

Curriculum

DrNB Super Specialty



Endocrinology

- ◆ Aim
- ◆ Programme Goals and Objectives
- ◆ Teaching and Training Activities
- ◆ Syllabus
- ◆ Log Book
- ◆ Recommended Text Books and Journals

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I. AIM

The aim of the course is to develop human resources and personnel in the field of Endocrinology who shall

1. Provide the health care to the patients needing endocrine care.
2. Introduce trainees to the principles of clinical research, and prepare them to analyze data, write investigative protocols and collect data in a scientific, organized manner.
3. Teach and train future undergraduate and postgraduate medical students and junior doctors in Endocrinology in Medical Colleges, Institutions and other Hospitals.
4. Acquire a spirit of scientific enquiry and carry out and guide research to improve the practice of the art and science of Endocrinology.
5. Have management capabilities to make health care more cost-effective.
6. Recognize the health needs of the community and carry out professional obligations ethically and in keeping with the objectives of the national health policy.
7. Be aware of the contemporary advances and developments in the field of Endocrinology.
8. Provide a comprehensive knowledge base to prepare the trainee to care for patients suffering from endocrine and metabolic diseases.
9. To ensure exposure to a wide variety of patients suffering from diverse endocrine problems to give the candidate experience in diagnosing and treating patients suffering from disease in all areas of endocrinology.
10. Provide a diverse experience through rotations in areas related to diagnostic procedures and imaging modalities used in endocrinology.

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11. Prepare the trainee in the art of interacting with patients, patient education and counselling.
 12. Prepare the trainee to continue his/her education throughout his/her life by giving him/her training in critically reading the medical literature, understanding medical informatics, medical economics, medical research methods, medical statistics, clinical decision-making, outcome assessment, health promotion, practice management and medico-legal issues.

II. PROGRAMME GOALS AND OBJECTIVES

i. Programme Goal

The goal of postgraduate medical education shall be to produce specialists of Endocrinology who shall have the following competencies:

- To diagnose endocrine diseases based on clinical methods.
- To interpret relevant laboratory and radiological investigations for the purpose of diagnosis.
- To arrive at a treatment plans and discuss the pros and cons with the patient and his family.
- To keep abreast of the current knowledge and recent advances in the field by self-learning and /or participating in continuing Medical Education programmes.
- To deliver preventive and rehabilitative care.
- To organize and manage administrative responsibilities for routine day to day work as well as emergent /urgent situations

ii. Programme Objectives

By the end of training, trainees should have the requisite knowledge of, skills in, and attitudes towards the situations listed in order to manage:

- Newly presenting disease in the outpatient and inpatient hospital settings in a way that restores health and well-being efficiently and effectively.
- The long term care of patients in a way that minimizes the impact on health and optimizes long-term disease outcomes.

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- Risk factors for a poor outcome, for example: hypertension, smoking, obesity, and hyperlipidaemia.
 - Emergencies and short-term loss of disease control in a hospital setting in order to minimize the period of hospital admission while making efficient use of resources.
 - Disease pre-dating or newly arising in pregnancy in both the outpatient and inpatient settings to optimise maternal and foetal outcomes.
 - Adolescent, adult and elderly inpatients and outpatients.
 - Screening for, and the prevention and treatment of, complications to optimize intermediate and final health outcomes.
 - The application of nationally accepted guidelines in their own practice.
 - The whole patient' taking account of personal, social and cultural as well as biomedical factors.
 - Social and professional implications such as restrictions on driving and certain types of employment or activity.
 - Clinical services at department, hospital, district and population level in a way that makes efficient and effective use of resources to optimize health outcomes

All the candidates will be involved in the direct care of the patients admitted to the endocrine services. This will include taking a complete history and performing a comprehensive examination.

Additionally, residents will be required to attend outpatient endocrine clinics where consultants will be available for on spot consultations.

Training in nuclear medicine will be coordinated with the department of nuclear medicine.

The residents will be given training in principles of scanning of various endocrine organs and interpretation of data.

III. TEACHING AND TRAINING ACTIVITIES

The fundamental components of the teaching programme should include:

1. Case presentations & discussion- once a week
2. Seminar – Once a week
3. Journal club- Once a week
4. Grand round presentation (by rotation departments and subspecialties)- once a week

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5. Faculty lecture teaching- once a month
 6. Clinical Audit-Once a Month
 7. A poster and have one oral presentation at least once during their training period in a recognized conference.

The rounds should include bedside sessions, file rounds & documentation of case history and examination, progress notes, round discussions, investigations and management plan of interesting and difficult cases in unit discussions.

The training program would focus on knowledge, skills and attitudes (behavior), all essential components of education. It is being divided into theoretical, clinical and practical in all aspects of the delivery of the rehabilitative care, including methodology of research and teaching.

Theoretical: The theoretical knowledge would be imparted to the candidates through discussions, journal clubs, symposia and seminars. The students are exposed to recent advances through discussions in journal clubs. These are considered necessary in view of an inadequate exposure to the subject in the undergraduate curriculum.

Symposia: Trainees would be required to present a minimum of 20 topics based on the curriculum in a period of three years to the combined class of teachers and students. A free discussion would be encouraged in these symposia. The topics of the symposia would be given to the trainees with the dates for presentation.

Clinical: The trainee would be attached to a faculty member to be able to pick up methods of history taking, examination, prescription writing and management in rehabilitation practice.

Bedside: The trainee would work up cases, learn management of cases by discussion with faculty of the department.

Journal Clubs: This would be a weekly academic exercise. A list of suggested Journals is given towards the end of this document. The candidate would summarize and discuss the scientific article critically. A faculty member will suggest the article and moderate the discussion, with participation by other faculty members and resident doctors. The contributions made by the article in furtherance of the scientific knowledge and limitations, if any, will be highlighted.

Research: The student would carry out the research project and write a thesis/ dissertation in accordance with NBE guidelines. He/ she would also be given exposure to partake in the research projects going on in the departments to learn their planning, methodology and execution so as to learn various aspects of research.

IV. SYLLABUS

Basic Sciences as related to Clinical Endocrinology:

- a. Hormone receptors / receptor biology
- b. Genetics in Endocrinology
- c. Molecular biology
- d. Hormonal assays

Section I: Hormones and Hormone Action

1. Principles of Endocrinology
2. The endocrine patient
3. Principles of Hormone Action
4. Genetics of Endocrinology and control of peptide hormone formation
5. Health Care Reform, Population Health, and the Endocrinologist
6. Laboratory Techniques for Recognition of Endocrine Disorders

Section II: Hypothalamus and Pituitary

7. Neuroendocrinology & Disorders of the Neurohypophysis
8. Pituitary Physiology and Diagnostic Evaluation
9. Pituitary Masses and Tumors
10. Posterior Pituitary Gland

Section III: Thyroid

11. Thyroid Physiology and Diagnostic Evaluation of Patients with Thyroid Disorders
12. Hyperthyroid Disorders
13. Hypothyroidism and Thyroiditis
14. Nontoxic Diffuse Goiter, Nodular Thyroid Disorders, and Thyroid Malignancies, Sick euthyroid syndrome

Section IV: Adrenal Cortex and Endocrine Hypertension

15. The Adrenal Cortex
16. Endocrine Hypertension

Section V: Reproduction

17. Physiology and Pathology of the Female Reproductive Axis
18. Hormonal Contraception and fertility control- current approaches and global aspects
19. Testicular Disorders and male reproductive tract
20. Sexual Dysfunction in Men and Women
 - Menstrual Disorders and Pelvic Pain
 - The Menopause Transition and Postmenopausal Hormone Therapy
 - Hirsutism and Virilization
 - Gynecologic Malignancies

Section VI: Endocrinology and the Life Span

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- a. Endocrine changes in pregnancy
 - b. Endocrinology of fetal development
 - c. Normal and aberrant growth
 - d. Puberty, ontogeny, Neuroendocrinology, physiology disorders

Section VI A: Maternal-Fetal

21. Endocrine Changes in Pregnancy
22. Endocrinology of Fetal Development

Section VI B: Childhood Growth and maturation

23. Pediatric Disorders of Sex Development
24. Normal and Aberrant Growth in Children
25. Physiology and Disorders of Puberty

Section VI C: Adult

26. Hormones and Athletic Performance
27. Endocrinology and Aging

Section VII: Mineral Metabolism

28. Hormones and Disorders of Mineral Metabolism
29. Osteoporosis and Bone Biology
30. Kidney Stones

Section VIII: Carbohydrates and Fat Metabolism

31. Neuroendocrine Control of Energy Stores

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32. Obesity
 33. Disorders of Lipid Metabolism
 34. Gastrointestinal Hormones and Gut Endocrine Tumors
 35. Hypoglycemia

36. Diabetes & related topics

- Classification of Diabetes and other categories of lactose intolerance
- Epidemiology of Type 1 and Type 2 Diabetes
- Physiology of pancreatic endocrine function
- Insulin gene expression and biosynthesis
- Normal Pancreatic B cell function & Mechanism of Insulin secretion
- Biosynthesis, secretion and actions of glucagon
- Incretin Physiology in Health and disease
- Mechanism of Insulin action
- Regulation of Carbohydrate and lipid metabolism
- Measuring B cell function and Insulin action in clinical practice
- Pathogenesis of Non alcoholic Fatty Liver disease
- Insulin resistance syndrome
- Pathogenesis of Type 2 Diabetes, Glucolipototoxicity
- Genetics of Type 2 Diabetes
- Monogenic disorders of B cell
- Immunopathogenesis of Type 1 diabetes
- Molecular Genetics of Type 1 diabetes
- Obesity; Pathogenesis, Treatment including Bariatric surgery
- Prevention of Type 2 Diabetes
- Prevention of Type 1 Diabetes
- Medical Nutrition therapy in Diabetes
- Exercise in Diabetes
- Sulphonylureas Current concepts
- Metformin
- PPAR agonists
- Alpha glucosidase inhibitors
- Incretin analogues and DPP 4 inhibitors
- SGLT -2 inhibitors

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- Other oral therapies for Type 2 Diabetes
 - Proposed Treatment Algorithms for Type 2 Diabetes
 - Insulin therapy: Conventional and Analogues
 - Insulin Pumps
 - Insulin Infusion (VRII)
 - Pancreatic and Islet transplantation
 - Hypoglycemia in Diabetes
 - Spontaneous hypoglycemia in Adults and children
 - Diabetes ketoacidosis and HHS
 - Diabetes in Pregnancy
 - Tools for Glucose control monitoring, HbA1c, Fructosamine, Glycated Albumin etc
 - Pathogenesis of Macrovascular complications
 - Pathogenesis of Microvascular complications
 - Diabetic retinopathy
 - Diabetic nephropathy
 - Diabetic neuropathy
 - Diabetic foot assessment and management
 - Connective tissue disorders of Diabetes
 - Sexual dysfunction in Diabetes
 - Coronary artery diseases and Stroke in Diabetes
 - Hypertension in Diabetes
 - Clinical trials in Diabetes

Section IX: Polyendocrine and Neoplastic Disorders

37. Multiple Endocrine Neoplasia
38. The Immunoendocrinopathy Syndromes
39. Endocrinology of HIV/AIDS
40. The Long -Term Endocrine Sequelae of Multimodality Cancer Therapy
41. Neuroendocrine Gastrointestinal and Lung Tumors (Carcinoid Tumors) and the Carcinoid Syndrome, and Related Disorder

Section X: Pregnancy

42. Thyroid disorders

- Maternal hyperthyroidism
- Maternal hypothyroidism
- Post-partum thyroid dysfunction
- Thyroid cancer in pregnancy

43. Parathyroid disorders and calcium disorders in pregnancy

44. Pituitary disorders

- Prolactinoma in pregnancy including management
- Hypopituitarism in pregnancy

45. Adrenal disorders

- Addison's disease in pregnancy
- Congenital adrenal hyperplasia
- Pheochromocytoma

Other areas in which knowledge is to be acquired:

- Biostatistics, Research Methodology and Clinical Epidemiology
- Ethics
- Medico legal aspects relevant to the discipline
- Health Policy issues as may be applicable to the discipline

STRUCTURED TRAINING PROGRAMME

1st Year

Outpatient / Inpatient management

- Endocrine testing
- Patient education
- Assisting & managing emergencies
- Starting research activity & Biomedical Statistics
- Computer data entry
- Teaching Undergraduate

2nd Year

In addition to patient management

- Patient counseling
- Endocrine testing
- Attending surgeries
- Radiology & pathology training
- Nuclear Medicine
- Laboratory methods
- Computer data entry
- Teaching Undergraduate (MBBS), diploma, Postgraduate (MD Medicine) and 1st year DNB students

3rd Year

Out patient / Inpatient management

- Patient counseling
- Finalization & submission of research projects
- Teaching and Guiding Undergraduate (MBBS), diploma, Postgraduate (MD /DNB Medicine) and 1st year & 2nd year DM students

TRAINING PROGRAMME:

Postings:

- General ward – 12 months
- Private ward – 10 months
- Interdepartmental /emergency unit consultations – 10 months

Interdepartmental posting (12 weeks)

- Biochemistry and laboratory -2 weeks
- Reproductive Medicine Unit – 2 weeks
- Pediatric Endocrinology (if separate unit available) or clinic – 3 weeks
- Diabetic foot lab and Podiatry -1 week
- Statistics – 1 week
- Molecular biology- 1 week
- Thyroid USG and other endocrine imaging -1 week
- FNAC – 4 days (2 hours each day) -1 week

Speciality Clinics:

a.	Diabetic Foot clinic	once a week	50 weeks
b.	Adult Young diabetes or Type DM clinic	once a week	20 weeks
c.	Menopause clinic / GDM / Gynae Endocrine clinic	once a week	50 weeks
d.	Ophthalmology clinic (Retina)	once a week	4 weeks
e.	Metabolic bone clinic	once a week	8 weeks
f.	Thyroid clinic	once a week	8 weeks
g.	General Endocrine clinic	once a week	12 weeks

Multi-departmental meetings:

a.	Nuclear Medicine – Endocrine surgery - Endocrinology meeting	once a week	50 weeks
b.	Pathology - Endocrine surgery -Endocrinology meeting	once in 2 weeks	20 weeks
c.	Neurosurgery - Endocrinology meeting	once a week	50 weeks

V. LOG BOOK

A candidate shall maintain a log book of operations (assisted / performed) during the training period, certified by the concerned post graduate teacher / Head of the department / senior consultant.

This log book shall be made available to the board of examiners for their perusal at the time of the final examination.

The log book should show evidence that the before mentioned subjects were covered (with dates and the name of teacher(s)) The candidate will maintain the record of all academic activities undertaken by him/her in log book.

1. Personal profile of the candidate
2. Educational qualification/Professional data

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3. Record of case histories
 4. Procedures learnt
 5. Record of case Demonstration/Presentations
 6. Every candidate, at the time of practical examination, will be required to produce performance record (log book) containing details of the work done by him/her during the entire period of training as per requirements of the log book. It should be duly certified by the supervisor as work done by the candidate and countersigned by the administrative Head of the Institution.
 7. In the absence of production of log book, the result will not be declared.

VI. RECOMMENDED TEXT BOOKS AND JOURNALS

Books

- William's Text book of Endocrinology Sholomo Melmed & Kenneth S Polosky, P Reed Larson & Henry M Kronenberg
- Clinical Gynaecologic Endocrinology and Infertility Marc A Freez & Leon Speroff
- Endocrinology Adult & Paediatric J Larry Jamesan & Leslie J Degroot
- Oxford Handbook of Endocrinology and Diabetes John Wass, Katherine Owen
- International Book of Diabetes Mellitus: Ralph A DeFranzo, EleFeranninni, Paul Zimmet, KGMM Alberti
- Werner and Ingbar's Thyroid
- Endocrinology & Metabolism: Felig, Baxter and Broadus
- Joslin's Diabetes Mellitus
- Diabetes Mellitus Ellenberg & Rifkin's
- Metabolic basis of Inherited disease Stanbury, Wtngard
- Reproductive Endocrinology Jaffe and yen
- Reproductive Endocrinology Speroff & Kase
- Clinical Neuroendocrinology Martine & Besser GM, Luciano Martini
- Handbook of Endocrinology Dillon, Richard S
- Immunoassay a practical Guide Brian's Law
- RIA, Principles and Practice Pillai and Bhandarkar, 1998, BARC
- Antibodies A laboratory manual Ed. Harlow and David lane

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- Text book of Clinical Chemistry Teitz.
 - Nutritive value of Indian Foods C. Gopalan, ICMR
 - Hypothalamic pituitary development Ed. Rapheel Rappaport serge Amselem
 - Adrenal diseases in childhood I A Hughes A J L Clark
 - Genetic disorders of Endocrine Neoplasia Patricia Dahia Charis Eng.
 - Textbook of Diabetes (Holt's) Richard IG Holt
 - Metabolic basis of inherited disease (Stanbury)
 - Endocrinology Leslie J DeGroot
 - Brooks Clinical Pediatric Endocrinology Charles GD Brook, Peter Clayton, Rosalind Brown

Journals

- Journal of Clinical Endocrinology & Metabolism
- European Journal of Endocrinology
- Diabetes
- Diabetes Care
- Fertility and sterility
- Hormone and Metabolic Research
- Journal of Bone and Mineral Research
- Clinical Endocrinology
- Endocrine and Metabolic Clinics of North America
- Endocrine Reviews
- Diabetes Research and Clinical Practice
- Indian journal of Diabetes and Metabolism
- Diabetic Medicine
- Diabetologia
- Best Practice & Research: Clinical Endocrinology & Metabolism
- Canadian Journal of Diabetes
- Journal of Diabetes and Its Complications



आयुर्विज्ञान में राष्ट्रीय परीक्षा बोर्ड
स्वास्थ्य एवं परिवार कल्याण मंत्रालय, भारत सरकार
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