Endocrine Function, Homeostasis & Metabolism Module - Year 3 Semester 1

Duration: 04 Weeks (20 days)

	Topic/ Concept	Objectives	Time (h) lecture	T/L activity	Responsible person
		Student should be able to,			
1	**2006-3/SBM-05/01** **ECF volume** **i) Volume regulation in oedematous conditions**	a. Correlate clinical conditions leading to formation of oedema, in relation to: 1. Abnormal leakage of fluid from the capillaries 2. Failure in return of fluid from capillaries b. Describe the effects of adding solutions, in different tonicity, to the ECF c. Describe the mechanisms involved in controlling ECF (Dehydration and Loss of blood or plasma) d. Recall the compensatory mechanism in hypovolaemic shock e. Describe the effects of hypovolaemic shock and grade hypovolaemic shock in relation to body responses	1	Lecture	Medicine
2	**2006-3/SBM-05/02** **Electrolyte imbalance**	a. Recall the mechanisms involved in the transport of electrolytes in- between the fluid compartments. b. Correlate Potassium, Sodium and Calcium homeostasis in relation to clinical problems	**1**	Lecture	Anaesthesia
3	**2006-3/SBM-05/03** **Acidosis and alkalosis**	a. Recall the principles of Acid base balance b. Relate metabolic derangements with acid base disorders c. Describe how compensatory mechanisms function in these disorders	**1**	Lecture	Anaesthesia

4	**2006-3/SBM-05/04 Measurement of pCO2, pH, Std HCO3, base deficit**	a. Recall acid base disorders with biochemical parameters b. Interpret arterial blood gas analysis results in relation to acid base disorders c. Explain the anion gap and its clinical importance	**1**	Lecture	Anaesthesia
5	**2006-3/SBM-05/05 Types and basis of clinical uses of diuretics**	a. Classify diuretics on the basis of mechanism of action and efficacy b. Describe the mechanism of action, pharmacokinetics, adverse effects and clinical uses of diuretics	**1**	Lecture	Pharmacology
6	**2006-3/SBM-05/06 Control of body temperature and actions of antipyretics**	a. Recall the mechanisms involved in the pathogenesis of fever b. List the drugs used as antipyretics c. Describe the mechanism of action, pharmacokinetics and adverse effects of antipyretic drugs	**1**	Lecture	Pharmacology
7	**2006-3/SBM-05/07 Enzymatic defects and receptor abnormalities Incl. signal transduction related to endocrine diseases**	a. Recall the role of receptors and signal transduction in endocrine function b. Describe how hormone resistance develops c. Describe how abnormalities in receptors and signal transduction result in endocrine disorders d. Describe how enzyme defects result in endocrine disorders	**1**	Lecture	Biochemistry
8	**2006-3/SBM-05/08** Hypopituitarism and hyperpituitarism Thyroid diseases Hypoparathyroidism, Hyperparathyroidism	Recall actions of hormones of anterior pituitary / Posterior pituitary States the diseases related to the anterior/Posterior pituitary gland Recall actions of thyroid hormones States diseases related to the thyroid gland Recall actions of parathyroid hormones States diseases related to the parathyroid gland	1	Lecture	Medicine

	Hypo and hyperadrenalism	Recall actions of cortisol and diseases related to the adrenal gland			
9	**2006-3/SBM-05/09** **Thyroid diseases** Thyroid diseases : Pathological process (benign & malignant neoplasm) in relation to the pathology	a. Recall anatomy, histology and physiology of the thyroid gland b. List the benign and malignant neoplasms of thyroid c. Describe the aetiology, morphology and diagnosis of thyroid neoplasms	**1**	Lecture	Pathology
10	**2006-3/SBM-05/10** **Thyroxine and antithyroid drugs**	a. Recall the steps in the synthesis and secretion of thyroid hormones b. Recall the physiological effects of thyroid hormones c. Describe the pharmacokinetics of thyroxine d. Explain the principles underlying replacement therapy and suppressive therapy with thyroxine e. Describe the mechanism of action, pharmacokinetics and adverse effects of antithyroid drugs	**1**	Lecture	Pharmacology

11	**2006-3/SBM-05/11** **Diabetes mellitus** **i)** Aetiology of Diabetes ii) Mechanism of Hypo and hyperglycemia iii) Diagnostic criteria of diabetes mellitus	a. Understand that diabetes arises due to an interaction between genes and the environment (Genetic susceptibility) b. Possible genes for diabetes c. Environmental factors i. diet ii. lack of exercises iii. obesity iv. sedentary occupations v. stress a. Regulation of normal blood sugar - hypoglycemia - hyperglycemia a. Diagnosis in symptomatic patients b. Diagnosis in asymptomatic patients c. Use of FBS d. IGT/IFG	**1**	Lecture	Medicine
12	**2006-3/SBM-05/12** **Measuring of metabolic control of Diabetes**	Describe the relevance of following analysis in measuring of metabolic control of Diabetes a) blood glucose b) glycosylated hemoglobin c) C- peptide	**1** **2**	Lecture Practical	Biochemistry Pathology
13	**2006-3/SBM-05/13** **Pathology of diabetic complications**	a. List the complications of diabetes b. Describe the pathogenesis of above complications c. Describe Histopathology in diagnosis of diabetes complications	**1** **1**	Lecture Museum class	Pathology
14	**2006-3/SBM-05/14** **Antidiabetic drugs**	a. Recall the mechanism of insulin secretion and its regulation b. List the classes of antidiabetic drugs c. Describe the mechanism of action, pharmacokinetics, adverse effects of antidiabetic	**1+1+2** **(4h)**	2-hr sessions & 2hrs for tutorial	Pharmacology

		drugs d. List the different types / formulations of insulins and state their duration of action e. Describe the principles underlying the manufacture and storage of insulins f. Explain the principles underlying the use of antidiabetic drugs during acute metabolic complications such as ketoacidosis, pregnancy, severe illness and surgery			
15	**2006-3/SBM-05/15** **Common endocrine problems in childhood**	Diabetes mellitus /Hypoglycaemia Hypo and hyperthyroidism adrenocortico insufficiency obesity and growth abnormalities	**1** **1**	Lecture Lecture	Paediatrics
16	**2006-3/SBM-05/16** **Glucocorticoid and Mineralocorticoid drugs**	a. Recall the physiological effects of adrenocortical steroids b. Describe the anti-inflammatory and immunosuppressive effects of glucocorticoids c. Compare the relative potency, glucocorticoid / mineralocorticod activity and duration of action of commonly available steroid drugs d. List the clinical uses and adverse effects of glucocorticoid drugs e. Explain the principles underlying replacement therapy in adrenocortical insufficiency f. Describe the precautions that can be taken to minimize the adverse effects of long-term steroid therapy	**1**	Lecture	Pharmacology

17	**2006-3/SBM-05/17 Measurements of endocrine dysfunction**	a. Recall the basis of testing endocrine functions and clinical relevance b. List routine tests that are available to detect endocrine malfunction c. Recall - i. hypothalamic – pituitary function ii. thyroid gland function iii. adrenal gland function iv. gonadal (male/female) function d. Correlate clinical features with laboratory investigation	**3**	**1** Lecture + 2hrs Practical class	NMU
18	**2006-3/SBM-05/18 Inborn errors of metabolism**	Inborn errors of metabolism Investigations	**1**	Lecture	Paediatrics
19	**2006-3/SBM-05/19 Obesity**	List causes of obesity Explain importance of metabolic syndrome	**1**	Lecture	Medicine

Endocrine Function, Homeostasis & Metabolism Module – (Year 3 – Semester 1)
Module Summary

	Lectures (hrs)	**PD (hrs)**	**Museum class (hrs)**	**Tutorial (hrs)**	**Total (hrs)**
Pathology	2	2	1		5
Pharmacology	4			4	8
Paedictrics	3				3
Nuclear Medicine	1	2			3
Medicine	4				4
Anaesthesia	3				3
Biochemistry	2				2
Total	**19**	**4**	**1**	**4**	**28**

Names and the departments of the teachers involved in the teaching programme

Dept. of Pathology
Dr D M Dissanayake

Dr E Siriweera
Dr S Wijetunge
Dr R Waduge

Dept. of Biochemistry
Prof. R. Sivakanesan
Dr S B P Athauda

Dept. of Pharmacology
Dr U Dangahadeniya

Dept. of Medicine
Dr. I.B. Gawarammana
Dr A Medagama

Dept. of Anaesthesiology
Dr.C.D.A. Goonasekera
Dr. V Pinto

Dept. of Paediatrics
Dr R Mudiyanse

NMU
Dr. J.M.C. Udugama
Dr D K K Nanayakkara

Examination Format

Module	Credits	Exam component and duration		
		MCQ	SAQ	Viva
Locomotion & Endocrine function, homeostasis and metabolism	3	1 ½ hrs	1 hr	√