



The Royal Australasian
College of Physicians

Neonatal/Perinatal Medicine

Advanced Training Curriculum

Paediatrics & Child Health Division





The Royal Australasian
College of Physicians

Physician Readiness for Expert Practice (PREP) Training Program

Neonatal/Perinatal Medicine Advanced Training Curriculum

TO BE USED IN CONJUNCTION WITH:

Basic Training Curriculum – Paediatrics & Child Health
Professional Qualities Curriculum

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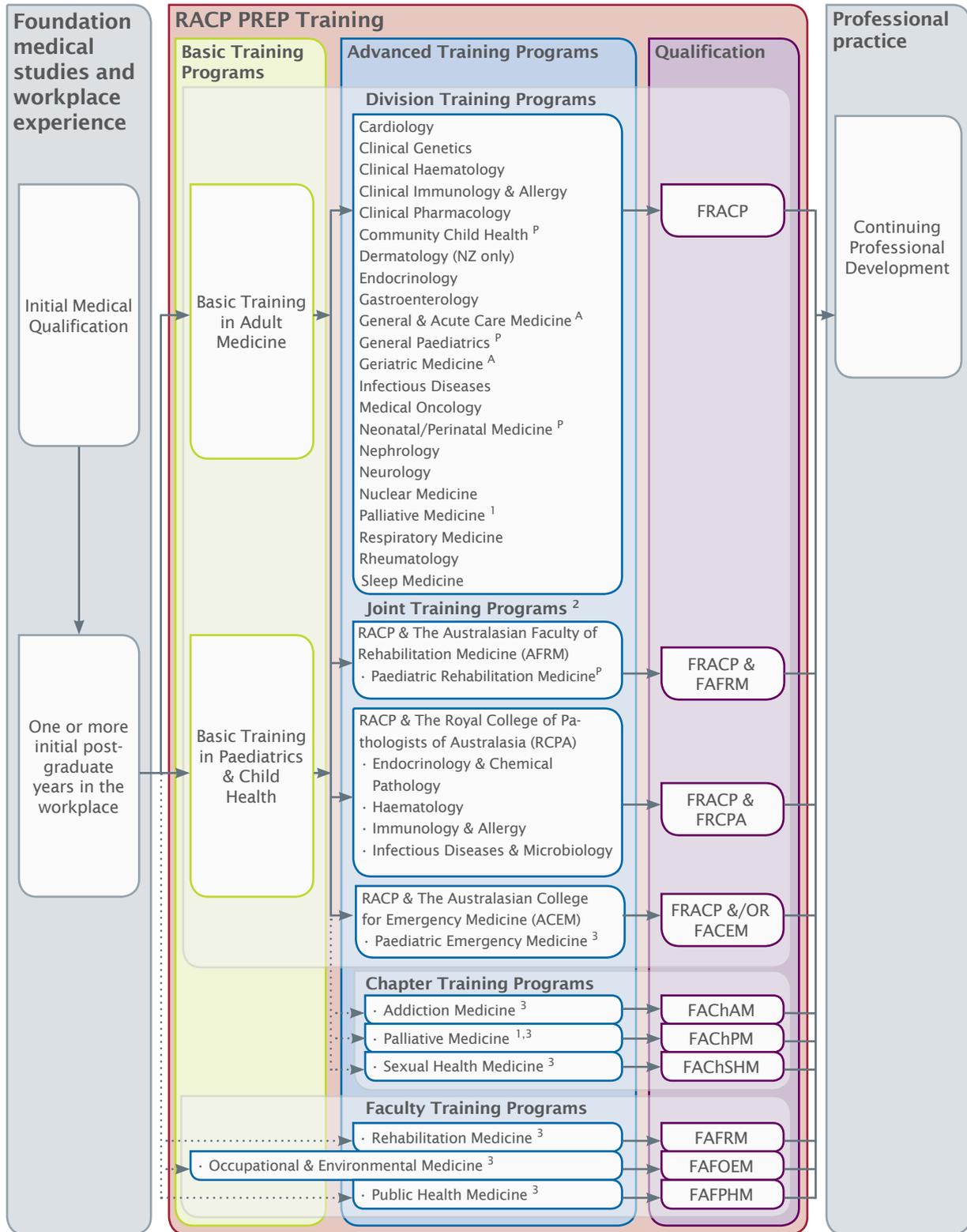
1st edition 2010 (revised 2013).

Please note: No Domains, Themes or Learning Objectives have been updated for this edition; design changes ONLY.

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RACP FELLOWSHIP TRAINING PATHWAYS AND THE CONTINUUM OF LEARNING



^P Trainees must complete Basic Training in Paediatrics & Child Health to enter this program.

^A Trainees must complete Basic Training in Adult Medicine to enter this program.

¹ Trainees who have entered Advanced Training in Palliative Medicine via a RACP Basic Training Program will be awarded FRACP upon completion and may subsequently be awarded FACHPM. Trainees who have NOT entered Advanced Training in Palliative Medicine via a RACP Basic Training Program will only be awarded FACHPM upon completion.

² The Child & Adolescent Psychiatry Joint Training Program with the Royal Australian and New Zealand College of Psychiatrists (RANZCP) is currently under review by the RACP and RANZCP and closed to new entrants at present.

³ Alternative entry requirements exist for these training programs; please see the corresponding PREP Program Requirements Handbook for further information.

NB1: This diagram only depicts training programs that lead to Fellowship. Please see the RACP website for additional RACP training programs.

NB2: For further information on any of the above listed training programs, please see the corresponding PREP Program Requirements Handbook.

OVERVIEW OF THE SPECIALTY

The College recognises that the practice of modern neonatal/perinatal medicine is different from the standard practice of paediatrics, and requires its own specialised training program. The practice encompasses care of the newborn infant at all levels of care, including the well newborn and those requiring special and intensive care, as well as counselling parents of the fetus at significant risk.

This curriculum details the specific outcomes to be achieved by trainees on completion of the Neonatal/Perinatal Medicine Advanced Training Program.

This subspecialty specific training builds on and further develops the knowledge and skills acquired during the Basic Training Program

The learning objectives specified within this curriculum are defined at the level of a person who, upon graduation from this training program, would be expected to accept total responsibility for the patient's welfare and clinical care. The learning objectives and related knowledge, skills, attitudes and behaviours; the range of training experiences; and teaching, learning and assessment methodologies have been defined, consistent with this expectation.

The specific content material detailed within this curriculum provides a guide for good practice in teaching, learning and assessment within the context of daily workplace and clinical practice.

Supervisors and trainees will also need to be cognisant of all applicable national and state health policies, issues and guidelines and incorporate the practice of these into relevant aspects of teaching, learning, and assessment within the context of their professional and daily clinical practice.

CURRICULUM OVERVIEW

Neonatal/Perinatal Medicine – Advanced Training Curriculum

This curriculum outlines the broad concepts, related learning objectives and the associated theoretical knowledge, clinical skills, attitudes and behaviours required and commonly utilised by neonatal/perinatal medicine physicians within Australia and New Zealand.

The purpose of Advanced Training is for trainees to build on the cognitive and practical skills acquired during Basic Training. At the completion of the Neonatal/Perinatal Medicine Advanced Training Program, trainees should be competent to provide unsupervised comprehensive medical care in neonatal/perinatal medicine at consultant level.

Attaining competency in all aspects of this curriculum is expected to take three years of training. It is expected that all teaching, learning and assessment associated with the neonatal/perinatal medicine curriculum will be undertaken within the context of the physician's everyday clinical practice and will accommodate discipline-specific contexts and practices as required. As such, it will need to be implemented within the reality of current workplace and workforce issues and the needs of health service provision.

There may be learning objectives that overlap with or could easily relate to other domains; however, to avoid repetition, these have been assigned to only one area. In practice it is anticipated that within the teaching/learning environment the progression of each objective would be explored.

Note: The curricula should always be read in conjunction with the relevant College Training Handbook available on the College website.

Professional Qualities Curriculum

The Professional Qualities Curriculum (PQC) outlines the range of concepts and specific learning objectives required by, and utilised by, all physicians, regardless of their specialty or area of expertise. It spans both the Basic and Advanced Training Programs and is also utilised as a key component of the Continuing Professional Development (CPD) program.

Together with the various Basic and Advanced Training Curricula, the PQC integrates and fully encompasses the diagnostic, clinical, and educative-based aspects of the physician's/paediatrician's daily practice.

Each of the concepts and objectives within the PQC will be taught, learnt and assessed within the context of everyday clinical practice. It is important, therefore, that they be aligned with, and fully integrated into, the learning objectives within this curriculum.

EXPECTED OUTCOMES AT THE COMPLETION OF TRAINING

Graduates from this training program will be equipped to function effectively within the current and emerging professional, medical and societal contexts. At the completion of the Neonatal/Perinatal Medicine Advanced Training Program, as defined by this curriculum, it is expected that a new Fellow will have developed the clinical skills and have acquired the theoretical knowledge for competent neonatal/perinatal medicine practice. It is expected that a new Fellow will be able to:

- participate in the multidisciplinary assessment and management of the at-risk unborn fetus
- lead and direct the clinical management of preterm and term newborn infants
- understand the regional organisation of perinatal care and the principles of neonatal transport
- understand the psychological, behavioural and ethical issues relevant to the clinical care newborn infants
- appreciate the importance of continuity of clinical care, including discharge planning, follow-up and referral of infants for ongoing paediatric care
- appreciate the importance of long-term follow-up
- understand the complex psychological, behavioural, ethical and organisational aspects of working in a large multidisciplinary team
- understand research methodology, critical appraisal of the literature, and the practice of evidence-based medicine.

CURRICULUM THEMES AND LEARNING OBJECTIVES

Each of the curriculum documents has been developed using a common format, thereby ensuring a degree of consistency and approach across the spectrum of training.

Themes

The Themes identify and link specific aspects of learning into logical or related groups.

Learning Objectives

The Learning Objectives outline the specific requirements of learning. They provide a focus for identifying and detailing the required knowledge, skills and attitudes. They also provide a context for specifying assessment standards and criteria as well as providing a context for identifying a range of teaching and learning strategies.

LEARNING OBJECTIVES TABLES

Theme 1	The Fetus Before and During Birth Transition
Learning Objectives	
1.1	Manage the fetus and family before birth
1.2	Manage complications in birth transition
Theme 2	Care of the Well Newborn Infant
Learning Objectives	
2.1	Manage well newborn infants
Theme 3	Care of the Sick Newborn
Learning Objectives	
3.1	Manage respiratory problems
3.2	Manage circulatory problems
3.3	Manage neurological and neuromuscular problems
3.4	Manage haematological problems
3.5	Manage metabolic and endocrine problems
3.6	Manage renal problems
3.7	Manage nutrition and metabolism
3.8	Manage gastrointestinal problems

3.9	Manage hepatobiliary problems
3.10	Manage infections
3.11	Explain the principles of pharmacology in neonatal/perinatal medicine
3.12	Manage dermatological problems
3.13	Manage ophthalmological abnormalities
3.14	Manage ear, nose and throat abnormalities
3.15	Coordinate integrated care of a sick newborn
Theme 4	Practical Procedures
Learning Objectives	
4.1	Perform the procedures required for care of a sick neonate
4.2	Explain the principles of pain management
Theme 5	End-of-life Care
Learning Objectives	
5.1	Manage end-of-life care
Theme 6	Long-Term Health Care and Follow-Up
Learning Objectives	
6.1	Manage long-term health care and follow-up of infants
6.2	Assess and manage the infant at risk
Theme 7	Regional Organisation of Perinatal Care
Learning Objectives	
7.1	Define and apply regional organisation of perinatal services
7.2	Undertake safe retrieval and transport of the sick newborn
Theme 8	Benchmarking and Audit
Learning Objectives	
8.1	Benchmark and manage clinical information
Theme 9	Evidence-Based Practice
Learning Objectives	
9.1	Implement evidence-based care
9.2	Contribute to new knowledge

Theme 1		The Fetus Before and During Birth Transition
Learning Objective 1.1		Manage the fetus and family before birth
Knowledge		Skills
<ul style="list-style-type: none"> recognise normal fetal growth and development describe common maternal conditions which affect fetal growth and development describe fetal and neonatal effects of intrauterine infections describe common congenital abnormalities identifiable in the fetus explain the effects of maternal medications and illicit drug use on the fetus and neonate identify methods of assessing fetal wellbeing describe indications and outcome of common fetoplacental interventions identify survival and long-term neurodevelopmental outcome data of extremely preterm newborns by week of gestation. 		<ul style="list-style-type: none"> interpret antenatal screening tests in diagnosis of fetal abnormality convey to parents the concepts and mechanisms of genetic diseases using non-technical language interpret results of tests of fetal wellbeing interpret results of fetal imaging participate in multidisciplinary management of high risk pregnancies, including pregnancies with known fetal abnormalities counsel parents of a high risk pregnancy, including pregnancies with a known fetal abnormality counsel parents anticipating the birth of an extremely preterm infant, including the discussion of management options at the threshold of viability.

Theme 1		The Fetus Before and During Birth Transition
Learning Objective 1.2		Manage complications in birth transition
Knowledge		Skills
<ul style="list-style-type: none"> describe physiological changes involved in the transition to extrauterine life describe common neonatal complications associated with birth identify neonatal resuscitation procedures, including national and international resuscitation guidelines and controversies describe the fetomaternal conditions which may influence mode of delivery and/or resuscitation describe the thermoregulatory principles in the newborn, including an understanding of the thermoneutral environment. 		<ul style="list-style-type: none"> perform basic resuscitation of the newborn perform advanced airway support, including endotracheal intubation during resuscitation of the newborn lead a resuscitation team counsel parents of an infant who has failed to respond to resuscitation show a diagnostic approach and initial management of the sick newborn infant perform and interpret an assessment of gestational age, such as the Dubowitz gestation score perform competent thermal management of the newborn communicate with the parents of a sick newborn infant.

Theme 2		Care of the Well Newborn
Learning Objective 2.1		Manage well newborn infants
Knowledge		Skills
<ul style="list-style-type: none"> • discuss normal care of the well newborn infant • discuss anthropometry, including documentation and normal ranges • describe common minor variants of the newborn, e.g. rashes, skin tags, tongue tie • discuss breast feeding, including the physiology, practicalities and advantages • describe factors impacting on maternal-infant bonding • discuss transitional care health issues, such as thermoregulation, hypoglycaemia, jaundice, infection risk and screening • identify screening tests, such as newborn examination including hip exam, newborn screening test and hearing screening • describe current immunisation program and recommendations • discuss safe sleeping • discuss maternal postnatal care • explain routine care and assessment of a well infant through first 12 months including preventative advice. 		<ul style="list-style-type: none"> • examine and assess a well newborn, identify normal variations and importance of parental reassurance • measure weight, length, and head circumference, and plot against normal ranges • manage infants with feeding problems and explain establishment of lactation • assess and manage breast feeding in the context of maternal medication or viral infection • manage infants with transitional care health issues • manage infant with positive newborn screening tests • apply evidence-based counselling regarding care of the newborn at home, including safe sleeping • work within different 'models of care' • work in a multidisciplinary team • manage the well newborn through the first 12 months.

Theme 3		Care of the Sick Newborn
Learning Objective 3.1		Manage respiratory problems
Knowledge		Skills
<ul style="list-style-type: none"> describe normal mechanisms of breathing in the term and preterm infant describe lung maturation in-utero and during infancy, including the maturation of the preterm lung discuss gas exchange and diffusion within the lung discuss lung mechanics in health and disease describe respiratory diseases affecting neonates describe radiological appearances of the conditions that cause neonatal respiratory disease discuss apnoea of prematurity identify conditions that may cause airway obstruction discuss indications and limitations of oxygen therapy explain the role of sleep studies describe the role of the following in the management of respiratory problems: <ul style="list-style-type: none"> respiratory support, including continuous positive airway pressure (CPAP), conventional ventilation and high frequency ventilation acute complications of respiratory support, e.g. pneumothorax, displaced or obstructed endotracheal tube mechanisms and prevention of chronic lung disease of a newborn management principles related to chronic lung disease of a newborn home oxygen therapy pulmonary hypertension. 		<ul style="list-style-type: none"> examine and assess a neonate with respiratory distress provide respiratory support to a range of neonatal respiratory conditions administer surfactant manage neonates requiring nitric oxide therapy use range of modalities that provide respiratory support use blood gases and non-invasive monitoring to manage ventilation and oxygenation interpret lung mechanics investigate and manage a neonate with apnoea manage the neonatal airway insert chest drains assess and manage neonatal chronic lung disease manage an infant on home oxygen counsel parents and family of a baby with chronic respiratory problems coordinate home based care with liaison medical officers and allied health care providers.

Theme 3		Care of the Sick Newborn
Learning Objective 3.2		Manage circulatory problems
Knowledge		Skills
<ul style="list-style-type: none"> describe normal physiology and development of the circulation in a neonate describe tissue oxygenation and gas transport describe the pathophysiology, causes, presentation and management of cardiac failure discuss patent ductus arteriosus in a preterm neonate describe abnormal blood pressure and cardiac output discuss management of arrhythmias discuss management of acquired cardiac conditions describe the use of cardiac imaging describe the use of electrocardiography recognise the standard echocardiographic views of a neonate describe the embryology, physiology and anatomy of congenital cardiovascular disease describe the surgical options for the treatment of congenital heart disease discuss the role of extracorporeal membrane oxygenation (ECMO). 		<ul style="list-style-type: none"> clinically assess the neonatal cardiovascular system (take a focused history and examination of) assess the adequacy of the neonatal circulation assess and manage a patent ductus arteriosus in a preterm neonate manage hypotension and hypertension assess and manage the common arrhythmias of a newborn assess and manage infants with possible heart disease perform and interpret the results of cardiac imaging, including bedside echocardiography for functional purposes* perform and interpret a neonatal electrocardiograph manage the following in neonates: <ul style="list-style-type: none"> abnormal blood pressure and cardiac output acquired cardiac conditions arrhythmias cardiac failure cyanotic heart disease patent ductus arteriosus in the preterm neonate counsel parents of babies with congenital or acquired cardiovascular disease.
*desirable but not mandatory		

Theme 3		Care of the Sick Newborn
Learning Objective 3.3		Manage neurological and neuromuscular problems
Knowledge		Skills
<ul style="list-style-type: none"> describe normal physiology and development of the nervous system discuss the impact on the developing brain of being born preterm, and common management strategies, e.g. mechanical ventilation describe the pathophysiology and prognosis of neonatal neurological conditions identify malformations of the brain and spinal cord identify malformations/deformation of the skeletal system describe the pathophysiology and prognosis of: <ul style="list-style-type: none"> hypotonia and neuromuscular disorders neonatal encephalopathy neonatal stroke periventricular haemorrhage seizure disorders white matter injury discuss modalities of: <ul style="list-style-type: none"> electrophysiological studies neuro imaging neuromuscular studies explain the use of neuroprotective treatments, e.g. cooling discuss indications for neurosurgical interventions discuss techniques for neurological and developmental assessment of infants. 		<ul style="list-style-type: none"> assess and manage: <ul style="list-style-type: none"> hypotonia neonatal encephalopathy neonatal stroke periventricular haemorrhage seizure disorders white matter injury perform a structured neonatal neurological history and examination appropriate for age and gestation adopt a structured approach to the investigation and interpretation of neonatal neurological conditions, e.g. encephalopathy, seizures, hypotonia assess and manage infants with neural tube defect and/or hydrocephalus assess and diagnose infants with talipes and congenital dysplastic hip assess an infant for mild, moderate and severe problems of neurodevelopment interpret bedside EEG recordings perform and interpret a bedside cerebral ultrasound examination* perform lumbar punctures and be familiar with techniques of ventricular drainage counsel parents regarding long-term implications of neurologic injury or abnormality integrate follow-up and multidisciplinary involvement in babies with neurologic injury or abnormality.
*desirable but not mandatory		

Theme 3		Care of the Sick Newborn
Learning Objective 3.4		Manage haematological problems
Knowledge		Skills
<ul style="list-style-type: none"> • discuss the prevention, diagnosis and management of neonatal anaemia • describe the pathophysiology of neonatal bleeding and thrombotic disorders, including: <ul style="list-style-type: none"> • disseminated intravascular coagulation (DIC) • haemorrhagic disease of the newborn • neonatal stroke • thrombocytopenia • vascular malformations • describe the pathophysiology and management of neonatal haemolytic diseases, immune and non-immune • discuss the indications for and risks of exchange transfusion • recognise the presentation of: <ul style="list-style-type: none"> • disorders of immune function • genetic conditions associated with malignancy • neonatal tumours and malignancies. 		<ul style="list-style-type: none"> • practice safe and effective use of blood products and haematinic agents • recognise and address parental concerns about the use of blood products • recognise and address ethical, safety and resource issues in the use of blood products • investigate and manage coagulopathies, thrombocytopenia, anaemias, and isoimmune haemolytic disease • perform an exchange transfusion • investigate and treat, in consultation with appropriate subspecialist: <ul style="list-style-type: none"> • disorders of immune function • genetic conditions associated with malignancy • neonatal tumours and malignancies • counsel parents about above conditions • counsel parents about vitamin K prophylaxis.

Theme 3		Care of the Sick Newborn
Learning Objective 3.5		Manage metabolic and endocrine problems
Knowledge		Skills
<ul style="list-style-type: none"> • describe normal antenatal development of the endocrine axes and postnatal adaptation, including the impact of preterm birth • describe the pathophysiology and prevention of hypoglycaemia/hyperglycaemia • describe the pathophysiology of important endocrine and metabolic disorders of the newborn, including: <ul style="list-style-type: none"> • adrenal insufficiency • ambiguous genitalia • thyroid disorders • describe the pathophysiology of inborn errors of metabolism • describe the pathophysiology of metabolic disturbances, including electrolyte abnormalities. 		<ul style="list-style-type: none"> • interpret endocrine investigations • screen for, investigate and manage hypoglycaemia/hyperglycaemia • plan investigation and management of endocrine and metabolic disorders • diagnose inborn errors of metabolism, including subspecialty consultation • recognise and institute emergency treatment for inborn errors of metabolism • prevent, investigate and manage electrolyte and acid base disturbances • counsel family on long-term adverse outcome of hypoglycaemia.

Theme 3		Care of the Sick Newborn
Learning Objective 3.6		Manage renal problems
Knowledge		Skills
<ul style="list-style-type: none"> describe renal development and physiological changes after birth in preterm and term neonates describe the pathophysiology of congenital renal disorders discuss modalities of: <ul style="list-style-type: none"> renal function assessment (biochemical, imaging, e.g. nuclide scans) renal tract imaging (ultrasound, CT and MRI, including flow studies) describe the pathophysiology of renal failure, both acute and chronic describe effects of renal impairment on drug metabolism describe indications for urological intervention. 		<ul style="list-style-type: none"> manage complex fluid and electrolyte problems, including those in very preterm babies and those with surgical problems manage and investigate diagnosed renal disorders antenatally and postnatally recognise and institute treatment for acute and chronic renal failure, including indications for dialysis perform urethral catheterisation and suprapubic aspiration perform and interpret a bedside renal ultrasound* contribute to development of strategies and staff education to optimise fluid and electrolyte management in at-risk babies counsel parents regarding implications of congenital and acquired renal abnormalities.
*desirable but not mandatory		

Theme 3		Care of the Sick Newborn
Learning Objective 3.7		Manage nutrition and metabolism
Knowledge		Skills
<ul style="list-style-type: none"> • discuss the normal lactation process, problems that can arise and management strategies to support problematic lactation • describe normal nutritional requirements, growth and organ maturation of the fetus and newborn • discuss the feeding of sick and preterm infants, including: <ul style="list-style-type: none"> • breast feeding • expressed breast milk • special formulas • supplements, fortifiers, vitamins and haematinics • discuss the principles of parenteral nutrition, including: <ul style="list-style-type: none"> • indications for use • mineral and vitamin requirements • nutritional components • trace elements • describe methods of delivering parenteral nutrition • discuss the importance of thermoregulation and close fluid and electrolyte monitoring in the sick and preterm neonate. 		<ul style="list-style-type: none"> • manage consequences of abnormal thermoregulation, energy and water balance in the sick and preterm neonate • anticipate and prevent nutritional deficiencies, including osteopenia of prematurity and failure to thrive • prescribe and manage parenteral nutrition in sick and preterm infants • insert and position percutaneous long lines safely and correctly • contribute to promotion of breast feeding throughout the hospital, including the neonatal unit • support mothers wishing to breastfeed sick and preterm babies, and acknowledge the psychological issues around those who are unable to breast feed or choose not to • counsel parents on benefits and potential complications of long line insertion and benefits and side effects of parenteral nutrition.

Theme 3		Care of the Sick Newborn
Learning Objective 3.8		Manage gastrointestinal problems
Knowledge		Skills
<ul style="list-style-type: none"> describe the normal development and functional maturation of gastrointestinal system, including gut hormones and motility describe the pathophysiology of necrotising enterocolitis describe the pathophysiology of congenital gastrointestinal anomalies, and antenatal and postnatal diagnosis describe the pathophysiology of failure to thrive describe the application of gut imaging modalities, including: <ul style="list-style-type: none"> contrast studies CT, MRI nucleotide scans ultrasound. 		<ul style="list-style-type: none"> diagnose and manage necrotising enterocolitis, including pre- and post-operative care manage congenital gastrointestinal disease, including pre- and post-operative care manage short gut syndrome diagnose, investigate and manage malabsorption syndromes and nutritional deficiencies perform and interpret a bedside abdominal ultrasound* request and interpret investigations for gastrointestinal tract (GIT) anomalies or suspected GIT disease counsel parents regarding diagnosis, management and prognosis for congenital and acquired gut problems in the newborn.
*desirable but not mandatory		

Theme 3		Care of the Sick Newborn
Learning Objective 3.9		Manage hepatobiliary problems
Knowledge		Skills
<ul style="list-style-type: none"> describe the normal development of hepatobiliary system, including bilirubin and bile acid metabolism describe the pathophysiology of physiological and non-physiological jaundice describe the pathophysiology of hepatobiliary and pancreatic disease, including: <ul style="list-style-type: none"> biliary atresia cholestatic jaundice cystic fibrosis neonatal hepatitis. 		<ul style="list-style-type: none"> investigate and manage jaundice, including use of phototherapy investigate and manage hepatobiliary disease adopt a multidisciplinary approach to patient management (surgery or hepatobiliary/gastroenterology) counsel parents regarding management of neonatal jaundice and other neonatal hepatobiliary disorders.

Theme 3		Care of the Sick Newborn
Learning Objective 3.10		Manage infections
Knowledge		Skills
<ul style="list-style-type: none"> describe bacterial, viral, fungal and protozoal infections, including: <ul style="list-style-type: none"> choice and use of anti-microbial therapy diagnostic tests prevention risk factors describe the pathophysiology of post-natal eye infection describe the pathophysiology of overwhelming sepsis in a neonate outline the principles of prevention and treatment of nosocomial infection. 		<ul style="list-style-type: none"> investigate and manage neonatal infections, e.g. septicaemia, meningitis, urinary tract infection perform a septic work up, including blood culture, suprapubic aspiration, and lumbar puncture manage a neonate with overwhelming sepsis investigate and manage neonatal viral infections, e.g. herpes simplex, neonatal varicella, cytomegalovirus (CMV), HIV, hepatitis B and C demonstrate a collaborative approach to developing protocols for prevention and management of perinatal sepsis, hand washing, and infection control measures in clinical practice advocate and support infection control policies and practice in the neonatal unit.

Theme 3		Care of the Sick Newborn
Learning Objective 3.11		Explain the principles of pharmacology in neonatal/perinatal medicine
Knowledge		Skills
<ul style="list-style-type: none"> describe the principles of pharmacology as applied to the preterm and term newborn identify commonly used neonatal medications, including: <ul style="list-style-type: none"> dose monitoring drug interactions indications for use side effects discuss drug excretion in breast milk. 		<ul style="list-style-type: none"> write clear, legible and safe prescriptions for medications educate parents about effects and side effects of prescribed medications contribute to development of unit guidelines and staff education for appropriate and safe medication use support parents in home administration of medications.

Theme 3		Care of the Sick Newborn
Learning Objective 3.12		Manage dermatological problems
Knowledge		Skills
<ul style="list-style-type: none"> describe the physiology of the skin in the preterm and term newborn describe the pathophysiology and differences between benign and pathological rashes in a newborn describe the characteristics and diagnosis of congenital and acquired infectious rashes and skin lesions describe the pathophysiology and differences between haemangioma and other vascular malformations. 		<ul style="list-style-type: none"> manage skin care in a newborn, at all gestations counsel parents in regards to aetiology, pathophysiology and management of skin lesions recognise severe and life-threatening congenital skin conditions, e.g. epidermolysis bullosa, severe ichthyosis, and manage in consultation with dermatologists and other disciplines as indicated treat infectious rashes in consultation with a dermatologist where necessary.

Theme 3		Care of the Sick Newborn
Learning Objective 3.13		Manage ophthalmological abnormalities
Knowledge		Skills
<ul style="list-style-type: none"> describe the pathophysiology and presentation of retinopathy of prematurity discuss indications for routine screening for retinopathy of prematurity discuss indications for treatment of retinopathy, methods of treatment and long-term outcome identify congenital eye disorders and syndromes associated with eye disorders identify infective eye disorders. 		<ul style="list-style-type: none"> liaise with ophthalmologist in development and implementation of comprehensive screening program for retinopathy of prematurity counsel parents with regards to the aetiology and management of retinopathy of prematurity screen for eye disorders on newborn examination.

Theme 3		Care of the Sick Newborn
Learning Objective 3.14		Manage ear, nose and throat abnormalities
Knowledge		Skills
<ul style="list-style-type: none"> describe congenital abnormalities of the head and neck and associated syndromes discuss the causes of congenital deafness syndromes and congenital malformations of the ear discuss techniques used for hearing screening in the newborn describe the embryology of cleft lip and palate and associated syndromes identify congenital laryngeal abnormalities and stridor, including laryngeal haemangioma identify abnormalities of the neck, e.g. cystic hygroma, vertebral anomalies and neck masses. 		<ul style="list-style-type: none"> coordinate involvement of audiologist, ear nose and throat surgeon, and, where necessary, a plastic surgeon counsel parents in regards to management and aetiology of congenital and acquired problems of the ear, nose and throat recognise and manage upper airway obstruction, including indications for tracheostomy, use of nasopharyngeal airway or jaw distraction manage feeding problems associated with cleft palate and Pierre-Robin syndrome.

Theme 3		Care of the Sick Newborn
Learning Objective 3.15		Coordinate integrated care of a sick newborn
Knowledge		Skills
<ul style="list-style-type: none"> discuss multisystem interactions in health and disease discuss impacts on families and appropriate supports discuss long-term implications of complications of care in a severely ill newborn. 		<ul style="list-style-type: none"> integrate care of a sick newborn considering multisystem interactions arrange and oversee multidisciplinary supports share information openly and honestly regarding diagnoses and outcomes.

Theme 4	Practical Procedures
Learning Objective 4.1	Perform the procedures required for care of a sick neonate
Skills	
<ul style="list-style-type: none"> • describe the relevant anatomy and physiology, indications, risks, and complications of the following procedures • insert and remove: <ul style="list-style-type: none"> • intercostal drains • nasogastric tube • nasopharyngeal tube • percutaneous central venous lines • peripheral arterial catheters • peripheral intravenous cannulas • umbilical arterial and venous catheters • urinary bladder catheter • perform: <ul style="list-style-type: none"> • airways suction • bag and mask ventilation • bladder tap • blood culture • blood sampling from umbilical and peripheral arterial lines • capillary blood sample • drainage of CSF reservoir • endotracheal intubation • exchange transfusion • lumbar puncture • thoracocentesis • paracentesis • pericardiocentesis • peripheral arterial puncture • surfactant administration • venesection • perform and interpret functional echocardiography* • perform and interpret cranial ultrasound* 	

Theme 4	Practical Procedures
Learning Objective 4.1	Perform the procedures required for care of a sick neonate
<ul style="list-style-type: none"> perform abdominal ultrasound*, including for the purposes of procedures (e.g. bladder tap, abdominocentesis etc) manage complications of the above communicate with parents regarding risks and benefits of the procedure, including appropriate consent be aware of own limitations and recognise when to ask for help. 	
*desirable but not mandatory	

Theme 4	Practical Procedures	
Learning Objective 4.2	Explain the principles of pain management	
Knowledge	Skills	
<ul style="list-style-type: none"> explain the pharmacological and non-pharmacological management of pain in neonates. 	<ul style="list-style-type: none"> assess and manage differing pain severities associated with the procedures listed in Learning Objective 4.1 communicate with parents regarding pain and management. 	

Theme 5		End-of-life Care
Learning Objective 5.1		Manage end-of-life care
Knowledge		Skills
<ul style="list-style-type: none"> discuss long-term outcome of infants of borderline viability and infants with major medical problems discuss ethical issues, including: <ul style="list-style-type: none"> borderline viability (awareness of attitudes) congenital malformations discontinuation of life support measures non-initiation of resuscitation discuss the following issues relating to end-of-life care: <ul style="list-style-type: none"> family (including sibling) emotional and behavioural issues medico-legal issues palliative care role and importance of autopsy role of cognitive, emotional, cultural and spiritual factors in end-of-life decisions recognise the value of a multidisciplinary approach to the family of a dying newborn. 		<ul style="list-style-type: none"> counsel parents in an emotionally and culturally appropriate fashion manage infants and families requiring palliative care request an autopsy support and debrief health care team follow-up with the family.

Theme 6		Long-Term Health Care and Follow-Up
Learning Objective 6.1		Manage long-term healthcare and follow-up of infants
Knowledge		Skills
<ul style="list-style-type: none"> discuss issues relating to: <ul style="list-style-type: none"> chronic respiratory disease hearing disability long-term neurodisability severe retinopathy of prematurity (ROP) and visual impairment short gut syndrome, malnutrition/poor growth and chronic feeding issues describe components of multidisciplinary team, including local medical officer and community services discuss the impact of chronic health issues on the patient and family discuss the impact of polypharmacy in chronic illnesses. 		<ul style="list-style-type: none"> perform a neurodevelopmental assessment assess and investigate poor growth and nutrition assess and investigate for hearing and visual impairment communicate, refer to, and work with paramedical staff, multidisciplinary teams and community services counsel parents/family about the impact of long-term illness on the child and family coordinate follow-up of baby and family with multidisciplinary team demonstrate a collaborative approach within a multidisciplinary team.

Theme 6	Long-Term Health Care and Follow-Up	
Learning Objective 6.2	Assess and manage the infant at risk	
Knowledge	Skills	
<ul style="list-style-type: none"> • discuss medico-legal and social issues around child protection • discuss issues relevant to post-natal depression • describe the effects of maternal drugs and drug withdrawal on the fetus and neonate. 	<ul style="list-style-type: none"> • identify and manage families at high psychosocial risk, including taking a full drug and alcohol history • liaise with multidisciplinary teams and support services • diagnose and manage neonatal abstinence syndrome and address child protection issues • counsel parents/family • coordinate follow-up of high risk infants and their families, including liaison with relevant community services • demonstrate a collaborative approach within a multidisciplinary team • identify strategies for the safe discharge and community support of families at high psychosocial risk. 	

Theme 7	Regional Organisation of Perinatal Care	
Learning Objective 7.1	Define and apply regional organisation of perinatal services	
Knowledge	Skills	
<ul style="list-style-type: none"> • discuss regional organisation of perinatal services • describe the organisation of outreach educational programs • describe the organisation of a perinatal/neonatal transport program • discuss the requirements for down transfer of convalescent infants. 	<ul style="list-style-type: none"> • apply communication and networking skills within the regional perinatal service • teach health care providers. 	

Theme 7	Regional Organisation of Perinatal Care	
Learning Objective 7.2	Undertake safe retrieval and transport of the sick newborn	
Knowledge	Skills	
<ul style="list-style-type: none"> describe maternal conditions requiring in-utero transfer describe neonatal conditions requiring transport discuss the risks of fetal and neonatal transport discuss the principles of stabilisation prior to transport discuss the principles of management of a neonate during transport describe the physiological changes that occur during air transport identify neonatal transport equipment discuss the transfer of a sick infant with special conditions, e.g. surgical conditions describe the indications and limitations of different transport modalities, e.g. road, fixed wing and rotor craft. 	<ul style="list-style-type: none"> advise referring personnel about management and need for in-utero transfer advise referring personnel about management and need for transfer of sick neonates stabilise a neonate prior to transport manage a neonate during transport use neonatal transport equipment counsel parents of an infant requiring transport resuscitate, stabilise and manage critically ill neonates in a non-critical care environment lead a transport team, including appropriate communication and prioritisation. 	

Theme 8	Benchmarking and Audit	
Learning Objective 8.1	Benchmark and manage clinical information	
Knowledge	Skills	
<ul style="list-style-type: none"> identify national/international benchmarking of clinical indicators recognise use of Australian and New Zealand Neonatal Network to guide benchmarking and management of clinical information. 	<ul style="list-style-type: none"> apply benchmarking and audit data to clinical practice participate in reviews of perinatal morbidity and mortality. 	

Theme 9	Evidence-Based Practice	
Learning Objective 9.1	Implement evidence-based care	
Knowledge	Skills	
<ul style="list-style-type: none"> • discuss the critical appraisal of published information, including case reports/series, clinical trials and meta-analyses • discuss the processes required to successfully implement change of practice(s). 	<ul style="list-style-type: none"> • appraise information from various sources • synthesise information into a cohesive practice • disseminate new knowledge and implementation of new therapies. 	

Theme 9	Evidence-Based Practice	
Learning Objective 9.2	Contribute to new knowledge	
Knowledge	Skills	
<ul style="list-style-type: none"> • describe research methodologies, including conduct and analysis of audits, case control trials, randomised controlled trials and meta-analyses. 	<ul style="list-style-type: none"> • undertake clinical research, including design, collaboration, enrolment, collation of data, and analysis and interpretation of results • review, present, publish and disseminate results • translate new knowledge into clinical care. 	

