

CURRICULUM

**M.Sc ENDOCRINOLOGY &
DIABETES**

CURRICULUM, MONITORING & EVALUATION COMMITTEE FOR M.Sc (ENDOCRINOLOGY & DIABETES)

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| <ul style="list-style-type: none">• Prof. Ikram Din Ujjan
Vice Chancellor | Advisor |
| <ul style="list-style-type: none">• Prof. Moin Ahmed Ansari
Dean Faculty of Medicine & Allied Sciences | Member |
| <ul style="list-style-type: none">• Dr. Kanwal Abbas Bhatti
Associate Professor of Medicine | Incharge |
| <ul style="list-style-type: none">• Prof. Ashok Kumar Narsani
Dean Faculty of Surgery & Allied Sciences | Member |
| <ul style="list-style-type: none">• Prof. Muhammad Iqbal Shah
Chairman Department of Medicine | Member |
| <ul style="list-style-type: none">• Controller of Examination (P.G) | Member |
| <ul style="list-style-type: none">• Professor of Gynecology & Obs | Member |
| <ul style="list-style-type: none">• Mr. Azar Akbar Memon
Director IT | Technical Member |

FACULTY / SUPERVISORS

- **Prof. Muhammad Iqbal Shah**
Chairman / Professor of Medicine
- **Prof. Imran Shaikh**
Professor of Medicine
- **Prof. Santosh Kumar**
• Professor of Medicine
- **Dr. Kanwal Abbas Bhatti**
Incharge SIED / Associate Professor
- **Prof. Ashok Kumar Narsani**
Professor of Ophthalmology
- **Dr. Sarwat Anjum**
Consultant Endocrinologist AIMS Hospital
- Σ **Professor of Gynecology & Obstetrics**
- **Prof. Shazia Memon**
Professor of Pediatrics
- **Dr. Adnan Qureshi**
Chairman Department of Radiology

M.Sc ENDOCRINOLOGY & DIABETES

PROGRAM AIMS AND GOALS

The objective of this training programme is to provide advanced training and experience at a level for the trainee to acquire the knowledge, skills, attitude and experience required to produce an Endocrinologist who is clinically skilled and sufficiently competent to function independently as a specialist in the field.

PROGRAM VISION

- Regional: To be the leader in South East Asia in the field of Diabetes & Endocrinology and research in this specialty.
- Global: To be recognized worldwide as an institute of excellence in education and research in the field of Diabetes & Endocrinology.

PROGRAM MISSION

The mission of Sindh Institute of Endocrinology and Diabetes (SIED) LUMHS is to provide high quality education, research & community service in the field of Diabetes & Endocrinology. Specific components of the mission are:

To provide high quality state of the art education in Diabetes & Endocrinology that prepares professionals who can perform jobs in the field of specialization at the highest quality level and who are competitive world wide.

To conduct research that expands knowledge in the field of Diabetes & Endocrinology and provides high quality graduate program that prepare students properly in their area of specialty.

To provide high quality professional training, specialization & consultation in the field of Diabetes & Endocrinology those are up to date & competitive world wide.

PROGRAMME OBJECTIVE

At the end of course learner will be able:

To learn basic and advanced endocrine biochemistry, physiology and pathophysiology; which provide the basis for understanding endocrine diseases.

To accumulate a critical mass of fundamental information and practical approaches for the diagnosis, management and prevention of endocrine disorders.

To acquire the technical and practical skills those are required by a consultant in endocrinology, diabetes and metabolism.

To acquire clinical skills in a progressive fashion and with increasing responsibility appropriate for a consultant in endocrinology, diabetes and metabolism.

To acquire knowledge and skills necessary for providing cost-effective, ethical and humanistic care of patients with diabetes and disorders of endocrinology and metabolism.

To acquire knowledge and skills necessary for critical analysis of the laboratory testing and the endocrine literature.

To acquire skills in design and performance of hypothesis driven endocrine research, and to participate in such research or equivalent scholarly activity. This may include gaining extensive experience in grant writing and scientific presentation.

ADMISSION CRITERIA / ENTRY REQUIREMENT

MBBS graduates with **ONE-YEAR EXPERIENCE** after house job will be eligible for training in M.Sc. Endocrinology & Diabetes.

They need to appear in the Entry Test and minimum 50% cumulative score will be required for appearing in the Interview before the Selection Committee for the final selection.

FEE STRUCTURE

Admission Fee	Rs. 25000/-
Tuition fee Per Year	Rs. 60000/-
Project Defense Fee	Rs. 15000/-
Enrollment fee	Rs. 1200/-

Examination Fee will be charged as per LUMHS policy.

DURATION OF TRAINING

A period of two years is to be spent in specialty training. The candidate will spend 2 years in a clinical department providing care for persons with Endocrine disorders and Diabetes. Exposure to Pediatrics / Gynae & Obs is desirable in the form of short term rotation.

A one week period is to be spent in an Endocrine laboratory, 1 week “hands-on” in Imaging Department providing facilities for investigations of Endocrine disorders.

Each participant in the programme must be responsible for at least TWO research projects leading to publication OR presentation of research THESIS.

TRAINING SYLLABUS

Hypothalamus and Pituitary
Thyroid, Parathyroid and Bone
Reproductive, Pregnancy and Paediatric Endocrinology
Metabolism, Energy balance and Lipids
Adrenal cortex and medulla
Genetics, Oncology and neuroendocrine tumours
Diabetes Mellitus
15 credits each

YEAR-1

Generic Skills and Core Knowledge

Learning Activity topics will include:

Overview of Endocrinology
How to read and appraise a paper
Clinical History taking Physical examination Biostatistics for clinical sciences Hormone synthesis and release
Mechanisms of hormone action
Hormone measurement - a "how to" guide
Diagnostic endocrinology
Principles of endocrine imaging
The patient journey; what you need to know
Basics of molecular biology
Gene regulation in endocrinology
Nuclear receptors
Evidence-based medicine in endocrinology
Designing and interpreting clinical studies
Referral system for endocrine patient
Topic-based discussion boards

Hypothalamus and Pituitary

Learning Activity topics will include:

- Structure and function of the hypothalamus and pituitary
- Physiology and pathology of the anterior pituitary
- Physiology and pathology of the posterior pituitary
- Pituitary Histopathology
- Bedside aspects of pituitary dysfunction
- Basal and dynamic testing
- Pituitary tumours
- Physiology and pathology of the GnRH axis
- The GH axis
- Cases and discussion

Hypothalamic and Pituitary Disorders

1. Pituitary Tumors

- a) Cushing's Disease
- b) Acromegaly
- c) Prolactinoma
- d) Non-functioning adenomas

2. Space-Occupying/ Infiltrative Dis

- a) Craniohypopharyngealoma
- b) Hemochromatosis
- c) Histiocytosis X
- d) Sarcoidosis

3. Hypopituitarism

- a) Adrenal
- b) Thyroid
- c) Growth hormone
- d) Gonadotropins

4. Water Balance

- a) Diabetes insipidus
- b) SIADH

5. Disease Specific Studies/ Procedures

- a) GnRH stimulation
- b) Insulin induced hypoglycemia
- c) CRH stimulation
- d) IPSS
- e) Pituitary imaging MRI/CT
- f) Dexamethasone suppression

Thyroid, Parathyroids and Bone

Learning Activity topics will include:

Thyroid anatomy
Overview of thyroid physiology and pathology
Thyroid testing
Hyper and hypothyroidism
Thyroid disease and pregnancy
Thyroid imaging
Graves ophthalmopathy
Approach to the thyroid nodule

Thyroid surgery
Diagnosis and treatment of thyroid cancer
Bone physiology
Disorders of calcium metabolism
Disorders of Vitamin D metabolism
Osteoporosis / Metabolic bone disorders
Hyperparathyroidism
Management dilemmas in parathyroid disease
Cases and discussion
Physiology of Ca, Mg, Phosphate homeostasis
Molecular biology, biochemistry & mechanism of action - calcitropic hormones

Reproductive, Pregnancy and Paediatric Endocrinology

Learning Activity topics will include:

Physiology of puberty
Endocrinology of fertility and reproduction
Endocrinology of normal pregnancy
Endocrine disorders in pregnancy
Evaluating the hypothalamo-pituitary-gonadal axis
Menstrual disorders
Hirsutism
Polycystic ovarian syndrome Hormonal
aspects of contraception Gynecomastia
assessment and management Male gonadal
failure
Testosterone replacement
Endocrinology in gender dysphoria
Assessment and treatment of the infertile couple
Turner syndrome
Menopause and premature ovarian failure
Normal growth and development
Disorders of growth and development in childhood
Cases and discussion

Adrenal Cortex and Medulla

Learning Activity topics will include:

Anatomy and Physiology of the adrenal cortex
Glucocorticoid physiology
The glucocorticoid receptor and Glucocorticoid resistance
Investigating the adrenal axis
Adrenal imaging
Approaches to adrenal surgery
Endocrine hypertension: investigations and management
Conn's syndrome
Cushing's syndrome: diagnosis, investigation, management
Congenital adrenal hyperplasia
Adrenal insufficiency
Perioperative management of the adrenal patient
Steroid therapy: uses and cautions
The adrenal incidentaloma
Adrenocortical carcinoma
Pheochromocytoma
Parangliomas
Cases and discussion

YEAR-2

Metabolism, Energy Balance and Lipids

Learning Activity topics will include:

- Water and sodium homeostasis
- Disorders of potassium and magnesium balance
- Brief review of fuel metabolism
- Metabolism in starvation, feeding and exercise
- Effects of critical illness on metabolism
- Overview of lipid biology
- Genetic dyslipidaemias
- Secondary dyslipidaemias
- Lipids and vascular risk
- Lipid-lowering therapies
- Health economics of obesity
- Regulation of appetite
- Fat as an endocrine organ
- Genetics of obesity
- Assessment and management of the obese patient
- Bariatric surgery
- Endocrine sequelae of eating disorders
- Cases and discussion

Genetics, Oncology and Neuroendocrine Tumours

This is an **Elective Module** that is suitable for students interested in clinical endocrinology and endocrine oncology.

The module will cover some of the basic sciences, research techniques and clinical sciences underpinning the understanding of the genetics and oncology as applicable to endocrinology. You will look at the pathophysiology, investigations and management of endocrine disorders associated with cancers, many of which are genetically-determined and increase your knowledge of the common and important conditions.

Learning Activity topics will include:

- Inherited endocrine syndromes
- Multiple Endocrine Neoplasia
- Von-Hippel Lindau disease
- Succinate dehydrogenase, pheochromocytoma and paragangliomas
- Guidelines for screening and surveillance
- Inherited syndromes of hormone resistance
- Hormone physiology of the Gut and Pancreas
- Neuroendocrine tumours: features and histopathology
- Diagnosis and treatment of neuroendocrine tumours
- Imaging of neuroendocrine tumours
- Carcinoid
- Tumour markers
- Insulinoma: diagnosis, localisation and treatment
- Endocrine aspects of oncology
- Late effects of oncology therapy
- Cases and discussion

Clinical Chemistry

This is an **Elective Module** that is suitable for students interested in clinical chemistry and/ or laboratory aspects of clinical endocrinology. This module is recommended for trainees in metabolic medicine and clinical biochemistry, although it may also interest some trainees in endocrinology and diabetes.

The module will cover some of the basic sciences, research techniques and clinical sciences underpinning the understanding of clinical chemistry.

Learning Activity topics will include:

Laboratory techniques in clinical biochemistry and the indications for investigations, interpretation of results and limitations and pitfalls in lab techniques.

Inborn errors of metabolism including carbohydrate and protein metabolism, lysosomal disorders and mucopolysaccharidoses.

Pathophysiology and evaluation of abnormalities of hem biosynthesis, porphyrias, red cell enzyme defects and other aspects of hematological chemical pathology.

Pathophysiology, evaluation and investigation of disorders of copper metabolism.

Use of biochemical markers in diagnosis and monitoring of disease including enzymes and proteins.

Use of therapeutic drug monitoring and analytical toxicology and diagnosis and management of patients with poisoning including alcohol.

Diabetes Mellitus**Learning Activity topics will include:**

Diagnostic criteria / classification

Diet and education in Diabetes mellitus Diabetes,

pre-diabetes and insulin resistance Current trials

and evidence for glycaemic control Oral

hypoglycaemic agents

Insulins, injection regimes and pumps

New and emerging therapies

Diabetic emergencies

Diabetes and the eye

Diabetes and the kidney

Diabetic neuropathies

Diabetic gastroenteropathies

Macrovascular disease

The foot in diabetes

Diabetes in special circumstances

Diabetes, exercise and sports

Inpatient diabetes

Diabetes in pregnancy, in childhood and adolescence HOT topics

Cases and discussion

THESIS WORK

On successful completion of the taught course, students who are eligible will to submit an independent research project in the form of either thesis or two research papers published in PMC/ HEC recognized journals. The project proposal, supervisor, host institution and funding arrangements will be organized by the students in their own institution. Thesis Project will be additionally need and oversight from a LUMHS supervisor and will be completed by a dissertation and viva-voce examination.

PROGRESSIVE ASSESSMENT

1. Training must be supervised by officially appointed trainers/ supervisors, who will be decided by the Department of Diabetes and Endocrinology.
2. Assessment of trainees will be based on:
 - i. **Clinical skills:** includes medical record keeping, clinical judgement, decision making and organizational ability.
 - ii. **Technical skills:** judgement, understanding and proficiency in performing certain procedures including understanding indications, contraindications, complications and the ability to interpret their results
 - iii. **Attitude:** demonstration of appropriate professional attitude, behavior and interpersonal skills
 - iv. **Educational activities:** trainees are expected to attend courses, seminars, lectures and other CME activities in the specialty throughout the training period
 - v. **Research:** trainees should be involved in at least one research project which should be presented / published in local / overseas journal
 - vi. **Teaching:** trainees must be involved in teaching of junior doctors and paramedical staff.
 - vii. **Log book statistics**
 - viii. **Case write ups:** at least 2 write ups per year of "case reports" of publishable standards and one submitted at the end of every 6 months, in duplicate, (two copies) to supervisors/ trainers for assessment by 2 reviewers.

Assessment of trainees will be done regularly during the training period. At the end of each 12 monthly rotation, there should be a formal meeting between trainees and supervisors/ trainers to review log books and to provide feedback information to the candidates.

CLINICAL ROTATIONS

Department	Weeks	Placement
Orthopedics	03	During First 6 months
Medical I.C.U	03	During 2 nd 6 months
Paeds	03	During 3 rd 6 months
Gynae & Obs	03	During 4 th 6 months
General Medicine	02	During each 6 months
Diabetes / Endocrinology OPD including Diabetic Retinopathy Screening Clinic	02	During each 6 months

The candidates will spend the remaining part of training in Medical Unit 1.

MANDATORY WORKSHOPS

1. Research Methodology
2. Diabetic Foot Care Hands on
3. Diabetic Retinopathy
4. Insulin Technique (Hands On)
5. Communication /Counseling Skills

LOG BOOK

The learning experience of a trainee should be properly recorded in the log book which should provide information on:

Cases and statistics of outpatient / inpatient which have been managed and followed through, with details on highlights and learning points of each case with related literature references.

Procedures/ endocrine dynamic testing and statistics should demonstrate procedures observed / done with supervision and done independently.

Educational activities

Research Activities

Publications

Presentation at meetings

Attendance of courses, seminars, workshops

The log book records should demonstrate increasing exposure and experience of the trainee throughout the training period.

EVALUATION

1. Internal Evaluation

There will be an internal evaluation after every six months.

2. Evaluation after First Year

After completion of one year, there will be examination from the topics included in the 1st year of syllabus and those who pass will be able to appear in final examination. The examination will be consisting of:

Theory:

Paper 1	MCQs (100)	(100 Marks)
Paper 2	MCQs (100)	(100 Marks)

OSPE (200 Marks)

Long Case (200 Marks)

Short Cases (200 Marks)

After passing theory, student can appear in three attempts whether availed or un-availed. The candidates will only be promoted in 2nd year course after passing first year.

3. Exit Evaluation

On satisfactory completion of 2 year training, exit examination will be taken from the topics included in the 2nd year of syllabus. The trainee will be assessed by an invited Board of Examiners determined by the Examination Department, LUMHS.

Exit evaluation will include:

Review of log book and Supervisor / Trainer assessment reports.

Theory:

Paper 1	SEQs (10)	(100 Marks)
Paper 2	BCQs (75)	(100 Marks)

OSPE (200 Marks)

Long Case (200 Marks)

Short Cases (200 Marks)

Research Project Presentation/Thesis defence or two publications pertaining to subject during the training period.

Examination will be conducted twice a year.

After passing theory student can appear in three attempts whether availed or un-availed.

CERTIFICATION OF COMPLETION OF TRAINING

A Certificate of Completion of Subspecialty Training (M. Sc in Endocrinology and Diabetes) will be awarded to the trainee following completion of the required training period and Exit Evaluation.

NOTE: The University authorities reserve the right to make change/ amend the rules & regulations, or in any other aspect of admission process and conduct/ completion of the course as and when deemed necessary, without prior notice.

Enquiries concerning admission process should be addressed to:

Dr. Kanwal Abbas Bhatti
Incharge
Sindh Institute of Endocrinology and Diabetes (SIED)
LUMHS, Jamshoro, Sindh, Pakistan

ADMINISTRATION TELEPHONE DIRECTORY

Liaquat University of Medical & Health Sciences, Jamshoro

DESIGNATION	Telephone No.
Vice-Chancellor	022-9213301
Pro Vice-Chancellor	022-9213361
Director SIED	022-9213142
Dean Faculty of Medicine & Allied Sciences	022-9213143
Dean Faculty of Surgery & Allied Sciences	022-9213144
Dean Faculty of Basic Medical Sciences	022-9213140
Dean Faculty of Community Medicine & Public Health Sciences	022-9213361
Dean Faculty of Dentistry	022-9213328
Director Medical Research Centre	022-9213314
Director Quality Enhancement Cell	022-9213360
Director Postgraduate Studies	022-9213322
Director Human Resources	022-9212249
Director Finance	022-9213311
Director Admissions (U.G)	022-9213307
Director Information Technology	022-9213325
Director Students' Affairs	022-9213347
Registrar	022-9213305
Additional Registrar	022-9213319