

Dow University of Health Sciences



Endocrinology MODULE

4 weeks

Second Year MBBS

5 YEAR CURRICULAR ORGANIZATION

Spiral	year	Modules					
First Spiral	I	FND1- Foundation Cell, Genetics & Cell Death (Basics of Anatomy, Physiology, Biochemistry, Gen. Pathology, Gen. Pharmacology, Community Medicine & Behavioral Sciences) 6 Weeks		Foundation Sub Module Genetics, Microbiology, Bioethics 2 Weeks	HEM1- Blood Module Immunity, Inflammation, Tissue repair, Antimicrobials & Neoplasia 8 Week		
		LCM1- Locomotion Bones, Joints, Nerves & Muscles, 8 weeks		RSP1- Respiratory System 4 weeks	CVS1- Cardiovascular System 4 weeks		
	II	NEU1- Nervous System 8 weeks		HNN1- Head & Neck & Special 4 weeks	END1- Endocrinology 4 weeks		
		GIL 1-GIT and Liver 8 weeks		EXC1- Renal and Excretory System 4 weeks	REP1- Reproductive System 4 weeks		
Second Spiral	III	IDD 1- Infectious diseases 4 weeks	HEM2- Hematology 4 weeks		RSP2- Respiratory System 4 weeks	CVS2- Cardiovascular System 4 weeks	
		GIL 2-GIT and Liver (including Nutritional Disorders) 8weeks		EXC2- Renal & Excretory System 4 weeks	END2- Endocrinology 4 weeks		
		ORT2- Orthopedics, Rheumatology, Trauma 7 weeks		REP2- Reproductive System 8 Weeks	PMR-Physical Medicine & Rehabilitation DPS-Dermatology Plastic Surgery / Burns GEN-Genetics 6 weeks		
		NEU2- Neurosciences and Psychiatry 8 weeks		OPH / ENT* 4 weeks		ENT/OPH * 4 weeks	
		Clinical Rotation 9:30 to 1:00 (with Ambulatory, Emergency, Intensive care) In Medicine, Pediatrics, Cardiology and Neurology units <ul style="list-style-type: none"> ▪ Lecture on problem based approach, twice a week ▪ Ward tutorial twice a week ▪ Student research presentation once a week 		Clinical Rotation 9:30 to 1:00 (Inpatient, Ambulatory, Emergency, Intensive care and Operation Theatres) In Surgery, Gynae & Obstetrics, Orthopedics and Neurosurgery. <ul style="list-style-type: none"> ▪ Lecture on problem based approach, twice a week ▪ Ward tutorial twice a week ▪ Student research presentation once a week 			
		PARALLEL THEMES: The following themes are not part of any individual module but shall run concurrently:Communication Skills, Clinical Skills, Writing and Presentation Skills, Article Writing, Ethics					

RATIONALE:

The function of the endocrine system is to coordinate and integrate cellular activity within the whole body by regulating cellular and organ function throughout life and maintaining homeostasis. Homeostasis, or the maintenance of a constant internal environment, is critical to ensuring appropriate cellular function. In this module the anatomy and physiology of the endocrine organs, functional biochemistry of the hormones secreted alongwith normal physiological changes are taught in integrated fashion with reference to common disease occurring in our community.

TERMINAL OBJECTIVE:

By the end of this module student will be able to:

- Review the anatomy of endocrine organs (pituitary, thyroid, pancreas, parathyroid and adrenal gland)
- Describe the role of hormones in relation to homeostasis and metabolism
- Identify and list functional physiology of hormones
- Recognize stepwise synthesis and release of various hormones
- Enlist common endocrine related disorders and their pathogenesis
- Recognize various endocrine disorders on the basis of clinical and investigative findings
- Highlight the role of pharmacological agents used to treat endocrine disorders

MODULE OBJECTIVES:

1. Overview of all endocrine glands / Describe the development, gross and microscopic features and List the endocrine glands in the body with their respective hormones
2. Classify the hormones on the basis of structure, biochemistry and functions
3. Describe the development, biochemical structure, secretions, mode of action, functions, anomalies and common related disorders of hypothalamus
4. Describe the development, biochemical structure, secretions, mode of action, functions, anomalies and common related disorders of thyroid and parathyroid gland
5. Discuss the epidemiology and consequences of iodine deficiency and the salient features of iodine control program in Pakistan
6. Describe the development, structure, secretions, mode of action, functions, anomalies and common related disorders of pancreas.
7. Given a set of laboratory data, differentiate between hypo and hyper secretion of Pancreas
8. Describe integration of different hormones in growth, metabolism maintenance of blood sugar level
9. Describe the epidemiology of diabetes mellitus in terms of global perspectives in Pakistan
10. Describe the levels of prevention of diabetes mellitus and its control at primary care level
11. Describe the development, biochemical structure, secretions, mode of action, functions, anomalies and common related disorders of adrenal gland

MODULE CONTENTS:

ANATOMY

Gross Anatomy:

1. [END1 ANG 1](#) Anatomical overview of all endocrine glands in the body
2. [END1 ANG 2](#) Gross, and development of Pituitary Gland
3. [END1 ANG 3](#) Gross structure of hypothalamus
4. [END1 ANG 4](#) Thyroid and Parathyroid Gland
5. [END1 ANG 5](#) Gross structure of Pancreas
6. [END1 ANG 6](#) Gross structure and development of adrenal gland+ anomalies

General Histology:

1. [END1 ANH 1](#) Pituitary Gland
2. [END1 ANH 2](#) Microscopic Features of Pituitary Gland (Practical)
3. [END1 ANH 3](#) Thyroid and parathyroid
4. [END1 ANH 4](#) Microscopic structure of Thyroid and Parathyroid gland (practical)
5. [END1 ANH 5](#) Microscopic structure of pancreas
6. [END1 ANH 6](#) Microscopic structure of pancreas (practical)
7. [END1 ANH 7](#) Microscopic structure of adrenal gland
8. [END1 ANH 8](#) Microscopic structure of adrenal gland (practical)

General Embryology:

1. [END1 ANE 1](#) Development of Thyroid and Parathyroid gland
2. [END1 ANE 2](#) Development of Pancreas and related anomaly

PHYSIOLOGY

1. [END1 PHY 1](#) Introduction to Endocrinology
2. [HNN1 PHY 2](#) Hypothalamo-Hypophyseal system; and Anterior Pituitary Hormone
3. [END1 PHY 3](#) Disorders of Ant. Pituitary (Practical)
4. [END1 PHY 4](#) Growth hormone
5. [END1 PHY 5](#) Posterior pituitary Hormones
6. [END1 PHY 6](#) Function of thyroid hormones

7. [END1 PHY 7](#) Parathyroid hormones and regulation of calcium
8. [END1 PHY 8](#) Glucose homeostasis
9. [END1 PHY 9](#) Hormones secreted by GI tract
10. [END1 PHY 10](#) Adrenal Cortex (Function of Glucocorticoids)
11. [END1 PHY 11](#) Adrenal Cortex (Functions of Mineralocorticoids)
12. [END1 PHY 12](#) Adrenal Medulla Secretions and Disorders
13. [HNN1 PHY 13](#) Pineal gland and local hormones (Prostaglandins)
14. [HNN1 PHY 14](#) Thyroid function Test & BMR (Tutorial)
15. [HNN1 PHY 15](#) Posterior Pituitary (Tutorial)

BIOCHEMISTRY

1. [END1 BIO 1](#) Hydrophobic and Hydrophilic Hormones
2. [END1 BIO 2](#) Metabolism of amino acid Hormones (Thyroid)
3. [END1 BIO 3](#) Metabolism of Peptide Hormones
4. [END1 BIO 4](#) Thyroid Profile (Tutorial)
5. [END1 BIO 5](#) Structure, Metabolism and Mechanism of action of Steroid Hormones
6. [END1 BIO 6](#) Electrolyte Metabolism in relation to Hormones (tutorial)
7. [END1 BIO 7](#) Diabetes Mellitus, An Endocrine Disorder (Insulin/ Glucagon)
8. [END1 BIO 8](#) Glucagon & somatostatin molecular structure and biochemical function
9. [END1 BIO 9](#) Biochemical Interpretation for Diagnosis of Diabetes Mellitus (tutorial)
10. [END1 BIO 10](#) Chemistry of Adrenal Medulla and Associated Hormones, Pheochromocytoma

BEHAVIORAL SCIENCES

1. [END1 BHE 1](#) Stress Management
2. [END1 BHE 2](#) Personality development

MEDICINE

1. [END1 MED 1](#) Clinical disorders of pituitary
2. [END1 MED 2](#) Presentations of Hypothyroidism/Hyperthyroidism and interpretation of laboratory tests
3. [END1 MED 3](#) Interpretation & Diagnosis of Hyper and Hypo Secretion of adrenal hormones

COMMUNITY MEDICINE

1. [END1 COM 1](#) Iodine control program
2. [END1 COM 2](#) Obesity
3. [END1 COM 3](#) Epidemiology of diabetes in Pakistan, Prevention & Control at primary care level

Pathology

1. [END1 PTH 1](#) Anterior pituitary, posterior pituitary
2. [END1 PTH 2](#) Hypothyroidism
3. [END1 PTH 3](#) Hyperthyroidism and Graves' disease
4. [END1 PTH 4](#) Disorders of Parathyroid gland
5. [END1 PTH 5](#) Diabetes Pathogenesis
6. [END1 PTH 6](#) Diabetes Complication
7. [END1 PTH 7](#) Hypo and Hyper secretion of adrenal Cortex & medulla

The contents are subjected to be altered according to requirement of academic calendar

TEACHING STRATEGIES

LARGE CLASS FORMATS

- Lectures

SMALL GROUP DISCUSSION

- Demonstrations
- Tutorial
- Practical
- Skill labs
- Case based learning sessions

CASE BASED LEARNING

1. CBL :1

Learning Objectives:

By the end of the CBL, students will be able to

- Identify the anatomical structures involved in these physical findings.
- Describe the physiology of Growth Hormone secretion and regulation.
- Correlate the physical findings of underlying hormonal disorder with normal functions.
- Interpret the investigations of relevant gland.
- To prescribed the treatment and monitor the response of treatment.

1. CBL :2

Learning Objectives:

By the end of the CBL, students will be able to

- Understanding pathophysiology of addisions disease
- Able to diagnose hormonal problems on basis of clinical features
- Able to identify anatomical structures involved

2. CBL :3

Learning Objectives:

By the end of the CBL, students will be able to

- Discuss the structure and functions of thyroid gland
- Recognize the mechanism of action of thyroid Hormones and regulation
- Relate the clinical picture with the presentation of such clinical condition.
- Recognize the importance of selection of salt utilized in cooking
- Recognize the social issues related to swelling in front of neck
- Identify the anatomical structures of the endocrine gland in front of the neck
- Discuss the synthesis of T3 T4

LEARNING OBJECTIVES OF SKILL LAB

I. Arterial Puncture

- **INTRODUCTION (RATIONALE)**

Since an arterial blood sample is necessary for the blood gas analysis, the procedure of arterial puncture is one of the most important skills that health professionals should possess.

- **LEARNING OBJECTIVES**

At the end of the session students should be:-

- Demonstrate the technique for performing an arterial puncture on a manikin

ASSESSMENT PLAN

ENDOCRINOLOGY MODULE

	WEIGHTAGE
ANNUAL EXAM	80%
MODULE EXAM (Internal Evaluation)	
Theory	10%
Practical	10%

CREDIT HOURS

ENDOCRINOLOGY MODULE	4.5
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Contact HOURS (DISCIPLINE WISE)

Discipline	Contact Hours
Gross Anatomy	06
Histology	10
Embryology	02
Biochemistry	11
Physiology	16.5
Medicine	3
Behavioral Sciences	2
Community Medicine	3
Pathology	6
CBL	6
Skill Lab	2

BOOKS

ANATOMY

- **CLINICALLY ORIENTED ANATOMY**
KEITH.L.MOORE, Arthur F. Dalley, Anne M.R. Agur
7th or Latest EDITION
- **GRAY'S ANATOMY FOR STUDENTS**
Drake & Vogl & Mitchell
3rd or Latest EDITION
- **CLINICAL ANATOMY BY REGIONS (REFERENCE BOOK)**
Richard S. SNELL
9th EDITION
- **LAST'S ANATOMY: REGIONAL & APPLIED (REFERENCE BOOK)**
Chummy S. Sinnatamby
12th or Latest EDITION
- **ATLAS OF HUMAN ANATOMY**
FRANK H.NETTER
6th EDITION

EMBRYOLOGY

- **LANGMAN'S MEDICAL EMBRYOLOGY**
T.W.SADLER
13th EDITION
- **THE DEVELOPING HUMAN CLINICALLY ORIENTED EMBRYOLOGY (REFERENCE BOOK)**
MOORE & PERSAUD & TORCHIA
10th EDITION

HISTOLOGY

- **MEDICAL HISTOLOGY**
LAIQ HUSSAIN SIDDIQUI
5TH or Latest EDITION
- **WHEATERS FUNCTIONAL HISTOLOGY**
BARBARA YOUNG
5th EDITION
- **BASIC HISTOLOGY(TEXT AND ATLAS) (REFERENCE BOOK)**
LUIZ JUNQUEIRA, JOSE CARNEIRO
11th or Latest EDITION

PHYSIOLOGY

- **GUYTON AND HALL TEXTBOOK OF MEDICAL PHYSIOLOGY**
GUYTON AND HALL
13th EDITION

BIOCHEMISTRY

- **LIPPINCOTT'S ILLUSTRATED REVIEWS SERIES**
DENISE R. FERRIER
6th EDITION
- **HARPERS ILLUSTRATED BIOCHEMISTRY (REFERENCE BOOK)**
VICTOR RODWELL, DAVID BENDER, KATHLEEN M. BOTHAM, PETER J. KENNELLY,
P. ANTHONY WEIL
28th EDITION

For Query

Chief Module Coordinator : Prof. Dr. Naheed Khan

(naheed.khan@duhs.edu.pk)

Module Coordinators

Dr. Sabahat Babar

(sabahat.babar@duhs.edu.pk)

Dr. Mehwish Sajjad

(mehwish.sajjad@duhs.edu.pk)
