

**August 2023****THE COLLEGE OF PHYSICIANS OF SOUTH AFRICA****R E G U L A T I O N S****FOR ADMISSION TO THE EXAMINATION FOR THE**  
**POST-SPECIALISATION****SUB-SPECIALTY CERTIFICATE****IN****ENDOCRINOLOGY AND METABOLISM****Cert Endocrinology and Metabolism(SA)****1.0 OBJECTIVES**

The specialist training programme in Endocrinology and Metabolism provides the trainee with the opportunities and the means to acquire the knowledge, skills and attitudes necessary to undertake comprehensive medical practice in this speciality, unsupervised and independently and/or within a team.

**2.0 ENTRY REQUIREMENTS**

Applicants must have completed training as a Specialist in Internal Medicine. South African entrants should have completed training in the Fellowship of The College Physicians – FCP(SA) and registration with the HPCSA as a specialist physician. International trainees must provide evidence of similar training and registration as a specialist in Internal Medicine in their home country.

**3.0 DURATION AND ORGANISATION OF TRAINING**

- 3.1 Training must take place in an HPCSA accredited training institution with an HPCSA Endocrinology Training Number being allocated for the duration of training. Training is currently time-based – a minimum of 2 years full-time training is required.
- 3.2 Part-time training in endocrinology is acceptable in a recognised training unit that is HPCSA approved. The part-time training programme must be approved by the HPCSA *prior* to the commencement of training and an HPCSA Training number allocated. The duration of training must be equivalent to a total full-time training period of 2-years with a maximum being 50% part time (i.e a 4-year training programme). Potential candidates must prepare a time schedule on application for approval by the local training institution and at a combined University HoD meeting. Part-time trainees must keep a weekly record of the training activities attended (e.g. clinics, academic meetings, ward rounds, testing, etc.) and the duration of these activities (e.g. clinic 5 hours, in-patient care 2 hours, testing 2 hours etc.); this should be signed off by the supervising consultant on a weekly or monthly basis to ensure and provide evidence that the apportioned percentage of training time has indeed been fulfilled. All the other rules and regulations to sit for the examinations must be met by part time trainees.
- 3.3 As per HPCSA regulations, training outside of an accredited training site may take place for up to 3 months (provided the trainee remains in an accredited training post under the auspices of the university) in order to meet specific training objectives that may not be available at the home institution or even other accredited training institutions.

**4.0 VALIDITY OF TRAINING**

- 4.1 Training is valid for a period of three (3) years from the date of completion in a numbered sub-speciality training post.
- 4.2 In exceptional circumstances candidates who do not successfully complete the examination within this period may motivate, with support from their HOD, to the College of Physicians for a once off extension.

**5.0 ADMISSION TO THE EXAMINATION**

The following are the requirements for admission to the examination:

- 5.1 registration as a specialist physician
- 5.2 certification of having completed at least eighteen months (full-time equivalent if part-time training) as a subspecialty trainee in accredited specialist department(s) / division(s) / unit(s) of Endocrinology and Metabolism, registered and approved by the Health Professions Council of South Africa.
- 5.3 submission of the prescribed portfolio, filled in up to date, and certified by the head(s) of the department(s)/division(s)/unit(s) in which the candidate trained.
- 5.4 a written report/written reports from the head/s of the specialist department(s) / division(s) / unit(s) of Endocrinology in which training was completed.

**6.0 AWARDING OF THE CERTIFICATE**

- 6.1 The certificate will be awarded to those candidates who have both successfully completed the written examination, completed their training time and completed a required research project.
- 6.2 Upon award of the Certificate, the trainee may apply to the Health Professions Council of South Africa for sub-specialty registration.

**7. SYLLABUS AND TRAINING**

A broad experience in general (internal) medicine is considered essential for the practice of endocrinology and metabolism. The portfolio book should be used to log all patient contacts during training.

**7.1 The management of outpatients and inpatients:**

- 7.1.1 Attendance at specialist clinics is obligatory. To ensure that outpatient training is implemented effectively an optimal number of new (n=1-2) and follow-up (n=6-8) patients will be seen at each clinic under supervision and review. Sufficient patients with common and rarer endocrine and metabolic disorders must be seen to provide adequate personal experience. Attendance at general and sub-specialty outpatient clinics are ideal, including attendance at reproductive endocrinology clinics, paediatric and adolescent endocrine clinics, gestational diabetes clinics, etc.
- 7.1.2 A logbook must be kept to record the number of the various out-patient clinics the trainee has attended.
- 7.1.3 The management of inpatients must also be supervised and reviewed. A logbook must be kept to record inpatients for whom the trainee has assumed responsibility. (Patients with very rare conditions, seen and discussed, should be added separately)
- 7.1.4 A logbook record of all dynamic tests performed by the trainee must be kept
- 7.1.5 Contact with other departments relevant to endocrinology, such as chemical pathology, histopathology, neurosurgery and surgery (endocrine), radiology, and nuclear medicine is essential
- 7.1.6 Attendance and observation at surgery (e.g. adrenal surgery, pituitary surgery, parathyroid surgery) for patients under the trainee's care is essential and should be logged in the portfolio.

**7.2 Research:**

- 7.2.1 A research protocol in the field of endocrinology and metabolism should be submitted within the first 6 months of appointment.
- 7.2.1 Completion of a research project is required prior to the awarding of the Fellowship/Certificate. Acceptable research includes any endocrine-related research study (original research or systematic review/meta-analysis), or case series that is published in a peer-reviewed journal OR presented as a thesis in endocrinology undertaken during their training (MPhil) OR presented as a poster/oral at a conference. No individual (single) case report will be accepted.

**7.3 Academic meetings, conference attendance and rotation to other centres:**

- 7.3.1 Active participation at official ward rounds and organised academic activities such as journal club, research meetings and seminars is mandatory
- 7.3.2 Active participation at scientific meetings (local and international) is encouraged
- 7.3.3 Rotation to other research centres (local and international) for a specific purpose and time period is encouraged, if possible. By HPCSA rules, up to 3 months may be spent outside the accredited training site, provided the candidate remains in the accredited post under the control of a university with a Faculty of Health Sciences or Medical School.

**7.4 Curriculum and competence (See Appendix A for content of the curriculum):**

It is expected that completion of the curriculum will result in demonstrable competence at consultant level in the following areas:

- 7.4.1 Knowledge of Endocrine and Metabolic Disorders. This will require a thorough theoretical knowledge of the endocrine and metabolic diseases. It will include knowledge of the epidemiology, aetiology, pathogenesis, pathology, clinical features and management of these diseases
- 7.4.2 Clinical contact with the patient. This will require the trainee to be able to take a history and perform a clinical examination of a patient with an endocrine or metabolic disorder to include special details and methods outlined in the training record
- 7.4.3 Demonstrate experience of endocrine and metabolic disease through the age spectrum. It is envisaged that this experience could be obtained over the two years by contact with appropriate patients and by attendance at Paediatric Endocrinology clinics or specific courses
- 7.4.4 Endocrinological and Metabolic emergencies. Gain experience with the endocrinological and metabolic emergencies as shown in the full curriculum (Appendix A)
- 7.4.5 Selection of appropriate laboratory tests. This will require knowledge of the metabolic changes, and changes that accompany endocrine or metabolic disease
- 7.4.6 Knowledge of the place of imaging techniques and ultrasonography in the investigation of endocrine disease. This will require knowledge of the place of these investigations in the diagnosis, and in following the progression of disease
- 7.4.7 Understand the pharmacology of drugs used in the endocrine and metabolic diseases. This will require knowledge of the drugs used in the management of endocrine disorders as well as knowledge of hormone replacement therapy
- 7.4.8 Appreciate the role of patient education and staff management in endocrine and metabolic diseases. This will require knowledge of the wide field of patient education required in the endocrine and metabolic disorders and the concept of the team approach to patient management
- 7.4.9 Special Skills
  - Performance and interpretation of dynamic endocrine tests. The trainee will be required to demonstrate competence in performing dynamic tests of endocrine function and be able to interpret the results of these tests. A logbook record of all dynamic tests performed by the trainee
- 7.4.10 Teaching experience. The trainee should be able to demonstrate the ability to teach medical and paramedical staff by experience and specific courses if necessary
- 7.4.11 Develop research experience. This will include training in the analysis of data and an understanding of the principles and practice of clinical research. The trainee must complete a successful research project and eventually should be able to promote and supervise research in endocrinology and metabolism. Publication in a peer-reviewed journal or presentation of research project at a scientific meeting
- 7.4.12 Endocrine/Metabolic Laboratory Investigation. Knowledge of the methodology of common biochemical assays and the interpretation of results is essential.
  - a. **General Principles**
    - The radioimmuno-assay
    - The radioreceptor-assay
    - ELISA assays
    - Molecular endocrinology: DNA extraction, PCR amplification, SSCP, DNA sequencing
  - b. **Measurement**
    - Peptide hormones
    - Steroid hormones
    - Important substrates (glucose, lipids)
    - Other (eg HbA1c)

- c. **Dynamic tests.** Knowledge of the common dynamic tests used in endocrinology is required. Practical experience is essential and must be documented in the logbook. Competence in the performance and interpretation of the following tests is required:
- ACTH stimulation test
  - HCG stimulation test
  - Glucose tolerance for diabetes and acromegaly
  - Glucagon stimulation tests
  - Dexamethasone suppression tests
  - Sodium loading test for primary hyperaldosteronism
  - Posture / Captopril test for primary hyperaldosteronism
  - Water deprivation test
  - Prolonged fasting for hypoglycaemic disorders
  - “Glucose-clamp” and other tests for insulin secretion/sensitivity

## **7.5 Recommended Reading:**

### **7.5.1 Books:**

- a. It is recommended that trainees should read a modern but relatively short and manageable textbook of Endocrinology in the first 3-6 months of training (eg. Greenspan and Baxter: Basic and Clinical Endocrinology; Lavin: Manual of Endocrinology and Metabolism – updated every 2-3 years).
- b. Modern reference textbooks on Endocrinology, Metabolism and Diabetes should be readily available (eg. de Groot: Endocrinology; Williams Textbook of Endocrinology, Oxford Textbook of Endocrinology).
- c. Paediatricians: eg. Bertrand, Rappoport, Sizonenko – Paediatric Endocrinology

### **7.5.2 Journals:**

A range of general medical and endocrinology and diabetes journals are essential reading. Suggested journals include:

- a. Journal of Clinical Endocrinology and Metabolism
- b. Endocrine Reviews
- c. Clinical Endocrinology
- d. Diabetes Care
- e. Diabetic Medicine
- f. Diabetologia
- g. Journal of Paediatric Endocrinology
- h. New England Journal of Medicine
- i. Lancet

**8.0 ONGOING IN-SERVICE EVALUATION OF THE ENDOCRINOLOGY TRAINEE**

Up-to-date **training records and a portfolio** of achievements will be maintained by the trainee throughout. The training records will be countersigned by the trainers to confirm the satisfactory fulfilment of the required training experience and the acquisition of competencies as set out in the curriculum. It will remain the property of the trainee and must be produced at the annual assessment time and when entering for the written examinations. And will consist of the following:

- 8.1 Assessment of a logbook kept by the candidate recording the details of all patients seen and the clinics attended, specific endocrine testing performed, procedures seen or performed, academic meetings attended, etc.
- 8.2 Details of research undertaken and manuscripts accepted or submitted for publication in the field of endocrinology and metabolism
- 8.3 Six-monthly in-house clinical case -assessments and an annual external portfolio assessment.
- 8.4 Six-monthly assessment of competence by the Head of the Endocrinology and Metabolism Training Unit.
- 8.5 Exit examination under the auspices of the CMSA consisting of a written paper and an objective test as stipulated above.

**9.0 FORMAT AND CONDUCT OF THE EXAMINATION**

- 9.1 The examination will be in written format and will consist of one written theory paper and one written objective test examination.
- 9.2 The theory paper
  - a will address the principles and practice of endocrinology and metabolism, including anatomy, normal physiology, pathophysiology, biochemistry, pharmacology, molecular biology, clinical investigation, diagnosis and treatment.
  - b is 180 minutes (3 hours) in duration
  - c the paper is composed of 12 questions, with several sub questions
  - d Marks
    - i. Total: 180
    - ii. Each question: 15
  - e the spectrum of questions will widely cover the curriculum, of which approximately 25% will cover diabetes
  - f 25% of all questions will cover relevant aspects of the basic sciences.
- 9.3 The objective paper
  - a will include the interpretation of laboratory data, dynamic tests, short case-histories and other material as problem-solving exercises.
  - b is 120 minutes (2 hours) in duration
  - c Marks
    - i. Total: 180
    - ii. Each question: 12
  - d Each question will be based on clinical information or case vignettes, laboratory data, radiologic or other investigations
- 9.4 There will be no clinical or oral examination.

**10.0 PASSING THE EXAMINATION**

A Candidate will be deemed to have passed the examination provided they have passed the theory paper and the objective test independently **with a minimum mark of 50% in each paper.**

**APPENDIX A****1.0 CURRICULUM FOR THE SUB-SPECIALTY ENDOCRINOLOGY AND METABOLISM****1.1 Emergencies:**

- Diabetes-related acute metabolic complications
- Thyrotoxic crisis and myxoedema coma
- Hyper- and hypocalcaemic crises
- Addisonian crisis
- Hypopituitary crisis
- Hyper- and hyponatraemia
- Hyper- and hypokalaemia

**1.2 Diabetes Mellitus**

- Diagnosis and classification
- Aetio-pathogenesis
- Epidemiology
- Clinical manifestations
- Complications including diabetes in children
- Therapy
- Intercurrent states (pregnancy, surgery)
- Insulin resistance metabolic syndrome
- Rare genetic syndromes

**1.3 Hypoglycaemia**

- Insulinoma
- Other syndromes

**1.4 Other pancreatic endocrine disorders (gastrinoma etc)****1.5 Lipid Disorders**

- Hypertriglyceridaemia
- Hypercholesterolaemia
- Mixed dyslipidaemia
- Secondary dyslipidaemia
- Dyslipidaemia and atherosclerosis
- Lipodystrophic disorders

**1.6 Thyroid Disorders**

- Graves' disease
- Multi-nodular goitre
- Toxic adenoma
- Thyrotoxicosis without hyperthyroidism
- Thyroiditis
- Primary thyroid neoplasms
- Hypothyroidism
- Sub-clinical thyroid disease
- Goitrous hypothyroidism
- Iodine deficiency disorders
- Drug-induced thyroid disease
- Thyroid hormone homeostasis in non-thyroidal illness
- Euthyroid goitres
- Thyroid nodules
- Abnormal thyroid function tests due to assay artefacts

**1.7 Pituitary Disorders**

- Prolactinoma
- Acromegaly
- Cushing's disease
- Glycoprotein-secreting adenomas
- "Non-secretory" adenomas
- Craniopharyngioma
- Lymphocytic hypophysitis
- Other sellar masses, including infections and pituitary "incidentaloma"
- Hypopituitarism
- Hyper- and Hypo- natriemic syndromes (including Diabetes Insipidus and SIADH)

**1.8 Adrenal Disorders**

- Adrenal glucocorticoid and mineralocorticoid hyper- and hypo-function
- Congenital adrenal hyperplasias
- Pharmacological use of glucocorticoids
- Pheochromocytoma
- Adrenal "incidentaloma"

**1.9 Parathyroid Disorders**

- Hyper- and hypo-parathyroidism
- Non-parathyroid-mediated hypercalcaemia
- Hypocalcaemia

**1.10 Metabolic Bone Disease**

- Primary and secondary osteoporosis
- Rickets and osteomalacia
- Paget's disease
- Abnormalities of vitamin D metabolism

**1.11 Endocrine Hypertension**

- Endocrine participation in essential hypertension
- Renin-angiotensin hypertension
- Mineralocorticoid-induced hypertension

**1.12 Growth and Pubertal Disorders**

- Short stature
- Growth failure
- Tall stature
- Delayed puberty
- Precocious puberty/pseudo-puberty

**1.13 Virilisation and feminisation**

- Disorders of sexual development
- Infertility
- Gynaecomastia
- Polycystic ovarian syndrome (PCOS) and other ovarian disorders
- Hirsutism
- Hormone replacement therapy
- Menopause

**1.14 Testicular Disorders**

- Infertility
- Hypogonadism
- Androgen resistance
- Androgen replacement therapy
- Andropause (the aging male)

**1.15 Nutritional Disorders**

- Obesity
- Anorexia nervosa

**1.16 Endocrine disorders in systemic diseases****1.17 Multi-endocrine Disorders**

- MEN syndromes
- Polyglandular syndromes
- Disorders of vasodilator hormones (eg carcinoid syndrome)

**1.18 Breast Disorders**

- Galactorrhoea
- Gynaecomastia

**1.19 Endocrine Oncology**

- Endocrine responsive tumours (Ca breast, prostate)
- Para-neoplastic endocrine and metabolic manifestations
- Thyroid cancer
- Neuroendocrine neoplasms

**1.20 Other**

- Epidemiology of common endocrine and metabolic conditions
- Age-related changes in endocrine function
- Fertility control and complications
- Endocrine causes of sexual dysfunction
- Endocrine disorders in pregnancy
- Endocrine/Metabolic effects of drugs
- Receptor/second messenger abnormalities and hormone resistance syndromes
- Renal stones
- Endocrine manifestations of porphyria
- Endocrine manifestations of iron overload.
- HIV, and the endocrine system
- COVID-19 and the endocrine system
- Disorders of phosphate and magnesium metabolism
- Genetic syndromes with endocrine/ metabolic complications



**APPENDIX B. CLINICAL CASE AND TOPIC PRESENTATIONS**

1. Trainees will present 12 over the training period i.e. 6 per year, if training for 2 years and 4 per year if training for 3 years, etc. They will also present a minimum of 10 topic presentations (seminars) over the course of their training period. The seminars will be included in the logbook.
2. These case reports can be on any clinical aspect of endocrinology but the trainee is encouraged to include a range of cases consistent with the diversity of the approved curriculum.
3. Each case report must be presented as a Power Point presentation of approximately 20 minutes duration and must discuss the case in the depth and clarity expected from a specialist in internal medicine. It should include the details around the relevant basic science where appropriate. The presentation will be followed by a 10-minute oral assessment (using the standardised marksheet) by consultant/s within the division. (Refer to attached marksheet). These cases will form the trainee's portfolio
4. The supervisor will oversee that the trainee has completed the required number of case reports and that the case reports represent a sufficiently diverse spectrum of endocrine disorders.

## INTERNAL CASE-PRESENTATION ASSESSMENT

Certificate in Endocrinology & Metabolism - Case Presentation Assessment		
NAME:	DIAGNOSIS:	DATE:
<u>Clinical Assessment (10)</u> <ul style="list-style-type: none"> <li>• Succinct summary</li> <li>• Appropriate differential diagnosis</li> </ul>		
<u>History and Examination (10)</u> <ul style="list-style-type: none"> <li>• Important past medical history, family history, chronic medication</li> <li>• Important history supporting diagnosis</li> <li>• Important clinical findings supporting the diagnosis</li> </ul>		
<u>Investigations (20)</u> <ul style="list-style-type: none"> <li>• Appropriate and cost-effective investigations</li> <li>• Correct interpretation of tests</li> </ul>		
<u>Management (40)</u> <ul style="list-style-type: none"> <li>• Appropriate management plan</li> <li>• Explanation for why each drug/procedure is used or modified if necessary</li> <li>• Long-term plan- management/follow-up</li> <li>• Other therapeutic options including potentially useful novel therapies</li> </ul>		
<u>Complications (10)</u> <ul style="list-style-type: none"> <li>• Explanation for complications that occurred OR</li> <li>• Understanding of potential complications</li> </ul>		
<u>Understanding of relevant basic science (10)</u>		
<u>Additional remarks</u> (If a candidate scores less than 50% please provide a detailed explanation below)		
Examiner 1	Signature _____	
Examiner 2	Signature _____	