

**THE TAMILNADU Dr.M.G.R. MEDICAL UNIVERSITY,
No.69, Anna Salai, Guindy, Chennai – 600 032.**

**D.M/ M.Ch
SUPER SPECIALTY DEGREE COURSE**



SYLLABUS AND CURRICULUM

2021-2022

D.M.- ENDOCRINOLOGY

THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI
Syllabus - DM - Endocrinology

1. AIMS AND OBJECTIVES:

The aim and objectives for the DM (Endocrinology) course should comprehensively cover all aspects of Endocrinology and Metabolism during a period of three years of study. The student will acquire an exposure in training in the clinical, laboratory, research, outreach and epidemiological perspectives of endocrine disorders, and will acquire adequate skills to treat patients with these disorders on acquiring the degree of DM in Endocrinology.

2. THEORY SYLLABUS:

All aspects of endocrinology and metabolism will be covered in detail in terms of basic science, clinical knowledge and laboratory based concepts. Theoretical aspects of medical research and ethics in clinical practice will also be incorporated.

A three years training period designed to meet the minimum requirements for training in Endocrinology prior to certification.

Course and Curriculum of DM Endocrinology & Metabolism:

1. Basic Sciences as related to Clinical Endocrinology:
 - a. Hormone receptors / receptor biology
 - b. Genetics in Endocrinology
 - c. Molecular biology
 - d. Hormonal assays
2. Disorder of growth and sexual differentiation
3. Endocrine disorders in childhood and adolescence
4. Diabetes Mellitus
5. Hypothalamo – pituitary disorders
6. Thyroid disorders
7. Reproductive disorders and problems of menopause
8. Bone and mineral metabolism
9. Adreno-cortical and adreno-medullary disorders
10. Metabolic disorders (lipids, carbohydrates and protein metabolism related disorders, including inborn errors of metabolism).

Bioethics

1. Respect human life and the dignity of every individual.
2. Refrain from supporting or committing crimes against humanity and condemn all such acts.

3. Treat the sick and injured with competence and compassion and without prejudice and apply the knowledge and skills when needed.
4. Protect the privacy and confidentiality of those for whom we care and breach that confidence only when keeping it would seriously threaten their health and safety or that of others.
5. Work freely with colleagues to discover, develop, and promote advances in medicine and public health that ameliorate suffering and contribute to human well being.
6. Educate the public about present and future threats to the health of humanity.
7. Advocate for social, economic, educational and political changes that ameliorate suffering and contribute to human well being.
8. Teach and mentor those who follow us, for they are the future of our caring profession.

3. CLINICAL TRAINING:

The ethos of clinical training will focus on developing a candidate who has the ability to:-

- 1) Handle any patient with an endocrine or metabolic disorder as an individual.
- 2) Ability to function and develop multidisciplinary teams to function with:
 - a) Endocrine surgeons and nuclear medicine specialists in handling related clinical problems.
 - b) Work with the vascular surgeons, PMR physicians, orthotists and physiotherapists in driving the aspects of diabetes related foot care and a foot related clinic.
 - c) Developing a laboratory facility which can handle the hormonal and molecular aspects of endocrinology.
 - d) Performing and interpreting dynamic testing in endocrinology including GH Stimulation tests, Inferior petrosal sinus sampling (IPSS), arterial stimulation venous sampling (ASVS) etc.
 - d) Personality development of the candidate to practice compassionate care in the assessment of their patients coupled with technology.
 - e) Leadership development.

All the candidates should be involved full-time in the direct care of the patients admitted to the endocrine services as resident staff. This will include taking a complete history, performing a comprehensive examination, ordering appropriate investigations and interpreting results. Additionally residents will be required to attend outpatient endocrine clinics where consultants will be available for on spot consultations. The residents will be expected to maintain a log book of seminars and journal clubs

presented by them, and interesting cases (at least 20) which they have worked up in detail, and procedures performed during their tenure of 3 years.

Clinical / Laboratory Research:

Residents should be provided a 3 month exposure to hormone assays and clinical biochemistry lab in the Department of Endocrinology or in the central laboratory facilities in the institution so as to provide insight and hands on training in hormone assays and other laboratory techniques.

Training Programme:

I Postings:

1. Inpatient ward: 24 months
2. Interdepartmental consultations for admitted patients – 10 months
- 3 Interdepartmental postings
 - a. Biochemistry -2 weeks
 - b. Reproductive Medicine Unit – 1 week
 - c. Paediatric Endocrinology – 4 weeks
 - d. Molecular biology- 2 weeks
 - e. Thyroid USG – 5 days
 - f. FNAC – 8 days (2 hours each day)
 - g. Radiotherapy, Nuclear Medicine, Endocrine Surgery – 7 days

II Speciality Clinics:

Students are encouraged to attend special clinics viz.,

- | | | |
|----|-----------------------------|-------------|
| a. | Foot clinic | once a week |
| b. | Adult Young diabetes clinic | once a week |
| c. | Menopause clinic | once a week |
| d. | Ophthalmology clinic | once a week |
| e. | Metabolic bone clinic | once a week |
| f. | Thyroid clinic | once a week |
| g. | Bariatric Clinic (Obesity) | once a week |
| h. | Transplant clinic | once a week |

II. Multi-departmental meetings:

- A. Nuclear Medicine – Endocrine surgery

- B. Pathology- Endocrine surgery
- C. Neurosurgery- Endocrinology

During II year, students are encouraged to undergo special postings for learning new advanced techniques / Procedure / Skills in institutions of higher repute where the requisite facilities are available without affecting the duties of the parent department.

4. SKILL TRAINING REQUIREMENTS:

- a) Foundational clinical skills based on internal medicine concepts, and developed further to focus on the historical assessment and clinical examination of the endocrine system
- b) In depth theoretical knowledge of the functioning of the endocrine glands and the physiology of the endocrine systems.
- c) Ability to understand hormonal assays and setting them up in a laboratory setting.

Training in allied specialities:

Endocrine Radiology:

At least fortnightly meetings with Department of Radiology. These meetings will be conducted to discuss imaging, conventional and CT, MRI, or patients seen in the OPD and in-patient service.

Nuclear Medicine:

The residents will be given training in the principles of scanning of various endocrine organs and interpretation of isotope scans. Additionally, regular weekly conferences should be scheduled with the nuclear medicine department where faculty and the resident staff should discuss interesting scans of the previous week.

Training in Pathology:

It is primarily aimed at providing trainee insight into the area of endocrine-pathology such that the trainee will keep himself updated on emerging methods and trends in endocrine pathology.

Molecular biology courses:

It would be appropriate to provide the resident a one week exposure to molecular techniques as relevant to endocrinology. Procedures such as DNA extraction, PCR, RFLP, Southern blots and chromatography should be explained to the candidates.

5. TEACHING METHODOLOGY:

Ward / OPD patient management.

Peri operative Management
Assisting / performing operative procedures.

Long and short topic presentations.

Ward rounds, case presentations and discussions. Combined ward rounds with Medical Gastroenterologist.

Clinico-radiological and clinico-pathological conferences.
Inter-departmental Periodical meeting on relevant topics with Department of Anatomy, Physiology, Bio-chemistry and Microbiology.

Journal club.

Research review.

Problem solving sessions.

Weekly Tumour Board discussions with Radiation and Medical Oncologist.

Guest and in-house lectures. Conferences, seminars and CME's.

Participation in workshops, etc.

Teaching undergraduates / postgraduates / paramedical staff.

Weekly Surgical audit (patient care review meeting).

Biomedical equipments use and maintenance.

6. RESEARCH WORK:

The candidate will be trained in the ability to

- Frame a research question.
- Plan a study to answer the question.
- Collect the relevant information and
- Evaluate appropriately the collected data to draw a conclusion.

The candidate should become conversant with the reporting of these results as a research paper, in journals and as a presentation in conferences.

The activities would consist of:

Planning and organizing relevant animal / clinical studies to be submitted as a dissertation at the end of the course.

Students should compulsorily attend Research Methodology workshop conducted by the University within first six months of D.M. Course.

7. LOG BOOK:

The Postgraduate student of a Postgraduate Degree Course in Super specialties shall maintain Log Book of the work carried out by them and the training programme undergone during the period of training including details of surgical operations assisted or done independently by.

The Log Book shall be checked and assessed by the faculty members imparting the training.

Periodical evaluation of Log Book to be done by the Head of the Department as per 52nd SAB.

The Evaluation of the candidates in both theory and practical aspects will help the candidate in the improvement of his/her knowledge skills & attitude.

8.COMPETENCY ASSESSMENT:

Overall:

1. Communication / Commitment / Contribution / Compassion towards patients and Innovation	-	10 Marks
2. Implementation of Newly learnt techniques	-	10 Marks
3. Documentation of case sheets / discharge Summary / Review	-	10 Marks
4. Number of cases presented in Clinical Meetings/ Journal Clubs / Seminars / Papers presented in Conference.	-	10 Marks
5. No. Of Medals/ Certificates won in the conference / Quiz competitions and other academic meetings with details.	-	10 Marks

	Total	50 Marks

Assessment	I	- February	-	First Year
	II	- August	-	First Year

III	- February	-	Second Year
IV	- August	-	Second Year
V	- February	-	Third Year
VI	- May	-	Third Year

VIVA INCLUDING COMPETENCY ASSESSMENT – 100 Marks (50+50)

9. THEORY EXAMINATION:

Paper I	Basic Sciences of Endocrinology
Paper II	Clinical and Therapeutic Aspects of Endocrinology - Part I
Paper III	Clinical and Therapeutic Aspects of Endocrinology - Part II
Paper IV	Recent Advances and Trends in Endocrinology

Each paper will contain:

1. Essay questions (2)	-	2 X 15	=	30 Marks
2. Short Notes (10)	-	10 X 7	=	70 Marks
Total				----- 100 Marks -----

10. CLINICAL EXAMINATION:

Particulars	Time for candidate to examine the cases	Time for examiners to question the candidates	Maximum Marks
Long Case	1 Case x 60 Minutes	60 Minutes	100
Short Case	2 Cases x 15 Minutes	30 Minutes	100
Ward Rounds	3 Patients x 10 Minutes	30 Minutes	100
OSCE	5 Stations x 3 Minutes	15 Minutes	50
Viva Voce		15 Minutes	100
Log Book			50
			500

As per Medical Council of India Post Graduate Medical Education Regulations 2000 (amended upto 10th August 2016) clause **13.9 A**
Postgraduate student of a Postgraduate degree Course in broad

specialties/Super Specialties would be required to present one poster presentation to read one paper at a National/State conference and to present one Research paper which should be published/accepted for publication/sent for publication during the period of his Postgraduate studies so as to make him eligible to appear at the Postgraduate Degree Examination.

Apart from Poster/Oral paper presentation in National/State conferences, the Research paper published by the candidate in the University Journal of Medical Sciences will be considered as equivalent to the Research Paper as mentioned in 13.9. clause. Case Reports can also be published in University Journal of Medical Sciences but case reports will not be considered as Research Paper.

The candidate can also present Research Paper as per Clause 13.9 of Post Graduate Education Regulation 2000, and if the article sent for publication by the candidate as primary author or corresponding author which has not yet been published/accepted for publication, the candidate should submit a letter from the HOD, stating that the article sent for publication is of publishable merit and the proof of the Research Article submitted to the Journal for publication should be sent to the university forwarded through the HOD [as per 53rd SAB]

The student can submit articles for the University journal anytime from the time of registration till 6 months prior to theory examination.

11. OSCE – 5 Stations With Examples:

1) Bioaesthesiometer as a demo instrument.

Question: How do you grade severe neuropathy with this instrument?

Answer: value greater than 40mV

2) Demonstration of Mixtard vial.

Question: How will an illiterate patient identify the kind of insulin in this bottle?

Answer: Orange brown colour indicates that it is a pre-mixed insulin.

3) X-ray of large pancreatic stones

Question: Name the commonest mutation that is the cause of this condition.

Answer: SPINK-1 mutation

4) Picture of optic fundus showing macular oedema

Question: What is the treatment for this condition?

Answer: Focal Grid laser.

5) Tube with lipaemic serum

Question: Name one endocrine condition where this can be accentuated in.

Answer: primary hypothyroidism.

Suggested Reading:

1. Williams Text book of Endocrinology
2. Joslin Diabetes Mellitus
3. Textbook of Diabetes (Holt's)
4. Metabolic basis of inherited disease (Stanbury)
5. The Thyroid (Ingbar)
6. RIA – Principles and practices (Pillai and Bhandarkar)
7. Reproductive Endocrinology (Speroff)
8. Textbook of Clinical Chemistry (Tietz)
9. Nutritive value of Indian Foods (Gopalan, ICMR)
10. Endocrinology (Leslie J DeGroot)
11. Pediatric Endocrinology (Hindmarsh and CGD Brook)

Primer on the Metabolic Bone Diseases and Disorders of Mineral Metabolism

****Note:** The editions are as applicable and the latest editions shall be the part of the syllabi.

12. JOURNALS:

1. Journal of Clinical Endocrinology & Metabolism
1. European Journal of Endocrinology
2. Diabetes
3. Diabetes Care
4. Diabetologia
5. Fertility and sterility
6. Nature
7. Science
8. New England Journal of Medicine
9. The Lancet
10. Annals of Internal Medicine
11. Hormone and Metabolic Research
12. American Journal of Clinical Nutrition
13. British Medical Journal

14. Journal of Bone and Mineral Research
15. Clinical Endocrinology
16. Endocrine and Metabolic Clinics of North America
17. Endocrine Reviews
18. Endocrine Practice
19. Indian Journal of Endocrinology and Metabolism
