JINNAH SINDH MEDICAL UNIVERSITY

STUDY GUIDE	
PROGRAM	**MBBS**
MODULE TITLE	**ENDOCRINE SYSTEM-2**
ACADEMIC YEAR	**4th YEAR MBBS 2025**
INTRODUCTION	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 the endocrine system with the basic science knowledge gained during the Endocrine-I module in 2nd year, where there was an 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.
RATIONALE	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 specialities during final year and internship.
OUTCOMES	By the end of the module, learners will be able to devise plans for the management of various endocrine disorders based on their knowledge of the underlying abnormal processes and medications.
DEPARTMENTS INVOLVED	1. Community Medicine 2. Medicine

	3. Pediatrics 4. Pathology 5. Pharmacology 6. Surgery
MODULE OBJECTIVES	By the end of the module, the students should be able to:
LECTURES COMMUNITY MEDICINE	**1. Diabetes Mellitus (DM) & its prevention** • Describe Diabetes mellitus • Discuss the epidemiology of Diabetes Mellitus • Explain the risk factors and complications of Diabetes Mellitus • Discuss preventive measures for Diabetes Mellitus **2. Iodine deficiency disorders & their prevention** • Describe iodine deficiency • Explain the effects of iodine deficiency • Discuss the preventive measures of iodine deficiency • Explain the fortification of iodine in food **3. Obesity & its prevention** • Describe Obesity • Discuss the epidemiology of Obesity • Enumerate the different methods to measure Obesity • Explain control measures of Obesity **4. Non-communicable diseases** • Define non-communicable diseases (NCDs) and differentiate them from communicable diseases • Identify the four major types of NCDs • Explain the risk factors for NCDs • Describe the impact of NCDs on global health • Discuss the prevention and control strategies for NCDs

	• Analyze the role of public health interventions in addressing the NCD epidemic • Describe the effectiveness of different NCD prevention programs **5. Metabolic Syndrome in South Asia:** • Describe Metabolic Syndrome and its associated risk factors • Identify the diagnostic criteria for metabolic syndrome • Recognize the potential complications of metabolic syndrome • Identify effective strategies for the prevention and management of Metabolic syndrome **6. Leadership- Health Management** • Describe management • Explain the elements of management • Describe the Scalar Principle • Describe Health care quality
MEDICINE	**1. Hypopituitarism** • Discuss etiology, pathophysiology, risk factors and clinical features • List the differential diagnoses. • Interpret the relevant investigations. • Discuss the plan of management for the condition **2. Hyperpituitarism and Acromegaly** • Discuss etiology, pathophysiology, risk factors and clinical features • List the differential diagnoses. • Interpret the relevant investigations. • Discuss the plan of management for the condition **3. Hyperthyroidism**

	• 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 **4. Hypothyroidism** • 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 **5. Cushing's Syndrome** • 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 **6. Addison's disease** • 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 **7. Diabetes Mellitus** • Discuss etiology, pathophysiology, risk factors and clinical

	features • List the differential diagnoses. • Interpret the relevant investigations • Discuss the plan of management for the condition
PATHOLOGY AND MICROBIOLOGY	**1. Overview of pituitary pathology** • Discuss the pituitary gland function and hormone secretion • Discuss the hypothalamus-pituitary axis • Discuss the clinical manifestations of Pituitary diseases • Discuss the etiology and clinical manifestations of hypopituitarism • Discuss the posterior pituitary syndrome including Diabetes Insipidus & SIADH **2. Tumors of Pituitary** • Classify anterior pituitary tumors. • Discuss the etiology, genetic alterations, morphology, and clinical manifestations of different types of adenomas • Discuss Hypothalamic suprasellar tumors **3. Hyperthyroidism, Graves' disease & Goiters** • Define hyperthyroidism & thyrotoxicosis • 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 goitres

	4. Hypothyroidism & Thyroiditis • Define hypothyroidism • Discuss congenital, autoimmune and iatrogenic hypothyroidism • Differentiate between cretinism & myxedema concerning 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 **5. Tumors of Thyroid gland** • Classify Thyroid tumors • Discuss the etiology, pathogenesis, genetic alterations, morphology and diagnostic features of follicular, papillary, anaplastic and medullary thyroid carcinomas **6. Pathology of Parathyroid gland** • Discuss the functions of the parathyroid gland • Discuss primary hyperparathyroidism concerning parathyroid adenoma, primary hyperplasia and parathyroid carcinoma • Discuss the causes, pathogenesis, morphology and clinical features of primary hyperparathyroidism • Discuss the causes of hypercalcemia concerning parathyroid levels • Discuss the diagnostic features of asymptomatic and symptomatic hyperparathyroidism • Discuss the causes, pathogenesis, morphology and clinical features of secondary hyperparathyroidism **7. Pathogenesis of Diabetes Mellitus (DM)**

	• 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 **8. Diabetes Mellitus: Pathogenesis of complications** • Discuss the morphology & clinical features of type I & II Diabetes including classic triad & chronic manifestations • Elaborate the acute metabolic complications & Ketoacidosis. • 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 **9. Adrenal gland- I** • Discuss the function and hormone secretion of the adrenal cortex and medulla • Discuss the etiology, pathophysiology and histopathology of hypercortisolism, hyperaldosteronism and adrenal adenoma • Discuss adrenogenital syndrome **10. Adrenal gland- II** • Discuss the etiology, pathophysiology and histopathology of adrenocortical insufficiency including Primary acute

	adrenocortical insufficiency, Waterhouse-Friderichsen syndrome & Addison disease & secondary adrenocortical insufficiency. • Discuss pathogenesis, morphology, and clinical presentation of tumors of the adrenal cortex and adrenal medulla. • Discuss MEN syndrome Type I & Type II
PEDIATRICS	**1. Diabetes Mellitus (DM) & DK** • List the causes of diabetes mellitus in infants and children • Describe the etiology, risk factors, signs and symptoms, investigations, management and complications of DM in infants and children **2. Hypo& hyperthyroidism** • Describe the etiology, clinical presentation, investigations, management and complications of hyperthyroidism and hyperthyroidism in infants and children **3. Short stature & stunting** • Define short stature and stunting • Describe the etiology, risk factors, signs and symptoms, investigations, management and complications of short stature and stunting
PHARMACOLOGY	**1. Pharmacology of Hypothalamic and Pituitary hormones** • Discuss the basic & clinical aspects of the relevant drugs, leading to clarification of the concepts **2. Drugs used to treat hyperthyroidism** • Classify anti-thyroid drugs. • Discuss the basic & clinical pharmacology of the anti-

	thyroid drugs **3. Drug used to treat hypothyroidism** • Explain the kinetics & dynamics of the drugs used to treat hypothyroidism **4. Pharmacology of Adrenocorticoids** • Classify corticosteroids • Explain their functions • Distinguish kinetics and dynamics of glucocorticoids and mineralocorticoids • Discuss their inhibitors of glucocorticoids and mineralocorticoids **5. Pharmacology of Oral Anti-Diabetic Drugs** • Classify Anti-Diabetic drugs 6. Insulin preparations • Explain the basic & clinical pharmacology of the Anti-Diabetic drugs **6. Insulin preparations** • Discuss basic and clinical pharmacology of insulin preparations including new ones
SURGERY	**1. Benign Thyroid Disorders** (Hyperthyrodism, Hypothyroidism, Thyroiditis) • Describe the surgical Anatomy of the Thyroid Gland • Discuss in detail the classification and clinical presentations of the conditions • Suggest the diagnostic modalities for these conditions • Discuss the treatment options, common complications and prognoses **2. Parathyroid diseases**

	• Describe the surgical Anatomy of the Parathyroid Gland • Classify Benign Parathyroid conditions • Differentiate among the etiology, clinical features, investigations and treatment plans for the types of Hyper-Parathyrodisms • Describe the etiology, clinical features, pathophysiology, investigations and treatment plans for: i. Hypo-Parathyrodism ii. Multiple Endocrine Neoplasia syndrome iii. Parathyroid carcinoma **3. Diseases of Adrenal Glands** • Describe the surgical Anatomy of the Adrenal Gland • Differentiate among the etiology, clinical features, investigations and treatment plans for conditions of the Adrenal Cortex (Incidentaloma, Primary hyperaldosteronism – Conn's syndrome, Cushing's syndrome, Adrenocortical carcinoma, Congenital adrenal hyperplasia, Adrenal insufficiency) • Differentiate among the etiology, clinical features, investigations and treatment plans for conditions of the Adrenal Medulla (Pheochromocytoma and paraganglioma, Neuroblastoma, Ganglioneuroma)
PATHOLOGY	**1. Histopathology of Thyroid** • Discuss morphological aspects of different types of goitres, cretinism, myxedema, thyrotoxicosis, Graves' disease, thyroiditis, and thyroid tumors **2. Lab evaluation of endocrine disease** • Interpret the lab tests associated with diseases of the Hypothalamus, Thyroid, Parathyroid, Pancreas and adrenal

	glands
TUTORIALS **PHARMACOLOGY**	**1. Drugs used in hyper and hypothyroidism** • Discuss the basic and clinical aspects of hyper and hypothyroidism **2. Adrenocorticoids and their clinical uses** • Discuss the basic and clinical aspects of the relevant drugs **3. Oral Anti-Diabetics drugs** • Discuss the basic and clinical aspects of the Anti-Diabetic drugs **4. Insulin preparations (interactive sessions, see lecture for objectives)**
CLINICAL SKILLS	• General Physical Examination • Interpretation of investigations related to benign Endocrine conditions • Professional behaviour • Relevant history taking • Thyroid Examination
INTERNAL ASSESSMENT	• Internal assessment will be according to JSMU policy. The details of the internal assessment will be determined by the respective institutions. • Internal assessment carries 20% weightage in the final, end-of-year examination
ANNUAL EXAMINATION	• MCQs and OSCE/OSPE (observed + unobserved) • **All clinical topics of Medicine, Surgery & Paediatrics will be included in final year MBBS examinations also (as well as in relevant modules of 4th year MBBS).**

COURSE EVALUATION	• The course will be evaluated through a feedback form which will be posted on the JSMU website
REFERENCE BOOKS	The following books can be referred to for further reading: • Public Health and Community Medicine of ILLYAS • Davidson's Principles and Practices of Medicine