



Master of Medicine (Paediatric) Entrance Exam Syllabus

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ACUTE CLINICAL MEDICINE

| Syllabus | Learning outcomes | Content |
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| 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> |

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| | | 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> |

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| <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 |
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| 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 |

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| 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 |
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| 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, |

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| | | 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 |
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| 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 | Milliaria <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 |
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| 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 |
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| 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> |

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| <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 |
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| 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 |

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| | | 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 |
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| 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 |

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| | 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 |
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| 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 | | |
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| 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 |
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| 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 |

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| | 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 |
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| 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 |
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| 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 |

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| 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 |
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| 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> |

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| | <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> |

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| | <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 |
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| 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 |

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| 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 |
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| <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> |

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| | <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 |
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| 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 |
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| 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> |

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| 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 |

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| | | <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 |