



Master of Medicine (Paediatric) Entrance Exam Syllabus

The entrance examination consists of 2 papers.

- Paper 1
 - 40 True False multiple choice questions (MCQ).
 - 1 hour 45 min
- Paper 2
 - 40 questions with 20 One Best Answer MCQ and 20 EMI
 - 1 hour 15 min

Please refer to the syllabus for a complete scope of knowledge.

Edited 18/07/2019

Index	Page
1. Acute Clinical Medicine	3
2. Cardiology	6
3. Community Paediatrics	8
4. Dermatology	10
5. Development Paediatrics	11
6. Endocrinology	12
7. Gastro-hepatology	14
8. Genetics – Inherited Errors and Metabolism	16
9. Haemato-Oncology	18
10. Immunology and Allergy	20
11. Infectious disease	22
12. Musculoskeletal	23
13. Neonatology	25
14. Neurology	28
15. Nephrology	30
16. Nutrition	32
17. Respiratory	33

ACUTE CLINICAL MEDICINE

Syllabus	Learning outcomes	Content
The seriously ill child	Able to recognise a seriously ill child	<p>Clinical features of serious illness – respiratory distress, shock, decreased level of consciousness</p> <p>Knows symptoms and signs of impending cardiorespiratory arrest</p> <p>Knows the pathophysiological consequences of serious illness</p>
Fluid and electrolyte balance	<p>Able to discuss fluid and electrolyte homeostasis</p> <p>Able to manage fluid and electrolyte imbalances</p>	<p>Knows physiology of body fluids</p> <p>Fluid and electrolyte requirements in well and unwell infants and children of different ages</p> <p>Knows how to assess fluid status / dehydration</p> <p>Principles of fluid and electrolyte maintenance and replacement</p> <p>Knows content of commonly available replacement fluids</p>
Respiratory distress/ failure (also refer to Section on Respiratory)	<p>Knows the causes, pathophysiology and signs of respiratory failure</p> <p>Able to discuss the use of oxygen therapy</p>	<p>Causes of respiratory distress/ failure (upper airway obstruction, lower airway obstruction, lung parenchyma disease, and disordered control of breathing)</p> <p>Knows the pathophysiology of respiratory failure in the above situations</p> <p>Knows the signs of respiratory failure</p> <p>Knows the indications, methods of delivery, monitoring and adverse effects of oxygen therapy.</p>

		Knows the methods of ventilation in children of different ages
Shock	Able to recognise the child with shock and provide initial resuscitation	<p>Definition of shock</p> <p>Differentiation of compensated and hypotensive shock</p> <p>Different types of shock (hypovolaemic, cardiogenic, distributive and obstructive) and their pathophysiology</p> <p>Knows types of fluid for resuscitation including advantages and disadvantages of crystalloids and colloids</p> <p>Knows how to utilise fluid resuscitation as initial management</p>
Coma	Able to recognise and evaluate a comatose child	<p>Knows common causes of coma in children</p> <p>Knows how to utilise age-related Glasgow coma score</p>
Arrhythmias and rhythm disturbances	Able to manage common rhythm disturbances	<p>Knows how to read and interpret a normal electrocardiogram</p> <p>Knows the features of and recognises the following rhythm disturbances:</p> <ul style="list-style-type: none"> • Heart block • Sinus bradycardia • Asystole • Pulseless electrical activity • Supraventricular tachycardia • Ventricular tachycardia • Ventricular fibrillation <p>Recognises the importance of hypoxia as an important cause of rhythm disturbances in children</p>

<p>Poisoning/drug overdose and Envenomation</p>	<p>Knows common poisonings and envenomation</p>	<p>Knows the clinical pharmacology of the common and serious poisonings/drug overdose:</p> <ul style="list-style-type: none"> • Paracetamol • Kerosene <p>Knows the presentation of common envenomation:</p> <ul style="list-style-type: none"> • Bee stings • Snake bites
<p>Transportation and use of retrieval services</p>	<p>Knows principles involved in the transportation of an ill child</p>	<p>Anticipates patients in whom rapid deterioration can occur and provide necessary management plan</p> <p>Recognises the need and able to discuss the case with the more senior staff if transportation or retrieval to another facility is required</p> <p>Preparation of a patient for transfer to another facility</p>

CARDIOLOGY

Syllabus	Learning Outcomes	Content
Anatomy and physiology of circulation	<ul style="list-style-type: none"> • Able to describe anatomy and physiology of normal circulation • Able to describe anatomy and physiology of foetal circulation 	<ul style="list-style-type: none"> • Anatomy of the heart and great vessels • Understanding of cardiac cycle • Circulatory changes at birth in health and disease
Common cardiac signs	<ul style="list-style-type: none"> • Able to understand cyanosis • Able to describe different types of cardiac murmurs 	<ul style="list-style-type: none"> • Cyanosis: definition/ & differential diagnosis • Cardiac murmurs: innocent and pathological
Conducting system and arrhythmia	<ul style="list-style-type: none"> • Able to understand the conducting system of the heart and its relation to electrocardiogram (ECG) 	<ul style="list-style-type: none"> • Basic knowledge and interpretation of ECG • Recognize the ECG changes from birth to adolescence • ECG for sinus rhythm, sinus arrhythmias, heart block & supraventricular tachycardia
Heart Failure	<ul style="list-style-type: none"> • Able to describe the pathophysiology and clinical presentation and principles of management of heart failure 	<ul style="list-style-type: none"> • Heart failure : pathophysiology, clinical presentation and principles of management
Acyanotic Heart Defects	<ul style="list-style-type: none"> • Able to describe the pathophysiology and clinical presentation of Acyanotic Heart Defects 	<ul style="list-style-type: none"> • Concept of left to right shunt • Knowledge on common conditions with similar shunting including VSD, ASD, PDA

Cyanotic Heart Defects	<ul style="list-style-type: none"> • Able to describe the pathophysiology and clinical presentation of cyanotic heart conditions 	<ul style="list-style-type: none"> • Describe common ductal & non-ductal dependant conditions • Indications for prostaglandin (PG) in ductal dependent heart lesions
Obstructive Heart Lesions	<ul style="list-style-type: none"> • Able to describe the pathophysiology and clinical presentation of the common obstructive heart lesions 	<ul style="list-style-type: none"> • Clinical presentation including Aortic Atresia/ Hypoplastic Left Heart Syndrome/ Coarctation of Aorta
Acquired Heart Diseases	<ul style="list-style-type: none"> • Able to understand the common acquired heart disease 	<ul style="list-style-type: none"> • Diagnosis and principles of management of : <ul style="list-style-type: none"> - Rheumatic heart disease - Kawasaki disease - Infective endocarditis
Blood Pressure and Hypertension	<ul style="list-style-type: none"> • Able to understand hypertension and the approach to diagnosis 	<ul style="list-style-type: none"> • Correct measurement of blood pressure • Variation of blood pressure with age • Causes of hypertension
Pharmacotherapy	<ul style="list-style-type: none"> • Able to describe the common medications used in cardiology 	<ul style="list-style-type: none"> • Diuretics • Prostaglandin

COMMUNITY PAEDIATRICS

Syllabus	Learning outcome	Content
Preventive health care & health promotion	Knowledge of the role of community health services in preventive health care & health promotion	Emerging and lifestyle diseases e.g. obesity
Advocacy	Knowledge of child rights as the basis for advocacy	Concepts of child rights Categories of rights under <i>UN Convention on the Rights of the Child</i>
Child Protection (Non-accidental injury)	Knowledge of the different forms of child abuse and an approach to management	Clinical presentation of different forms of child abuse (physical, sexual & emotional abuse, child neglect)
Injury Prevention	Knowledge of unintentional injuries in young children	Types & common causes of unintentional injuries in young children road, drowning, falls, etc Strategies for prevention
Children in disadvantaged communities	Knowledge of categories of disadvantaged children & their associated problems	Categories: Urban poor/slums, Rural poor, Estates, Indigenous, Migrants Associated problems: malnutrition, failure to immunize, infectious disease, risk of injury, development & schooling problems
Screening	Knowledge of screening programmes conducted for infants and children	WHO criteria for implementing a screening programme Umbilical cord blood screening for hypothyroidism & G6PD deficiency – rationale & implementation
Routine Health Surveillance	Importance of health surveillance as a preventive health strategy	Monitoring of Growth Normal growth patterns Indices to measure growth Developmental screening of Developmental delay: types,

		causes & indications for referral
The child in school	Knowledge of problems encountered by children in schools	school bullying school & examination pressure sexual health
Epidemiology	Knowledge of health indicators for children	Indicators of child health: in a population (under 5 mortality, infant mortality rate, perinatal MR, neonatal MR)

DERMATOLOGY

Syllabus	Learning outcome	Content
Anatomy and physiology of skin	Able to describe structure and function of the skin	Anatomy and physiology of skin
Skin infections	a. Able to recognise clinical features b. Basic principle in the management of skin infection c. Understand the infective agents - Bacterial - Fungal (superficial) - viral	<u>BACTERIAL</u> <i>Impetigo</i> <i>Ecthyma</i> <i>Cellulitis</i> <i>Folliculitis</i> <i>SSSS</i> <u>FUNGAL</u> <i>Tinea infection/candida</i> <u>VIRAL</u> <i>Molluscum</i> <i>Viral warts</i>
Skin Infestations	a. Able to recognise clinical features b. Basic principle in the management of skin infestations	Scabies Lice
Inflammatory Dermatoses	a. Able to recognise clinical features b. Basic principle in the management of common inflammatory dermatoses	Seborrheic dermatitis Atopic dermatitis
Neonatal Dermatoses	a. Able to recognize manage common physiological skin changes in newborn b. Able to recognise and manage common birthmarks	Millaria <i>Erythema toxicum neonatorum</i> Port wine Stain Infantile haemangiomas
Principle of skin treatment	Understand the common topical preparations in dermatology	Potencies of topical steroids and complications of topical steroid
Skin and systemic diseases	Able to recognize common skin manifestations of systemic diseases	Neurofibromatosis Tuberous Sclerosis Sturge Weber Systemic Lupus erythematosus

DEVELOPMENT PAEDIATRICS

Syllabus	Learning Outcomes	Content
Child development	<ol style="list-style-type: none"> 1. Able to describe normal child development 2. Able to recognise abnormal developmental milestones. 	<ul style="list-style-type: none"> -Normal development including gross motor, fine motor, speech and language, emotional, cognitive - Normal visual and hearing development - factors influencing child development Normal variation and deviation and abnormality in developmental assessment Red flags in normal development
Developmental Delay and intellectual disability (ID)	<ol style="list-style-type: none"> a) Able to identify a child with developmental delay b) Able to discuss the aetiology of developmental delay. c) Able to identify a child with ID d) Able to discuss the aetiology of ID 	<ul style="list-style-type: none"> Global developmental delay -definitions -aetiology Specific developmental delay – motor, speech delay -aetiology Intellectual disabilities Definition Aetiology
Developmental regression	Able to define and identify developmental regression and its causes	<ul style="list-style-type: none"> Developmental regression -definition -aetiology
Learning disability	Able to define and identify learning disability and its causes	<ul style="list-style-type: none"> Definition Learning disability Specific learning disability - dyslexia
Behavioural problems	Able to identify common behavioural problems in children	<ul style="list-style-type: none"> Autism spectrum disorder ADHD -clinical features -comorbidities

ENDOCRINOLOGY

Syllabus	Learning Outcomes	Content
The Hypothalamic Pituitary Axis	- Able to describe the embryology and physiology of the hypothalamic pituitary and target organ axis.	Physiology of hypothalamic pituitary thyroid, gonadal and growth axes. Synthesis, transport, biochemical actions and control of hormones.
Growth	<p>- Understands normal growth; physical and endocrinological changes.</p> <p>- Factors determining physical growth ie genetic, hormonal, environmental (prenatal and postnatal).</p> <p>- Method of correct and accurate method of measuring growth.</p> <p>- Able to identify and diagnose short stature.</p>	<p>Physiology of hypothalamic pituitary growth axis.</p> <p>Normal growth pattern: from prenatal growth to puberty.</p> <p>Principles of growth charts: normal distribution, understanding of mid-parental height, target height.</p> <p>Growth monitoring: accurate auxology measurement.</p> <p>Causes and approach to short stature.</p>
Normal Puberty & Pubertal Disorder	<p>- Able to describe the physical and hormonal changes of normal puberty.</p> <p>- Able to detect disorders of precocious puberty and knows the principles of management</p>	<p>Physiology of puberty.</p> <p>Assessment of puberty: Tanner staging (boys and girls)</p> <p>Precocious Puberty:</p> <ul style="list-style-type: none"> • Central vs peripheral: characteristics and investigations • Variants of normal development (premature thelarche, premature pubarche)
Childhood diabetes	<p>- Able to describe the homeostasis of blood sugar and physiology of insulin.</p> <p>- Understands the principles of diagnosis and types (Type 1 vs Type 2) of diabetes.</p> <p>- Pathophysiology of diabetic ketoacidosis.</p>	<p>Glucose homeostasis.</p> <p>Criteria to diagnose diabetes in children.</p> <p>Characteristics of diabetes in children: Type 1 vs Type 2.</p> <p>Diabetic ketoacidosis: pathophysiology and management</p>

<p>Vitamin D and Calcium Metabolism</p>	<ul style="list-style-type: none"> - Able to describe vitamin D and calcium homeostasis. - Knowledge on disorders of calcium metabolism and vitamin D abnormalities. - Able to diagnose and manage hypocalcaemia 	<p>Calcium homeostasis.</p> <p>Vitamin D metabolism.</p> <p>Clinical features and causes of vitamin D and calcium abnormalities.</p> <p>Assessment/investigation and principles of management of childhood hypocalcaemia.</p>
<p>Congenital Hypothyroidism</p>	<ul style="list-style-type: none"> - Able to understand and explain the development and physiology of the thyroid gland. - Synthesis, transport, biochemical actions and control of thyroid hormones. - Able to discuss aetiology and principles of management of congenital hypothyroidism. 	<p>Physiology of hypothalamic pituitary thyroid axis.</p> <p>Cord blood TSH screening; importance of screening, interpretation of screening results.</p> <p>Congenital hypothyroidism: clinical presentation and investigation.</p>
<p>Ambiguous genitalia</p>	<ul style="list-style-type: none"> - Understands steroid biosynthesis and the effect of 21-hydroxylase deficiency - Able to detect and evaluate ambiguous genitalia 	<p>Embryology and development of genitalia.</p> <p>Approach to ambiguous genitalia and salt-losing crisis in 21-hydroxylase deficiency.</p>

GASTRO-HEPATOLOGY

Syllabus	Learning outcomes	Content
General competencies	Have the knowledge and skills to be able to assess and initiate management of patients presenting with gastroenterological problems in acute and outpatient settings	
Acute presentations		
Acute abdominal pain	Know the causes of acute abdominal pain and their presentation	Causes of acute abdomen (medical and surgical) Recognise conditions which require urgent intervention e.g. intussusception
Acute diarrhoea and/or vomiting	Know the causes of acute diarrhoea and/or vomiting and assessment of dehydration Know about oral and intravenous fluid therapy	Pathophysiology Causes of acute diarrhoea and/or vomiting Assessment of dehydration Be familiar with local isolation policies Understand the scientific principles for oral and intravenous fluid therapy
Upper and lower gastrointestinal bleeding	Approach to upper and lower gastrointestinal bleeding	Causes Assess the severity and the potentially life-threatening nature of this condition Emergency treatment
Acute liver failure	Know the pathophysiology and approach to acute liver failure	Causes of acute liver failure Pathophysiology Complications of acute liver failure
Congenital abnormalities	Know the presenting features of congenital abnormalities	Causes and presentations including tracheo-oesophageal fistula, malrotation, bowel atresias, Hirschsprung's

		disease, abdominal wall defects, diaphragmatic hernia Be familiar with potential associated abnormalities
<i>Outpatient presentations</i>		
Recurrent vomiting eg Gastro-esophageal(GER) reflux and Gastro-oesophageal reflux disease (GERD)	Know the presenting features of GER and GERD	Recognise the range of signs and symptoms associated with gastro-oesophageal reflux and GERD
Chronic or recurrent abdominal pain	Know the causes and presentations of chronic or recurrent abdominal pain	Know the causes and features that suggest functional and underlying pathological conditions
Chronic diarrhoea	Know the causes and presentation of chronic diarrhoea	Causes Pathophysiology/mechanism of chronic diarrhoea and features eg osmotic/malabsorption secretory, motility, inflammatory
Constipation	Approach to chronic constipation	Features that suggest functional and underlying pathological conditions predisposing conditions e.g. hypothyroidism, neurodisability, psychosocial problems
Jaundice	Approach to prolonged jaundice Evaluation of childhood jaundice	Causes : -Cholestatic and non-cholestatic Presentations Investigations Viral hepatitis A,B,C,D, E Investigations

GENETICS – INHERITED ERRORS AND METABOLISM

Syllabus	Learning Outcomes	Content
Basic Genetics	Understand the scientific basis of inherited disorders	Basic cell biology-physiology, function Chromosomes and genes
	Understand basis of patterns of inheritance	Constructing a pedigree Interpretation of modes of inheritance
	Understand the basis of molecular genetics disorders	Gene structure and function Mutations and diseases
Birth defects and common chromosomal conditions	Know about birth defects and the features of some common chromosomal conditions	Basic principles of embryology Birth defects – major and minor Multiple birth defects and chromosomal disorders Common chromosomal conditions
	Problems associated with Down syndrome	
Inherited metabolic diseases	Basis of inherited metabolic disease Recognition of a child at risk for inherited metabolic disease	Genes and enzymes Metabolites: <ul style="list-style-type: none"> • Acidosis • Lactate • Ammonia • Glucose • Ketones Pathogenesis Clinical presentation

	Know the appropriate screening investigations that should be performed when a metabolic disorder is suspected	Newborn screening – principles Basic screening for inborn errors of metabolism
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HAEMATO-ONCOLOGY

Syllabus	Learning Outcomes	Content
Haematology		
Haemopoiesis	To know the differentiation of the pluripotent stem cells	Development, structure and function of 3 cell lines
Haemoglobin	Changes of haemoglobin chain and peripheral blood elements after birth to adolescence	Normal haemoglobin types
Haemostasis	Approach to a child with bleeding tendencies	Physiology of normal and abnormal haemostasis Inherited & acquired haemostatic disorders: Haemophilia A/B, von Willebrand disease, Idiopathic immune thrombocytopenia Clinical and laboratory diagnosis of bleeding disorders
Anaemia	Differential diagnosis, classification and basic investigations of childhood anaemia Metabolism of iron	IDA Megaloblastic Anaemia Haemolytic Anaemia Diagnosis, prevention and management of iron deficiency anaemia
Blood products	Basic knowledge on types of blood products and side effects of blood products	Packed RBC Platelets FFP
Thalassaemia and other haemoglobinopathies	Diagnosis & management: --TDT --NTDT	Complications of chronic iron overload Screening Genetic counselling
Clinical and Technical Skills		

Oncology		
Common childhood malignancies	Characteristics : clinical presentation, differential diagnosis, laboratory findings of common childhood malignancies	Acute Leukaemias Lymphomas Brain tumours: medulloblastoma Neuroblastoma Wilms tumour
Oncological emergencies	Diagnosis Clinical presentation Interpretation of laboratory findings Principles of management	Tumour lysis syndrome Hyperleukocytosis Febrile neutropenia
	Interpretation of results of FBCs at different ages Recognition of common abnormalities on a blood film Assessment of haemostasis and interpretation of test of haemostasis	White cell differential counts Red cell indices PT, APTT, DVC

IMMUNOLOGY AND ALLERGY

Syllabus	Learning Outcomes	Content
Normal body defense mechanisms	Able to compare and contrast innate and adaptive immunity	<ul style="list-style-type: none"> Describe differences between innate and adaptive immunity Describe and understand components of innate immunity Describe characteristics of adaptive immunity – specificity, diversity, discrimination between self and non-self, memory Describe the 4 types of adaptive immunity
Cellular and humoral immunity	Able to outline the general steps involved in adaptive immune response	<ul style="list-style-type: none"> Knows the components of adaptive immunity – humoral immunity and cell-mediated immunity Understand the humoral and cellular immune responses Understand the primary and secondary immune responses
Hypersensitivity	<p>Knowledge of the different types of hypersensitivity reactions</p> <p>Recognise a child with anaphylaxis and initiate basic emergency and supportive care</p>	<ul style="list-style-type: none"> Describe the Gell and Coombs classification of hypersensitivity reactions and give examples Understand the basic mechanisms involved in 4 types of hypersensitivity Understand pathophysiology of anaphylaxis Clinical presentations of anaphylaxis Diagnosis and management of anaphylaxis The indications for auto-injector epinephrine
Immunisation	Able to describe common immunisation issues like vaccine hesitancy or	<ul style="list-style-type: none"> Understand the principles of immunisation and concept of herd immunity Knowledge of active and passive immunisations

	refusal, timing and spacing of immunisations	<ul style="list-style-type: none"> • Knowledge of live-attenuated and inactivated vaccines • Contraindications and precautions to routine childhood immunisation • Malaysian National Immunisation programme
Primary immunodeficiencies (PID)	Able to outline the indications for investigating for PID	<ul style="list-style-type: none"> • Describe clinical predictors of PID (10 warnings signs of PID) • Common basic screening tests in suspected patients with PID – full blood count, humoral, cellular, phagocytic

INFECTIOUS DISEASE

Syllabus	Learning outcome	Content
Immunisation	<p>Knowledge of the physiological basis and principles of immunisation</p> <p>To be able to counsel and advise parents on common immunisation issues like vaccine hesitancy or refusal, timing and spacing of immunisations</p> <p>Reporting of AEFIs to relevant authorities</p>	<p>Physiology of vaccination Concept of herd immunity</p> <p>Active and passive immunisations Live attenuated and inactivated vaccines</p> <p>Adverse events following immunisation (AEFIs)</p> <p>Contraindications and precautions to routine childhood immunisation</p> <p>Malaysian NIP and policy</p>
Fever of unknown origin	Approach to a child with FUO	<p>Definition –classical FUO, and evolving definitions</p> <p>Simple classification – classical FUO and fever due to nosocomial infections, cyclical neutropenia and periodic fever syndromes, neutropenic fever, fever in HIV infections</p> <p>Categorise causes of FUO and their investigations</p>
Sepsis and septic shock	<p>Recognise early features of septic shock</p> <p>Initiate resuscitation and early management</p>	<p>Pathophysiology and its complications Predisposing conditions – immunocompromised, central lines, etc</p> <p>Prevention – neutropenia, splenectomised patients Principles of management</p>
Prescribing common anti-infectives	Rationale use of anti-microbials in different clinical settings	<p>Commonly used classes of anti-infectives – penicillins, macrolides, cephalosporins, aminoglycosides, carbapenems</p> <p>Basic principles in selection of an anti-microbial in treating common infections</p> <p>Anti-microbial stewardship – concepts</p> <p>Understand concept of MIC and therapeutic drug monitoring Drug interactions</p> <p>Hospital and National Antibiotics Guidelines</p>

MUSCULOSKELETAL

Syllabus	Learning outcome	Content
Development of bone and joints	Knows basic clinical anatomy and physiology of bone and joints	Types of bones & bone growth Anatomy of joint and surrounding structures
Basic immunology	Knows basic immunology and concept of autoimmunity	Innate and adaptive immune system Pathogenesis of autoimmunity
Musculoskeletal (MSK) symptoms, signs and investigation	Interprets MSK symptoms, signs and investigations	Causes of MSK symptoms according to pathophysiology - Inflammatory, mechanical and psychosomatic Red flags to suggest serious pathology –e.g. inflammatory , malignancy, infection, vasculitis, NAI
Joint swelling	Knows common causes of joint swelling Knows clinical features, investigation and diagnosis	Causes of arthritis/joint swellings in children Septic arthritis Juvenile idiopathic arthritis
Limp	Knows differential diagnosis of limping at different ages	Infections Trauma Arthritis Developmental problems e.g. DDH Orthopedic conditions e.g SUFE, Perthes
Limp pain	Knows differential diagnosis of limp pain	Growing pains Benign hypermobility
Scoliosis	Knows causes of scoliosis	Congenital Neuromuscular Idiopathic Others (e.g. tumours, infections)
Leg alignments and foot postures	Knows normal variants	Bow legs Knock knees In-toeing and out-toeing Flat feet

Multisystem disease	Differentiate between inflammatory and non-inflammatory systemic diseases Knows clinical presentation, investigation and diagnosis	Clinical features and investigations supporting an inflammatory aetiology Systemic lupus erythematosus, Juvenile Dermatomyositis
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NEONATOLOGY

Syllabus	Learning Outcomes	Content
Basic science and fundamentals	<ul style="list-style-type: none"> ▪ Describe the foetal circulation ▪ Describe the physiological changes after birth and transition to extra-uterine life ▪ Know the physiological adaptation/changes in postnatal life ▪ Know the concept of thermoneutrality ▪ Describe the oxygen dissociation curve and factors that shift this curve 	<p>The components that make up the foetal circulation</p> <p>Contrast between the foetal circulation and the postnatal circulation</p> <p>Principles of thermoregulation and mechanisms of heat and transepidermal water loss</p>
Newborn screening and newborn care	<ul style="list-style-type: none"> ▪ Know the principles and meaning of newborn screening ▪ Know the principles of Vitamin K prophylaxis against haemorrhagic disease of the newborn ▪ Know about the national programme for vaccination at birth ▪ Know the importance of early initiation of breast feeding and kangaroo mother care 	<p>National programme for universal cord blood screening (G6PD deficiency and congenital hypothyroidism)</p> <p>Other tests e.g. universal newborn hearing screening and critical congenital heart disease (CCHD) screening</p> <p>BCG and Hepatitis B; indications for Hepatitis B Immunoglobulin</p> <p>The components of the WHO Baby Friendly Hospital Initiative</p>

	<ul style="list-style-type: none"> ▪ Know the importance of umbilical cord stump hygiene 	The principles in umbilical cord care and recognition of omphalitis
Neonatal resuscitation and transitional care	<ul style="list-style-type: none"> ▪ Know the principles and steps of newborn resuscitation ▪ Know the cause and effects of oxygen-related toxicity ▪ Know the definition and practice of delayed umbilical cord clamping or umbilical cord milking 	<p>The content of the current NRP guidelines</p> <p>Principles in avoiding toxicity with the use of air or blended oxygen during resuscitation and monitoring oxygen saturation using pulse oximetry</p> <p>Recommendations by the WHO and NRP</p>
Nutrition and growth monitoring	<ul style="list-style-type: none"> ▪ Able to describe the importance and advantages of breastfeeding and recognise problems in lactation ▪ Know the constituents of human breast milk and benefits to the infant ▪ Able to describe small, appropriate and large for gestational age 	<p>The basic physiology of lactation</p> <p>Causes and complications of SGA and LGA</p>
Fluid therapy	Know the principles of fluid balance and therapy in the newborn period	Definitions and physiology of insensible and transepidermal water loss. Normal urine output and fluid requirements.
Prematurity	<ul style="list-style-type: none"> ▪ Able to define the various degrees of prematurity ▪ Know the various causes of prematurity ▪ Know the definitions and problems of low birth weight (LBW), including 	<p>Gestational periods for severe, very, moderate and late preterm</p> <p>Commonly associated medical conditions and</p>

	<p>very and extremely LBW infants</p> <ul style="list-style-type: none"> ▪ Know the physical characteristics and appearance of preterm infants 	<p>complications related to prematurity</p> <p>Assessment of gestational age using the Ballard and Dubowitz scores</p>
Respiratory distress in the newborn	<ul style="list-style-type: none"> ▪ Able to describe the signs of respiratory distress ▪ Know the common respiratory disorders affecting the newborn infant ▪ Able to define and know the common causes of pneumonia ▪ Know the principles and complications of mechanical ventilation and continuous positive airway pressure therapy ▪ Know the physiology of surfactant ▪ Able to analyse and interpret blood gas results 	<p>Silverman scoring for the various degrees of respiratory distress</p> <p>The underlying causes, clinical features and principles of management of:</p> <p>(a)Respiratory distress syndrome, (b)Meconium aspiration syndrome, (c)Transient tachypnea of the newborn, (d) Pneumothorax and air leak syndrome, (e)Persistent pulmonary hypertension of the newborn</p> <p>Clinical features and principles of management of congenital, early-onset and nosocomial pneumonia</p> <p>The basis of surfactant replacement therapy for respiratory distress syndrome</p> <p>The normal, abnormal and differences between capillary, arterial and venous blood gas</p>

NEUROLOGY

Syllabus	Learning Outcomes	Content
Development of the brain	Able to describe the normal development of the central nervous system	Congenital brain malformations -Aetiology Spinal dysraphism
Febrile seizures	Able to diagnose, manage and stratify risk of recurrence	Acute management Risk of recurrence Counselling of parents
Intracranial infections	Able to describe the pathophysiology, clinical features, investigations and management	Acute bacterial meningitis Viral encephalitides Tuberculous meningitis Cerebral abscess
Cerebral palsy	Able to identify the antecedents, classify and describe clinical features	Definition Antecedents Classification Clinical features
Seizures and epilepsy	Able to describe seizure semiology, classify, identify aetiology and institute acute management	Describe seizure semiology Classification Aetiology Acute management including status epilepticus
Neuromuscular disorders	Able to describe clinical features, identify aetiology based on a systematic approach	<u>Floppy infant syndrome</u> -Classification -Aetiology -Investigations Dystrophinopathy Spinal muscular atrophy
Raised intracranial pressure and hydrocephalus	Able to describe pathophysiology, identify its presence, aetiology and institute acute management	Clinical features Aetiology Acute management

Clinical skills	Able to interpret abnormal neurological signs	Localize site of neurological lesion Differentiate between upper and lower motor lesion Recognize cerebellar and extrapyramidal signs
Technical skills	Knowledge of LP Able to interpret cerebrospinal fluid (CSF) results	Lumbar puncture Indications Contraindications Interpret CSF results

NEPHROLOGY

Syllabus	Learning Outcomes	Content
<p>1. Basic Sciences</p> <p>a. Renal and Bladder Anatomy</p> <p>b. Embryology of genitourinary system</p> <p>c. Renal physiological changes from neonate to adult</p> <p>d. Bladder innervation and controls</p>	<p>Able to describe the basic renal and bladder function anatomically and physiologically.</p> <p>Understand how normal renal and bladder development (in order to understand pathogenesis of CAKUT)</p>	<p>Anatomy – landmark, adjacent structures Physiology –glomerular and tubular function Bladder innervation and control</p> <p>Able to describe renal physiological changes that occur from neonates to adult</p> <p>To understand how renal regulate electrolyte balances and clinical manifestation</p> <p>To understand the concept of RAAS</p> <p>Appreciate the concept of acid base disturbances and interpretation of blood gaseous</p> <p>Congenital anomalies of the kidney and urinary tract (CAKUT) - PUV, PUJO, VUJO.</p>
<p>2. Clinical conditions</p>	<p>Able to describe the pathophysiology, clinical features, investigations and basic management of common condition</p> <p>Nephrotic syndrome</p>	<p>Idiopathic vs secondary nephrotic syndrome (NS)</p> <p>Pathogenesis of oedema (underfilled vs overfilled)</p> <p>Management of NS</p> <p>Glomerulonephritis – APSGN Henoch Schonlein Purpura</p> <p>Principles of managing paediatric UTI</p> <p>Acute kidney injury- manifestation and basic management approach</p>

	<p>Nephritis: Acute post-streptococcal GN Henoch Schonlein Purpura</p> <p>Urinary tract infection</p> <p>Acute kidney injury</p> <p>Hypertension</p> <p>To be aware what are potential steroids side effects and toxicity</p> <p>To be aware of medication that potentially resulted in renal toxicity/nephrotoxic drugs</p>	<p>Causes for young hypertension and pharmacological management of hypertension (acute)</p> <p>Corticosteroids-mechanism and side effects</p> <p>Common drugs associated with nephrotoxic- antibiotic/chemo agents/ analgesic</p>
<p>3. Relevant GUS investigations (when to request/how to perform and interpret)</p>	<p>Able to explain the basis of relevant investigations, and interpret the findings</p>	<p>Basis of specific test- clinical significance</p> <ul style="list-style-type: none"> a. Urinalysis b. USS KUB c. MCUG d. Radionuclide scan(DMSA/DTPA/MAG3)

NUTRITION

Syllabus	Learning Outcomes	Content
Nutrition & growth	Knowledge in management basic nutritional requirement	<ul style="list-style-type: none"> - Basic nutrition requirement for all paediatric age group
Infant feeding	Breastfeeding Breast milk substitutes <ul style="list-style-type: none"> - Choices - Types - Indications 	<ul style="list-style-type: none"> - Benefits to mother and child - Contraindication: absolute and relative - Baby-friendly initiative: the 10 steps - Issues surrounding breastfeeding
Complementary feeding & weaning	Able to counsel on weaning and choice of complementary feeds	<ul style="list-style-type: none"> - What is weaning. - Timing of weaning. - Appropriate choices and ways in complementary feeds
Nutritional assessment	Able to perform appropriate nutritional assessment for all age group Able to monitor growth appropriately	<ul style="list-style-type: none"> - Different techniques of measuring nutritional parameters - Different types of growth charts
Malnutrition & malabsorption	Physiology of nutrient digestion, absorption, metabolism, and elimination	<ul style="list-style-type: none"> - Able to anticipate potential deficiency of specific nutrition group in different clinical scenario - Able to recognise protein energy malnutrition & kwashiorkor
Obesity	Able to recognize obesity and its potential complication	<ul style="list-style-type: none"> - Important parameters and clinical signs during assessment of overweight and obese - Potential complications of obesity -

RESPIRATORY

Syllabus	Learning Outcomes	Content
Lung development	Able to describe the embryological development of the lung	Different stages of lung development
Pulmonary physiology and control of breathing	<p>Able to describe structure and function of the respiratory system</p> <p>Able to describe the breathing mechanism and its control</p> <p>Able to describe the mechanism of gas exchange.</p>	<p>Respiratory muscles Chest wall Airway (upper & lower) Lungs Pulmonary circulation</p> <p>Central controller Brainstem, Medulla and Pons</p> <p>Effectors - Muscles of respiration</p> <p>Sensors - Central & peripheral chemoreceptors & Lung receptors</p> <p>Oxygen-haemoglobin dissociation curve</p> <p>Mechanism and causes of Hypoxia and hypoventilation</p>
Differences between infant and adult respiratory system	<p>Able to describe the anatomical differences between infants and adults</p> <p>Able to describe the physiological differences between infants and adults</p>	<p>Upper and lower airway and lung anatomy</p> <p>Low lung volumes Limited respiratory reserve Poor lung elastic recoil High lung compliance High airway resistance</p>
Lung defense mechanism	<p>Able to describe the lung defense mechanism</p> <p>Mechanical responses</p> <p>Non-immunologic responses</p>	<p>Cilia function and its role in the defense system</p> <p>Cough reflex Mucus secretion and clearance</p> <p>Pulmonary macrophages Airway epithelial cells Mast cells</p>

Lung function	Able to describe and interpret lung function.	PEFR Bronchodilator response
Respiratory failure	Able to understand and explain the features and development of respiratory failure	Type 1 and type 2 respiratory failure – pathophysiology and causes Clinical signs and symptoms of respiratory failure Interpretation of blood gas
Common respiratory noises	Able to explain and understand the pathophysiology and causes of common respiratory noises Approach to wheezing, stridor and snoring	Wheezing Acute and chronic stridor. Grunting Snoring Clinical history, physical examination, differential diagnosis, and management.
Upper respiratory tract infections	Able to describe the pathophysiology, clinical features, investigations and principles of management.	Rhinitis Pharyngitis Tonsillitis Otitis media Sinusitis Epiglottitis Croup Bacterial tracheitis
Lower respiratory tract infections	Able to describe the pathophysiology, clinical features, investigations and management.	Bronchiolitis Community Acquired pneumonia - different organisms according to age groups.
Asthma	Able to describe the pathophysiology, clinical features, investigations and management.	<u>Acute Asthma</u> Classification and assessment of asthma severity Pharmacology in acute asthma. <u>Chronic Asthma</u> Classification of Intermittent & Persistent Asthma

		<p>Pharmacology in chronic asthma and the devices used</p> <p>Asthma action plan</p> <p>Asthma education</p> <p>* reference to Malaysian CPG on childhood asthma 2014</p>
Chronic suppurative lung disease	Able to describe the pathophysiology, clinical features, investigations and management	Causes, investigations and management in bronchiectasis