, 3, 5
Liaises with therapists, community paediatricians and other sub-specialty colleagues, where appropriate.	GPC 2, 3, 5
Effectively supports and communicates with families at the time of discharge and thereafter.	GPC 2, 3, 4
Leads collection of follow-up data in line with national audit requirements.	GPC 2, 3, 5

## Illustrations

<b>1.</b>	<p><b>Epidemiology and outcome statistics:</b></p> <ul style="list-style-type: none"> <li>• Describes the process of local and national neonatal data collection</li> <li>• Discusses local and regional outcome statistics and reasons for variation and understands local and regional data in the context of counselling parents</li> <li>• Assesses the major factors influencing perinatal mortality and morbidity</li> <li>• Explains local and national death notification and congenital anomaly monitoring</li> <li>• Evaluates the outcomes from local, regional and national quality assurance projects, including neonatal care quality indicators</li> <li>• Discusses the outcomes within high-risk groups, eg prematurity, fetal growth restriction and perinatal hypoxia</li> </ul>
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# 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)	Paediatric Case-based 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
Demonstrates knowledge of the transport process and stabilises a baby in preparation for transport.		✓	✓	✓	✓	✓	✓			
Resuscitates neonates with a variety of problems.		✓	✓	✓		✓				
Applies knowledge of maternal and fetal pathophysiology in the management of the neonate.		✓	✓	✓						
Provides neonatal safeguarding and family care.		✓			✓	✓				
Manages neonatal disorders of the following systems: <ul style="list-style-type: none"> <li>• respiratory</li> <li>• cardiovascular</li> <li>• gastrointestinal</li> <li>• neurological</li> <li>• renal</li> <li>• genetic</li> <li>• haematological</li> <li>• metabolic</li> <li>• endocrine</li> <li>• immune</li> <li>• musculoskeletal</li> <li>• surgical problems</li> </ul>	✓	✓		✓		✓				
Performs advanced neonatal procedures independently, teaches safe practice and supervises others in performing the procedures.	✓	✓	✓							
Recognises the incidence and prevalence of conditions affecting the neonate in order to provide effective counselling.	✓	✓				✓		✓		
Manages and provides support to families and other team members at the end of a baby's life.	✓	✓			✓	✓		✓		

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)
Co-ordinates and leads appropriate follow-up of neonates deemed to be at risk of neurodevelopmental problems, in accordance with national guidelines					✓	✓			✓	✓
Liaises with therapists, community paediatricians and other sub-specialty colleagues, where appropriate.					✓	✓			✓	✓
Effectively supports and communicates with families at the time of discharge and thereafter.					✓	✓			✓	✓
Leads collection of follow-up data in line with national audit requirements.					✓	✓			✓	✓

