



STUDY GUIDE

PROGRAM	MBBS
MODULE TITLE	Endocrine II
ACADEMIC YEAR	4th year, 2023
INTRODUCTION	<p>Endocrinology is a branch of medicine which deals with the role Of hormones and other biochemical mediators in regulating bodily functions and with the treatment of imbalances of these hormones. The Endocrine System-II module will enable the students to link the pathophysiological and pharmacological knowledge of endocrine system with the basic science knowledge gained during the Endocrine-I module in 2nd year, where there was emphasis on normal structure and function. However, in this module, students will learn how abnormalities cause various conditions, how they can be treated and how some of them can be prevented.</p>
RATIONALE	<p>One of the most common endocrine conditions in the world is Diabetes Mellitus. Thyroid abnormalities are also very common. Pakistani medical graduates need to have a solid knowledge base of the endocrine glands since their disorders are prevalent in the country and the region. Skills learnt in this module will help students function better in various specialties during final year and internship.</p>
OUTCOMES	<p>By the end of the module, learners will be able to justify plans for management for various endocrine disorders based on their knowledge of the underlying abnormal processes and therapeutics</p>
DEPARTMENTS INVOLVED	<ul style="list-style-type: none"> ● Community Medicine ● Medicine

	<ul style="list-style-type: none"> • Pediatrics • Pathology • Pharmacology • Surgery
MODULE OBJECTIVES	By the end of the module, the students should be able to:
<u>LECTURES</u> COMMUNITY MEDICINE	<p>1. Diabetes Mellitus (DM) & its prevention</p> <ul style="list-style-type: none"> • Describe Diabetes mellitus • Explain the risk factors and complications of DM • Discuss preventive measures of Diabetes Mellitus <p>2. Iodine deficiency disorders & their prevention</p> <ul style="list-style-type: none"> • Describe iodine deficiency • Explain the effects of iodine deficiency • Discuss the preventive measures of iodine deficiency • Explain the fortification of iodine in food <p>3. Obesity & its prevention</p> <ul style="list-style-type: none"> • Describe Obesity • Discuss the epidemiology of Obesity • Enumerate the different methods to measure Obesity • Explain control measures of Obesity
MEDICINE	<p>1. Hypopituitarism</p> <ul style="list-style-type: none"> • Discuss etiology, pathophysiology, risk factors and clinical features • List the differential diagnoses. • Interpret the relevant investigations. • Discuss the plan of management for the condition <p>2. Hyperpituitarism and Acromegaly</p>

	<ul style="list-style-type: none"> • Discuss etiology, pathophysiology, risk factors and clinical features • List the differential diagnoses. • Interpret the relevant investigations. • Discuss the plan of management for the condition <p>3. Hyperthyroidism</p> <ul style="list-style-type: none"> • Discuss etiology, pathophysiology, risk factors and clinical features • List the differential diagnoses. • Interpret the relevant investigations. • Discuss the plan of management for the condition • Explain the complications of the condition <p>4. Hypothyroidism</p> <ul style="list-style-type: none"> • Discuss etiology, pathophysiology, risk factors and clinical features • List the differential diagnoses. • Interpret the relevant investigations. • Discuss the plan of management for the condition • Explain the complications of the condition <p>5. Cushing's Syndrome</p> <ul style="list-style-type: none"> • Discuss etiology, pathophysiology, risk factors and clinical features • List the differential diagnoses. • Interpret the relevant investigations. • Discuss the plan of management for the condition • Explain the complications of the condition
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	<p>6. Addison's disease</p> <ul style="list-style-type: none"> • Discuss etiology, pathophysiology, risk factors and clinical features • List the differential diagnoses. • Interpret the relevant investigations. • Discuss the plan of management for the condition • Explain the complications of the condition <p>7. Diabetes Mellitus</p> <ul style="list-style-type: none"> • Discuss etiology, pathophysiology, risk factors and clinical features • List the differential diagnoses. • Interpret the relevant investigations. • Discuss the plan of management for the condition
<p>PATHOLOGY</p>	<p>1. Overview of pituitary pathology</p> <ul style="list-style-type: none"> • Discuss the pituitary gland function and hormone secretion • Discuss the hypothalamus pituitary axis • Discuss the clinical manifestations of Pituitary diseases • Discuss the etiology, clinical manifestations of hypopituitarism • Discuss the posterior pituitary syndrome including Diabetes Insipidus & SIADH <p>2. Tumors of Pituitary</p> <ul style="list-style-type: none"> • Classify anterior pituitary tumors. • Discuss etiology, genetic alterations, morphology, and clinical manifestations of different types of adenomas • Discuss Hypothalamic suprasellar tumors <p>3. Hyperthyroidism, Graves' disease & Goiters</p> <ul style="list-style-type: none"> • Define hyperthyroidism & thyrotoxicosis

	<ul style="list-style-type: none"> • Discuss important causes of thyrotoxicosis • Classify disorders associated with thyrotoxicosis • Discuss clinical features and lab diagnosis of thyrotoxicosis • Define Graves' disease • Discuss the pathogenesis, morphology and clinical course of Graves disease • Define Goiters • Classify Goiters • Discuss the etiology, pathogenesis and clinical aspects of diffuse and multinodular goiters <p>4. Hypothyroidism & Thyroiditis</p> <ul style="list-style-type: none"> • Define hypothyroidism • Discuss congenital, autoimmune and iatrogenic hypothyroidism • Differentiate between cretinism & myxedema with regards to etiology, pathogenesis, clinical features & lab diagnosis • Define thyroiditis and list different types of thyroiditis • Discuss the etiology, pathophysiology, morphology & clinical features of various types of clinically significant thyroiditis <p>5. Tumors of Thyroid gland</p> <ul style="list-style-type: none"> • Classify Thyroid tumors • Discuss the etiology, pathogenesis, genetic alterations, morphology and diagnostic features of follicular, papillary, anaplastic and medullary thyroid carcinomas <p>6. Pathology of Parathyroid gland</p> <ul style="list-style-type: none"> • Discuss the functions of parathyroid gland
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	<ul style="list-style-type: none"> • Discuss primary hyperparathyroidism with reference to parathyroid adenoma, primary hyperplasia and parathyroid carcinoma • Discuss the causes, pathogenesis, morphology and clinical features of primary hyperparathyroidism • Discuss the causes of hypercalcemia with relation to parathyroid levels • Discuss the diagnostic features of asymptomatic and symptomatic hyperparathyroidism • Discuss the causes, pathogenesis, morphology and clinical features of secondary hyperparathyroidism <p>7. Pathogenesis of Diabetes Mellitus (DM)</p> <ul style="list-style-type: none"> • Define Diabetes Mellitus (DM) • Classify DM • Discuss the diagnostic criteria of type I & II Diabetes Mellitus • Differentiate between salient features of type I & II Diabetes Mellitus • Discuss glucose homeostasis & regulation of insulin release • Explain the pathogenesis of Type I & type II diabetes, related to beta cell dysfunction, genetic susceptibility, environmental factors • Discuss Diabetes in pregnancy <p>8. Diabetes Mellitus: Pathogenesis of complications</p> <ul style="list-style-type: none"> • Discuss the morphology & clinical features of type I & II Diabetes including classic triad & chronic manifestations • Elaborate the acute metabolic complications & Ketoacidosis.
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	<ul style="list-style-type: none"> • Explain the morphology and clinical features of chronic complications of Diabetes, including lesions of Pancreas, diabetic macrovascular disease, diabetic microangiopathy, nephropathy, neuropathy, diabetic ocular complications & susceptibility to infections <p>9. Adrenal gland- I</p> <ul style="list-style-type: none"> • Discuss the function and hormone secretion of adrenal cortex and medulla • Discuss the etiology, pathophysiology and histopathology of hypercortisolism, hyperaldosteronism and adrenal adenoma • Discuss adrenogenital syndrome <p>10. Adrenal gland- II</p> <ul style="list-style-type: none"> • Discuss etiology, pathophysiology and histopathology of adrenocortical insufficiency including Primary acute adrenocortical insufficiency, Waterhouse-Friderichsen syndrome & Addison disease & secondary adrenocortical insufficiency. • Discuss pathogenesis, morphology, clinical presentation of tumors of adrenal cortex and adrenal medulla. • Discuss MEN syndrome Type I & Type II
PEDIATRICS	<p>1. Diabetes Mellitus (DM) & DK</p> <ul style="list-style-type: none"> • List the causes of diabetes mellitus in infants and children • Describe the etiology, risk factors, sign and symptoms, investigations, management and complications of DM in infants and children <p>2. Hypo & hyperthyroidism</p> <ul style="list-style-type: none"> • Describe the etiology, clinical presentation,

	<p>investigations, management and complications of hyperthyroidism and hypothyroidism in infants and children</p> <p>3. Short stature & stunting</p> <ul style="list-style-type: none"> Define short stature and stunting <p>Describe the etiology, risk factors, sign and symptoms, investigations, management and complications of short stature and stunting</p>
PHARMACOLOGY	<p>1. Pharmacology of Hypothalamic and Pituitary hormones</p> <ul style="list-style-type: none"> Discuss the basic & clinical aspects of the relevant drugs, leading to clarification of the concepts <p>2. Drugs used to treat hyperthyroidism</p> <ul style="list-style-type: none"> Classify anti-thyroid drugs. Discuss basic & clinical pharmacology of the anti-thyroid drugs <p>3. Drug used to treat hypothyroidism</p> <ul style="list-style-type: none"> Explain kinetics & dynamics of the drugs used to treat hypothyroidism <p>4. Pharmacology of Adrenocorticoids</p> <ul style="list-style-type: none"> Classify corticosteroids Explain their functions Distinguish kinetics and dynamics of glucocorticoids and mineralocorticoids Discuss their inhibitors of glucocorticoids and mineralocorticoids <p>5. Pharmacology of Oral Anti-Diabetic Drugs</p> <ul style="list-style-type: none"> Classify Anti-Diabetic drugs

	<ul style="list-style-type: none"> • Explain basic & clinical pharmacology of the Anti-Diabetic drugs <p>6. Insulin preparations</p> <p>Discuss basic and clinical pharmacology of insulin preparations including new ones</p>
SURGERY	<p>1. Thyroid Disorders</p> <ul style="list-style-type: none"> • Discuss in detail the classification and clinical presentation of benign and malignant goiters • Suggest the diagnostic modalities for these conditions • Enumerate the treatment options for goiter <p>Propose a management plan for goiter and its complications</p>
<u>TUTORIALS</u> PATHOLOGY	<p>1. Histopathology of Thyroid</p> <ul style="list-style-type: none"> • Discuss morphological aspects of different types of goiters, cretinism, myxedema, thyrotoxicosis, Graves' disease, thyroiditis and Thyroid tumors <p>2. Lab evaluation of endocrine diseases</p> <ul style="list-style-type: none"> • Interpret the lab tests associated with diseases of Hypothalamus, Thyroid, Parathyroid, Pancreas and adrenal glands
PHARMACOLOGY	<p>1. Drugs used in hyper and hypothyroidism</p> <ul style="list-style-type: none"> • Discuss the basic & clinical aspects of the hyper and hypothyroidism <p>2. Adrenocorticoids and their clinical uses</p> <ul style="list-style-type: none"> • Discuss the basic & clinical aspects of the relevant drugs <p>3. Oral Anti-Diabetic drugs</p> <ul style="list-style-type: none"> • Discuss the basic & clinical aspects of the Anti-Diabetic drugs

	4. Insulin preparations (interactive session, see lecture for objectives)
INTERNAL ASSESSMENT	Internal assessment will take place as per institutional policy
ANNUAL EXAMINATION	MCQs and OSCE (observed + unobserved)
MODULE EVALUATION	Course evaluation will be obtained through a feedback form which will be posted on the JSMU website