اختصاص دقيق في أمراض السكري والغدد الصم والاستقلاب

Subspecialty in Diabetes, Endocrine, and Metabolism

المنهج التدريبي

اسم الدراسة	
اللغة العربية	دراسة المجلس العربي للاختصاصات الصحية- اختصاص دقيق في أمراض السكري والغدد الصم والاستقلاب
In English	Arab board of Health Specializations -Subspecialty in Diabetes, Endocrine, and Metabolism
اسم الشهادة	
اللغة العربية	زميل المجلس العربي للاختصاصات الصحية- اختصاص دقيق في امراض السكري والغدد الصم والاستقلاب
In English	Fellow of Arab board of Health Specializations -Subspecialty in Diabetes, Endocrine, and Metabolism (CABM-Endo.)

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A- **Introduction**: -

General Statement

- Within this program, the fellow will encounter a broad array of diabetes, endocrine and metabolic disorders that will allow him to become a consultant in the discipline.

Mission Of the program: -

- Is to promote the education and continued training of clinicians in endocrinology and related disciplines with the ultimate goal of improving the care and treatment of individuals with endocrine disorders.

General goals: -

The endocrinology fellowship training program is a two-year program designed to train clinicians in diabetes, endocrine and metabolism disorders. Trainees will gain the skills and knowledge to succeed in either the academic or private health care sectors.

Specific goals for each period of Training: - (in months or years) 24 Months □ 2Years □

- Acquire a comprehensive understanding of diabetes, endocrine, and metabolic disorders and providing excellence in diagnosis and management.

Program objectives: -

Develop competence in pathophysiology, epidemiology, clinical manifestations, diagnostic tools, and therapeutic options of diabetes, endocrine, and metabolic disorders.

Medical Knowledge: -

Had the required expertise in the field of diabetes, endocrine, and metabolic disorders.

Patient Care: -

Had the required knowledge how to deal with the diverse clinical presentations and concerns the patient had bout his diabetes, endocrine, and metabolic disorders.

Interpersonal &Communication Skills: -

Had the capacity to interact and engage with his colleagues about the recent advances in the field of diabetes, endocrine, and metabolic disorders.

Professionalism: -

Hold and maintain finest degree of professionalism in his work

Practice based Learning & Improvement: -

Work according to evidence-based medicine and according to the latest guidelines

System-based practice: -

Had the ability to work within multidisciplinary team.

B- **Requirements of the institutes of training**: -

(Must be approved by the Arab Board)

Program Director (Head of training): - Those hold Professor, Assistant Professor degree, or consultant in Internal Medicine with at least **10 years clinical and academic experience in** diabetes, endocrine, and metabolic disorders **and qualified as** endocrinologists in their country.

a)

-Role: -Trainer

-Qualifications: -MD

-Experience: - broad clinical and scientific expertise in all major subspecialty areas within endocrinology, diabetes and metabolism.

b) Program committees: - (to supervise & evaluate)

c) Structure: -scientific and educational program, clinical affair core committees, research affairs, public outreach, and publication core committee.

d) Function: -

e) Facilities Required: -

- Primary & secondary sites if applicable: -

  Certified tertiary care training center in diabetes endocrine and metabolism

- Number of required personnel: -Minimum 3

  N: 3 qualifications MD Experience at least 10 years in diabetes endocrine and metabolism

  - Ratio of Trainers: Trainee 1/3

  - Role & responsibilities of various Factuality & Personnel

  Trainer should be consultants who are accredited Endocrinologists

  - The Personnel requirement: -??

  -Minimum 10 years expertise in diabetes, endocrine and metabolism

  - Bench Marking: - should involve:

    - An in-depth knowledge of the specialty
    - Recognition of patients who require specialist input
    - Willingness to work as both a member and leader of a team.

  f) Volume: -

  Required volume for training: -

The fellow should have minimum 200 session of clinical training each year. A total of 300 new endocrine consultations and 500 endocrine follow-up visits should be done each year. Over two years fellows are evaluated each month by attending faculty members on their outpatient services.

Required variety

1. Adrenal disorders
2. Pituitary disorders
3. Female reproduction and transwomen
4. Male reproduction and transmen
5. Thyroid disorders

6. Pediatric and transition endocrinology
7. Diabetes and hypoglycemia
8. Calcium and bone health
9. Lipid, obesity, nutrition, sleep apnea and fatty liver
10. Sodium and water disorders

Bench marking

g) Resources:

clinical, inpatient/outpatient

-Tertiary care center for diabetes, endocrine and metabolism

Educational: -

On Call: -

Dietary requirements when applicable: -none

h) Teaching: -

methods: - (clinical & Theoretical): -

Plans for net-based teaching: -

Self-study sessions: -

Conferences & teaching rounds

Evaluation method Logbook signed by the trainer weekly

Teacher: - Trainees: -

C- Eligibility & selection criteria for training:

Arab Board / other approved qualifications" Specify

- Doctors who hold Arab Board in Medicine or its equivalents (local country board in Internal Medicine).
- Those who hold local country Board in Endocrine, fellowship in endocrine and/or equivalent subspecialty of MSc endocrinology with at least 2 years training from a Center that is accepted by Arab Board of Health Specializations and have completed at least one year post-specialty clinical practice in diabetes, endocrine, and metabolic disorders, can also attempt the part two examinations as an external candidate without the need for competition examination or part one examination , or research paper or full time two years training, provided that they hold baseline Arab Board certificate in Internal Medicine or its local equivalent.

Licensure

Training details & experience: See appendix A, B and C

Recommendations for current training centers / program directors

Registration with the Arab Board

D- Application Process:

Online / Written

Documentation Required:

Fees required:

Application for the program

The program of this subspecialty should to be started in October each year.

Application should start in February and the training started October-November each year.

The competition examination will be held: April -May each year.

The application for part one examination should start in July each year.

Those exempted from the training for the above reasons should register as external candidates and at the same time apply for the final written examination in March each year.

Time Table for training: See appendix A, B and C

Number of years / semesters

- is two years (24 months) with an emphasis on training in clinical endocrinological disorders.

Details on training program

-See appendix A, B and C

Rotation: Length and contents see appendix A

E- Evaluation of trainees:

Supervising Personnel

-daily bases in the journal club, clinical meeting, seminars

Frequency of evaluation

-Weekly

Methods and tools of evaluation

-log book

Trainees must submit logbooks to their supervisors every month and to heads of training every 6 months for certification.

Documentation of evaluation

- log book

Aspects of competency evaluation to include:

Knowledge

Professionalism

Attitude to work

Team work

Adherence to ethical standard

Proficiency

Clinical skills

Practical skills

Case log

F- Assessment of trainers:

Methods and tools of assessment

-Daily and weekly

360-degree evaluation

Frequency of evaluation

-Each 3 months

G- CME requirements

Indicate type and frequency

- Minimum one national and one international activity with CME should be attained each year.

Will this be part of evaluation?

-Yes

H- Research requirements

Indicate type and frequency once basic or clinical research paper

- Optional see appendix A

Will this be part of evaluation?

- **Optional**

I- Vacation & Leave

Entitlement -10 days each year

Educational leave- 5 days each year

Arrangements for leave- non

J- Examination process:

Is examination required?

- Yes written

Details of examination:

Format: Written only

Timing each 12 months (details in appendix A)

Expected personnel & facility requirements

Number of examination centers

K- Core Curriculum

Detailed curriculum over the training period with specific objectives and including recommended learning resources (Appendix A, B, C)

L- Qualification:

Title of qualification

Name of certificate English

Fellow of Arab board of Health Specializations -Subspecialty in Diabetes, Endocrine, and Metabolism

(CABM-Endo.)

اسم الشهادة (عربي)

زميل المجلس العربي للاختصاصات الصحية- اختصاص دقيق في امراض السكري والغدد الصم والاستقلاب

Appendix A Details Eligibility Criteria and Requirements

Proposal

Name of the study (English)

Arab board of Health Specializations -Subspecialty in Clinical Diabetes, Endocrine, and Metabolism

اسم الدراسة (عربي)

دراسة المجلس العربي للاختصاصات الصحية- اختصاص دقيق في أمراض السكري والغدد الصم والاستقلاب

Name of certificate (English)

Fellow of Arab board of Health Specializations -Subspecialty in Diabetes, Endocrine, and Metabolism

(CABM-Endo.)

اسم الشهادة (عربي)

زميل المجلس العربي للاختصاصات الصحية- اختصاص دقيق في امراض السكري والغدد الصم والاستقلاب

Eligibility

- Doctors who hold Arab Board in Medicine or its equivalents (local country board in Internal Medicine).
- Those who hold local country Board in endocrine, fellowship in endocrine and/or equivalent subspecialty of MSc endocrinology with at least 2 years training from a Center that is approved by Arab Board of Health Specializations and have completed at least one year **post-specialty clinical practice** in diabetes, endocrine and metabolism , can attempt the part two examinations as an external candidate without the need for competition examination , part one examination , research paper or full time two years training, provided that they had Arab Board certificate in Internal Medicine or its local equivalent.

Exclusion

- Those who hold only subspecialty degree in Endocrine or MRCP endocrine alone **without** having certificate of Arab Board in Medicine or its equivalent are **not** allowed to be enrolled.

Application for the program

Should start in February and the training started October-November each year.

The competition examination will be held in April -May each year.

The application for part one examination should start in July each year.

Those exempted from the training for the above reasons should register as external candidates and at the same time apply for the final written examination in March each year.

Requirement

The requirement for the Center to be eligible for training:

- **Program Director and Program committees (Faculty)**
- **Endocrinologists**

Broad clinical and scientific expertise in all major subspecialty areas housed within endocrinology, diabetes and metabolism. Those hold Professor, Assistant Professor degree, or Consultant in Internal Medicine with at least **10 years clinical and academic experience in endocrinology and qualified as an endocrinologists in their country.**

- Radiologist with at least 5 years' experience in neuroradiology, adrenal computed tomography and thyroid ultrasound.
- Bariatric surgeon with at least 5 years' experience.
- Dermatologist with at least 5 years' experience.
- Pathologist with at least 5 years' experience.
- Chemical Pathologist with at least 5 years' experience.
- Dietitian and nutritionist with at least 5 years' experience.

Training Center requirements

The eligible center should include endocrine Center with proper out-patients endocrinology clinic, pediatric endocrinology clinic, thyroid ultrasound clinics, thyroid FNAC facilities and proper adrenal and pituitary imaging facilities.

The laboratory to be eligible should include all hormonal assessment and biochemical tests needed in Endocrine (see Appendix C).

Teaching Commitments

Trainees are required to be involved in teaching undergraduates, junior medical staff, nurses and other medical personnel. They should also be involved in other departmental activities, which may include:

- A weekly endocrinology conferences
- A weekly Endocrine Journal Club
- A weekly Grand Rounds program
- A weekly Endocrine Core Conference
- A weekly Endocrine Basic Science Series
- A weekly radiology meeting

Training requirements

Training in the areas of endocrinology, metabolism and clinical nutrition. These include disorders of the pituitary, thyroid and adrenal glands, diabetes mellitus, hypoglycemic syndromes, obesity, dyslipidemias, calcium disorders and metabolic bone disease, reproductive endocrinology, pediatric endocrinology, endocrine oncology, fundamentals of enteral and parental nutrition, eating disorders, disorders of vitamin and trace metal metabolism, endocrinology of aging, metabolic disorders in pregnancy and endocrine diagnostic testing.

NB: the laboratory units should be conventional units with optional SI units using American English language

Research paper (Optional) -country specific requirement

At the end of second year, the student should complete a research article. This research can involve clinical or basic studies which are managed on an individual basis with faculty members. Acceptance for publication of the paper in a peer review journal on PubMed of Medline or presentation in international conference without the need for discussion on committee bases.

Endocrine fellow

Student in training called endocrine fellow for the full time two years training.

Study examinations

Duration of study is **two years**. Divided into two -stages; each stage is 12 months of training and written examination in December each year.

Recruitment examination (competition for acceptance in the study)

Includes 50 single best answer questions in Endocrine Diabetes and Metabolism.

First year part one examination (Promotion examination)

After the first year, there will written promotion examination in December called **part one examination** (100 single best answer questions including basic science and clinical cases over three hours). Candidates who fail will have a chance for a second trial in June, and if he fails, he should have trial in December. The final examination (**part two examination)** will be after 12 months from a successful **part one examination (promotion)** trial.

Second year part two examination

The second-year examination will be in December called **part two examination** in endocrinology diabetes and metabolism (including two papers; **paper one** 60-100 single best answer questions and **paper two** 60-100 problem, clinical case and slides questions over three and half hours each).

For part one and part two, there are maximal of three attempts of examination. If the fellow passes~~ed~~ all the examinations at end of second year, he will be **earned** the certificate.

The passing mark will be 60 degree for all examinations.

Minimum training requirements

This period must include:

Two years of approved clinical residency at a senior level in diabetes, endocrinology and metabolism.

The fellow should have minimum 200 session of clinical training each year.

A total of 300 new endocrine consultations and 500 endocrine follow-up visits should be seen each year.

Over two years fellows are evaluated each month based by attending faculty members on their outpatient services.

Diabetes Endocrine and Metabolism training and questions blueprint

For each of two training years and examinations (competition, part one, part two examination).

Suggested Information Resources

Textbooks

	Topics	Percentage of training and questions
	Endocrine	
1	**Adrenal disorders**	**10%**
2	**Pituitary disorders**	**10%**
3	**Female reproduction and transwomen**	**7%**
4	**Male reproduction and transmen**	**7%**
5	**Thyroid disorders**	**15%**
6	**Pediatric and transition endocrinology**	**5%**
	Endocrine total	**54%**
	Diabetes and metabolism	
7	**Diabetes and hypoglycemia**	**24%**
8	**Calcium and bone health**	**10 %**
9	**Lipid, obesity, nutrition, sleep apnea and fatty liver**	**10%**
10	**Sodium and water disorders**	**2%**
	Diabetes and metabolism total	**46%**
	Endocrine Diabetes and Metabolism total	**100%**

- Williams Textbook of Endocrinology 14th Edition, 2019

Journals

- Clinical Endocrinology
- Journal of Clinical Endocrinology and Metabolism
- European Journal of Endocrinology
- Endocrinology
- Diabetes Spectrum
- Diabetes Care
- Clinical Diabetes

- Diabetes
- Nature Reviews Endocrinology
- Diabetic Medicine
- Diabetologia
- Endocrine Practice
- Endocrine Reviews
- Diabetes Therapy
- Diabetes, Obesity, and Metabolism
- Annals of Clinical Biochemistry
- Current Opinion in Endocrinology, Diabetes, and Obesity
- Current Opinion in Endocrinology & Diabetes
- Diabetes& Metabolic Syndrome Clinical Research & Reviews
- Diabetes & Metabolism
- Diabetes and Vascular Disease Research
- Diabetes Research and Clinical Practice
- Diabetes, Obesity, and Metabolism
- Diabetes, Metabolic Syndrome, and Obesity
- BMC Endocrine Disorders
- Endocrinologist
- Best Practice & Research Clinical Endocrinology & Metabolism
- Pituitary
- Indian Journal of Endocrinology and Metabolism
- International Journal of Diabetes in Developing Countries
- Reviews in Endocrine & Metabolic Disorders
- Thyroid
- Thyroid Research and Practice
- Asian Journal of Andrology
- Lancet
- The New England Journal of Medicine
- Annals of clinical biochemistry

- Clinical biochemistry
- Fertility and Sterility
- Journal of Endocrinological Investigation
- Journal of Clinical Densitometry

Guidelines and Societies

- American Diabetes Association (ADA)
- European Association for the Study of Diabetes (EASD)
- International Diabetes Federation(IDF)
- World Health Organization (WHO)
- American Association of Clinical Endocrinologists(AACE)
- National Institute for Clinical Excellence(NICE)
- Endocrine Society
- American Thyroid Association (ATA)
- European Thyroid Association (ETA)
- European Society of Endocrinology (ESE)
- International Hormone Society
- International Society for Pediatric and Adolescent Diabetes (ISPAD)
- Pituitary Society
- American Thyroid Association

Syllabus (Training curriculum)

Topics to be covered during two-year training program

1. Adrenal disorders
2. Pituitary disorders
3. Female reproduction and transwomen
4. Male reproduction and transmen
5. Thyroid disorders
6. Pediatric and transition endocrinology

7. Diabetes and hypoglycemia
8. Calcium and bone health
9. Lipid, obesity, nutrition, sleep apnea and fatty liver
10. Sodium and water disorders

The student should have a logbook for the cases he sees over **two years**. No examination allowed unless 50% or the program in the logbook finish and signed by the supervisor in the first year and 100% in the next year (Appendix-B). No entry to the part two examination without fulfills all requirement for **2 years of training** or **the fellow is exempted** from part one examination as mentioned above or he is exempted from the requirement as above.

Special training program and workshop

In the second-year training

- Pediatric and transition endocrinology. At least 10 outpatient clinic sessions.
- Reproductive and obstetric endocrinology. At least 10 outpatient clinic sessions.
- Medical nutrition therapy and calories counter. At least 10 outpatient clinic sessions.
- Neuroradiology of the pituitary gland, IPSS, PET scan, octreotide scan, MIBG, Ultrasound of thyroid, parathyroid gland, and adrenal CT. At least 10 outpatient clinic sessions.
- Adrenal CT (dynamic). At least 10 outpatient clinic sessions
- Radioisotope thyroid scans and nuclear medicine. At least 10 outpatient clinic sessions
- Radioiodine treatment. At least 10 outpatient clinic sessions
- DXA scan. At least 10 outpatient clinic sessions

- Immunoassay, liquid chromatography tandem-mass spectrometry (LC-MS/MS At least 10 outpatient clinic sessions.
- Eye disease in diabetes. At least 10 outpatient clinic sessions.
- Insulin pumps. At least 10 outpatient clinic sessions
- Real life proper diabetes Center. At least 10 outpatient clinic sessions
- Examination and processing of human semen workshop. At least 5 outpatient clinic sessions.
- Thyroid ultrasound. At least 10 outpatient clinic sessions
- Fine needle aspiration biopsy of the thyroid gland. At least 10 outpatient clinic sessions.

Appendix B Curriculum of two Years Training

Topics to be covered during two-year training program

1. Adrenal disorders
2. Pituitary disorders
3. Female reproduction and transwomen
4. Male reproduction and transmen
5. Thyroid disorders
6. Pediatric and transition endocrinology
7. Diabetes and hypoglycemia
8. Calcium and bone health
9. Lipid, obesity, nutrition, sleep apnea and fatty liver
10. Sodium and water disorders

Two years curriculum alphabetical order

Autoimmune polyendocrine syndromes

1. Polyglandular autoimmune syndromes.
2. The Schmidt syndrome.

Adrenal disorders

3. Diagnosis and treatment of primary aldosteronism: practical clinical perspectives.
4. Screening for adrenal-endocrine hypertension.
5. Update in adrenal venous sampling for primary aldosteronism.
6. Clinical characteristics of aldosterone and cortisol-coproducing adrenal adenoma in primary aldosteronism.
7. The ratios of aldosterone / plasma renin activity (ARR) versus aldosterone / direct renin concentration (ADRR)
8. Pathogenesis of familial hyperaldosteronism Type II: New concepts involving anion Channels.
9. Case detection and localization of aldosteronism.
10. Mineralocorticoids and mineralocorticoid excess syndromes.
11. Glucocorticoid remediable aldosteronism.
12. Refining the definitions of biochemical and clinical cure for primary aldosteronism using the primary aldosteronism surgical outcome (paso) classification system.
13. Aberrant G-protein coupled hormone receptor in adrenal diseases.
14. ACTH-independent macronodular adrenocortical hyperplasia.
15. Adrenocorticotropic hormone assay.
16. ACTH resistance syndrome.
17. Diagnostic performance of adrenal biopsy.
18. Circadian endocrine rhythms: the hypothalamic–pituitary– adrenal axis and its Actions.
19. Aldosterone- and cortisol-co-secreting adrenocortical adenoma.
20. Mccune-Albright syndrome.
21. Measurement of cortisol in human hair.
22. Adrenal fatigue does not exist.
23. Adrenal hemorrhage.
24. Adrenal imaging and intervention.
25. Adrenal insufficiency

26. Autoimmune Addison's disease.
27. Management of hypertension and heart failure in patients with Addison's disease.
28. Central hypoadrenalism
29. Multisteroid LC–MS/MS assay for glucocorticoids and androgens and its application in Addison's disease.
30. DHEA-S and adrenal insufficiency.
31. Management issues with exogenous steroid therapy.
32. Once-daily, dual-release hydrocortisone in patients with adrenal insufficiency
33. Evaluation of adrenal function in critically ill.
34. Pitfalls in the interpretation of the cosyntropin stimulation test for the diagnosis of adrenal insufficiency.
35. Cortisol: ACTH ratio to test for primary hypoadrenalism.
36. Predicting recovery of the hypothalamic-pituitary-adrenal axis after prolonged glucocorticoid use.
37. Surgical therapy of adrenal tumors.
38. Management of adrenal incidentaloma.
39. Practical CT Adrenal Imaging.
40. CT and MRI of adrenal gland pathologies.
41. Lipid poor adrenal mass.
42. Optimal diagnosis of adrenal masses.
43. Adrenocortical carcinoma.
44. Bilateral adrenal lesions.
45. Myelolipomas and other fatty tumors of the adrenals.
46. Primary adrenal lymphoma.
47. Laparoscopic partial adrenalectomy.
48. Modern Management of pheochromocytoma and paraganglioma.
49. Changing behavior of pheochromocytoma.
50. Adrenocortical adenoma or pheochromocytoma.
51. Subclinical pheochromocytoma
52. Selective versus non-selective alpha-blockade prior to laparoscopic adrenalectomy for pheochromocytoma.
53. Diagnosis and management of congenital adrenal hyperplasia in children and adults.
54. Testicular adrenal rest tumor (TART) in congenital adrenal hyperplasia.
55. Other adrenal rest tumor in congenital adrenal hyperplasia
56. Non-classic congenital adrenal hyperplasia.
57. Prenatal diagnosis of congenital adrenal hyperplasia.

58. Classic congenital adrenal hyperplasia and its impact on reproduction.
59. Fertility in patients with nonclassical congenital adrenal hyperplasia
60. Monitoring of therapy in congenital adrenal hyperplasia.
61. Genetics of congenital adrenal hyperplasia and genotype-phenotype correlation.
62. Adrenal Cushing syndrome.
63. Bilateral adrenalectomy for Cushing's syndrome: Pros and cons.
64. Cushing's disease pituitary surgery versus adrenalectomy.
65. ACTH producing adenomas: Cushing's disease.
66. The role of the desmopressin test in the diagnosis and follow-up of Cushing's syndrome.
67. Ectopic ACTH syndrome.
68. Late-night salivary cortisol as a screening test for Cushing's syndrome.
69. Hypercortisolism in type 2 diabetes.
70. Bilateral inferior petrosal sinus sampling.
71. Medical therapy for cushing's syndrome in the twenty-first century.
72. Quality of life in Cushing's disease: A long term issue
73. Octreotide trial in Cushing syndrome.
74. Bone Health in patients with Cushing's Syndrome.
75. Macronodular Adrenal Hyperplasia.
76. ACTH-independent macronodular adrenocortical hyperplasia.
77. Primary pigmented nodular adrenocortical disease (PPNAD).
78. Role of aberrant hormone receptors.
79. Differentiation of pathologic/neoplastic hypercortisolism (Cushing's syndrome) from physiologic/non-neoplastic hypercortisolism (formerly known as pseudo-Cushing's syndrome)
80. Subclinical Cushing's syndrome-Mild autonomous cortisol excess (MACE).

Calcium and bone health

81. Screening to prevent osteoporotic fractures.
82. Bisphosphonates in the treatment of osteoporosis.
83. Bisphosphonate treatment in osteoporosis: Optimal duration of therapy and the incorporation of a drug holiday
84. Bisphosphonate and denosumab therapy: Fields of application.
85. Bisphosphonate drug holiday: who, when and how long.
86. Secondary osteoporosis: Pathophysiology & diagnosis.
87. Osteoporosis treatment: When to discontinue and when to re-start.

88. Comparison of the effect of denosumab and alendronate on BMD and biochemical markers of bone turnover in postmenopausal women
89. Comparison of denosumab vs. bisphosphonates in osteoporosis patient
90. Update on bone anabolics in osteoporosis treatment: Rationale, current status, and perspectives
91. Diabetes mellitus and bone metabolism
92. Frailty and risk of fractures in patients with type 2 diabetes.
93. Investigating hypocalcemia.
94. Surgical hypoparathyroidism.
95. Hypoparathyroidism and Pseudohypoparathyroidism.
96. Bone turnover: Biology and assessment tools
97. Subclinical and asymptomatic parathyroid disease: implications of emerging data
98. Parathyroid hormone-related protein.
99. The role of intra-operative parathyroid hormone estimation in the surgical management of patient with parathyroid adenoma.
100. Chronic kidney disease–mineral and bone disorder.
101. Fragility fractures & their impact on older people.
102. Glucocorticoid-induced osteoporosis.
103. Advances in treatment of glucocorticoid-induced osteoporosis
104. Oncogenic osteomalacia.
105. Hypophosphatasia.
106. Osteoporosis in men.
107. Osteoporosis in premenopausal women.
108. Use of trabecular bone score (TBS) as a complementary approach to dual- energy x-ray bsorptiometry (DXA) for fracture risk assessment in clinical practice.
109. Hypercalcemia with undetectable parathormone levels.
110. Calcium-creatinine clearance ratio is not helpful in differentiating primary hyperparathyroidism from familial hypercalcemic hypocalciuria
111. Hypercalcemia and primary hyperparathyroidism.
112. 24-Hour Urinary Calcium in primary hyperparathyroidism.
113. Paget's disease of bone.
114. Hypophosphatemic rickets.
115. Nutritional rickets,
116. Vitamin D supplementation and musculoskeletal health.

117. Mass spectrometry assays of vitamin D metabolites.
118. Vitamin D toxicity.
119. Cinacalcet treatment of primary hyperparathyroidism.
120. CYP24A1 mutations in a cohort of hypercalcemic patients.
121. Familial hypocalciuric hypercalcemia and related disorders.
122. Update in parathyroid imaging.
123. Primary hyperparathyroidism.
124. Primary hyperparathyroidism, hypercalciuria, and bone recovery after parathyroidectomy.
125. Intraoperative parathyroid hormone monitoring in guiding adequate parathyroidectomy.
126. Surgical management of parathyroid disease.
127. Normocalcemic primary hyperparathyroidism.
128. Diagnostic accuracy of 4D-CT for parathyroid adenomas and hyperplasia.
129. A novel technology for localization of parathyroid adenoma.
130. Parathyroid carcinoma
131. Idiopathic hypercalciuria and nephrolithiasis.
132. Diagnostic approach to hypercalciuria.
133. Inactivating pthpthrp signalling disorder (ippsd).
134. Parathyroid hormone targets in chronic kidney disease and managing severe hyperparathyroidism.
135. Parathyromatosis and the challenge of treatment

Celiac disease

136. Endocrine manifestations in celiac disease
137. Celiac disease and type 1 diabetes

Contraception

138. Male hormonal contraception
139. Ocps

Diabetes mellitus

140. Alfa cells glucagon as new target in diabetes.
141. Alpha cell function in type 1 diabetes.
142. The role of glucagon on type 2 diabetes at a glance.
143. Intranasal glucagon for hypoglcyemia in diabetic patients. An old dream is becoming reality.
144. Acarbose add-on therapy in patients with type 2 diabetes mellitus

145. Approach to the patient with atypical diabetes
146. The Time is right for a new classification system for diabetes: Rationale and implications of the b-cell–centric classification schema.
147. Management of diabetes in dialysis patients.
148. Prevalence and comorbidities of double diabetes.
149. Obesity, autoimmunity, and double diabetes in youth.
150. Monogenic diabetes.
151. Neonatal diabetes mellitus.
152. Autoantibodies in diabetes.
153. Breakfast skipping and the risk of type 2 diabetes.
154. Glucocorticoid-induced hyperglycemia.
155. Critical review of the evidence underlying management of glucocorticoid-induced hyperglycemia.
156. Ketosis-prone diabetes (flatbush diabetes): An emerging worldwide clinically important entity
157. Syndromes of ketosis-prone diabetes mellitus.
158. Latent autoimmune diabetes.
159. Post- transplant diabetes mellitus in patients with solid organ transplants.
160. Effect of long-term exposure to air pollution on type 2 diabetes mellitus risk.
161. Type 3c diabetes associated with pancreatic disease.
162. Shift work and diabetes.
163. Diabetes and cancer: evaluating the temporal relationship between type 2 diabetes and cancer incidence.
164. Diabetic cardiomyopathy.
165. Diagnosis and clinical implications of diabetes in liver cirrhosis.
166. Diabetes management with severe mental illnesses and type 2 diabetes.
167. Cognitive decline and dementia in diabetes mellitus: mechanisms and Clinical implications.
168. Addressing diabetes distress in clinical care.
169. Management of gastroparesis.
170. Cardiovascular autonomic neuropathy.
171. Diabetes mellitus and heart failure.
172. Diabetes and liver disease: An ominous association.
173. Constraints and challenges in access to insulin: a global perspective.
174. Economic costs of diabetes.
175. Diabetes and atherosclerotic cardiovascular disease.

176. Effects of aspirin for primary prevention in persons with diabetes mellitus.
177. Durable change in glycemic control following intensive management of type 2 diabetes in the ACCORD clinical trial.
178. Atrial fibrillation and type 2 diabetes.
179. Clinical implications of cardiovascular outcome trials in type 2 diabetes.
180. Cardiovascular risks in type 2 diabetes and the interpretation of cardiovascular outcome trials.
181. Translating recent results from the cardiovascular outcomes trials into clinical practice.
182. Management of patients with type 2 diabetes mellitus and acute coronary syndrome.
183. SGLT2 inhibitors and mechanisms of cardiovascular benefit.
184. Dapagliflozin and cardiovascular outcomes in type 2 diabetes.
185. Effects on clinical outcomes of adding dipeptidyl peptidase-4 inhibitors
186. Versus sulfonylureas to metformin therapy in patients with type 2 diabetes mellitus.
187. Empagliflozin and cardio-renal outcomes in patients with type 2 diabetes.
188. GLP-1 receptor agonists and cardiovascular disease: drug-specific or class effects.
189. Once-weekly GLP-1R agonists.
190. Generalizability of glucagon-like peptide-1 receptor agonist cardiovascular outcome trials.
191. Cardiovascular actions and clinical outcomes with glucagon-like peptide-1 receptor agonists vs. dipeptidyl peptidase-4 inhibitors.
192. Pathophysiology, and management of heart failure in diabetes mellites
193. SGLT-2 inhibitors and GLP-1 receptor agonists for nephroprotection and cardioprotection in patients with diabetes mellitus and chronic kidney disease.
194. Efficacy and safety of dual SGLT 1/2 inhibitor sotagliflozin in type 1 diabetes
195. Metformin in heart failure patients.
196. The prospective pioglitazone clinical trial in macrovascular events (proactive).
197. Comparative effectiveness of sulfonylureas and metformin monotherapy on cardiovascular events in type 2 diabetes mellitus.
198. Do sulfonylureas still have a place in clinical practice?
199. Sulfonylureas as second line treatment for type 2 diabetes.
200. Adherence to insulin treatment in insulin-naïve type 2 diabetic patients initiated on different insulin regimens.
201. AUTONOMY: The first randomized trial comparing two patient-driven approaches to initiate and titrate prandial insulin lispro in type 2 diabetes.
202. Psychological reluctance to insulin therapy: as an illness side of diabetes mellitus.

203. Optimal prandial timing of bolus insulin in diabetes management.
204. Insulin management strategies for exercise in diabetes.
205. Noninsulin diabetes medications.
206. Basal insulin and cardiovascular and other outcomes in dysglycemia.
207. Free and fixed-ratio combinations of basal insulin and GLP-1 receptor agonists versus basal insulin intensification in type 2 diabetes.
208. A practical approach and algorithm for intensifying beyond basal insulin in type 2 diabetes.
209. Biosimilar insulins: What do you need to know?
210. New insulin delivery recommendations.
211. Efficacy and safety of fast-acting insulin aspart in people with type 1 diabetes.
212. Insulin therapy in diabetes.
213. Insulin analogs are they worth.
214. Efficacy and safety of ideglira versus basal-bolus insulin therapy in patients with type 2 diabetes uncontrolled on metformin and basal insulin.
215. When basal insulin is not enough.
216. Insulin injection site adverse effect.
217. Higher concentration insulins: an overview of clinical considerations.
218. Oral insulin: time to rewrite the textbooks.
219. HOMA and Matsuda indices of insulin sensitivity.
220. Gut microbiota and type 2 diabetes mellitus.
221. The influence of the microbiome on type 1 diabetes.
222. Diagnosing diabetes mellitus — best practices still unclear.
223. HbA1c versus glucose testing: a comparison.
224. Utility of HbA1c and fasting plasma glucose for screening of Type 2 diabetes.
225. Risk models and scores for type 2 diabetes.
226. Hemoglobin glycation index as risk factor for cardiovascular disease in type 2 diabetes patients.
227. Sickle-cell trait and diagnosis of type 2 diabetes.
228. Diagnostic dilemma of HbA1c detection in presence of a hemoglobinopathy
229. Is HbA1c the right outcome for studies of diabetes?
230. Challenges and opportunities in the prevention and management of diabetic foot ulcers.
231. Offloading techniques for diabetic foot.
232. Update on management of diabetic foot ulcers.

233. Debridement of diabetic foot ulcers.
234. Charcot neuroarthropathy.
235. Cost of diabetic foot.
236. Efficacy of hyperbaric oxygen therapy in diabetic foot ulcers.
237. Peripheral arterial disease in diabetes.
238. Hand function in people with type 1 and type 2 diabetes.
239. Diabetic ketoacidosis and hyperosmolar crisis.
240. Glycemic variability in diabetes: clinical and therapeutic implications.
241. 1,5 Anhydroglucitol evaluation as glycemic control parameter.
242. Nonglycemic targets in diabetes.
243. Achievement of guideline targets for blood pressure, lipid, and glycemic control in type 2 diabetes.
244. Metabolic memory phenomenon in diabetes mellitus.
245. Serum fructosamine and glycated albumin.
246. Glycemic management in patients with diabetes in hospital.
247. Effects of perioperative tight glycemic control on postoperative outcomes
248. diabetic nephropathy.
249. Metformin-associated lactic acidosis: Current perspectives on causes and risk.
250. The diabetic lung - a new target organ?
251. The management of preexisting (type 1 and type 2) diabetes mellitus in pregnancy.
252. Diabetes and pregnancy.
253. Screening and diagnosing diabetes in pregnancy
254. Comparison of the screening tests for gestational diabetes mellitus between “one-step” and “two-step.
255. Postpartum glucose intolerance.
256. Diabetic retinopathy.
257. Dyslipidemia and diabetic retinopathy.
258. Prevention or delay of type 2 diabetes.
259. Sustained spontaneous partial remission in a pediatric patient with type 1 diabetes.
260. Remission of type 2 diabetes.
261. Diabetes self-management education.
262. Multiple benefits of targeting inflammation in the treatment of type 2 diabetes.
263. Modern strategies for management of glycemia in type 1 diabetes.
264. Impaired hypoglycemia awareness in type 1 diabetes.

265. Diabetes mellitus: moving toward non glucose centric approach.
266. Closed-loop insulin delivery for type 1 diabetes.
267. Insulin pump risks and benefits.
268. Continuous glucose monitoring efficacy in routine use.
269. Monitoring glycemic control in patients with diabetes mellitus.
270. Real-world use of self-monitoring of blood glucose in people with type 2 diabetes.
271. Stem cells in the treatment of diabetes mellitus.

Diet and nutrition

272. Association between intake of non-sugar sweeteners and health outcomes.
273. Carbohydrate counting.
274. The dose adjustment for normal eating (DAFNE) education programme.
275. Low-carbohydrate diets in type 2 diabetes.
276. Dietary guidelines in type 2 diabetes: the Nordic diet or the ketogenic Diet?

Disorders of sex development (DSD)

277. Steroid 5α-reductase deficiency.
278. Diagnosis of 17-beta hydroxysteroid dehydrogenase III deficiency.
279. 46,XX DSD.
280. 46,XY DSD.
281. Ambiguous genitalia (Atypical genitalia).
282. Androgen insensitivity syndrome.
283. Gender Identity in patients with congenital adrenal hyperplasia.
284. Care of the patient undergoing sex reassignment surgery (SRS).
285. Pure gonadal dysgenesis.
286. Klinefelter syndrome.
287. Turner syndrome.

Endocrine disorder chemoimmunotherapy

288. Immune checkpoint inhibitor therapy induced hypophysitis.
289. Cancer immunotherapy-induced endocrinopathies.
290. Expert opinions on endocrine toxicity induced by new anticancer therapies:

Precautions to be taken in performing and interpreting hormonal assays under immunotherapy.

Endocrine disruptors (endocrine disrupting)

291. Human infertility: are endocrine disruptors to blame?
292. History of the obesogen field.

Endocrine survivors of cancer

293. Bone health during endocrine therapy for cancer.
294. Endocrine late effects in survivors of cancer in adolescence and young adulthood.
295. Hormone replacement therapy in cancer survivors.
296. Preservation of fertility in patients with cancer.

Erectile dysfunction

297. Erectile dysfunction.
298. Phosphodiesterase-5 (PDE5) inhibitors for erectile dysfunction in patients with diabetes mellites.
299. Treating erectile dysfunction when PDE5 inhibitors fail.

Ethics

300. Ethical guidelines for peer reviewers.
301. The ethics of conducting clinical trials.

Hypertension

302. A Comparison of the 2017 American college of cardiology/American heart association blood pressure guideline and the 2017 American diabetes association diabetes and hypertension.
303. Do we need a new definition of hypertension after SPRINT?
304. Initial treatment of hypertension in patient with diabetes mellitus.
305. Endocrine hypertension.

Hypoglycemia

306. Hypoglycemia in diabetes
307. Hypoglycemia among insulin-treated patients with diabetes.
308. Congenital hyperinsulinism induced hypoglycemia.
309. Diagnosis and management of hyperinsulinemia hypoglycemia.
310. Hypoglycemia unawareness.
311. Insulin autoimmune syndrome.
312. Neonatal hypoglycemia.

Hyperandrogenism

313. Ferriman–Gallwey scoring system for hirsutism.
314. Hirsutism.
315. Interobserver variations hirsutism.
316. Management of postmenopausal virilization.
317. Evaluation and treatment of hirsutism in premenopausal women.
318. Androgenetic Alopecia.
319. HAIR-AN syndrome.
320. Postmenopausal ovarian hyperthecosis.
321. Postmenopausal hyperandrogenism.

Hypergonadotropic hypogonadism

322. Familial Hypergonadotropic hypogonadism.

Hypogonadism and puberty

323. Functional hypothalamic amenorrhea.
324. Congenital hypogonadotropic hypogonadism.
325. Kallmann syndrome.
326. Acquired hypogonadotropic hypogonadism.
327. Cryptorchidism.
328. Hypogonadism and diabetes mellitus.
329. Inducing puberty.
330. Fertility in hypogonadotropic hypogonadism.
331. Hypogonadism due to glucocorticoids.
332. Testosterone and androgens in women.
333. Cardiovascular outcomes testosterone.

Infertility reproductive HRT and women health

334. Anti-Mullerian hormone.
335. Dyspareunia.
336. Fertility induction.
337. Infertility.
338. IVF-ART.
339. Menopause.
340. Premature ovarian insufficiency.
341. Sertoli cell-only syndrome.

Kidney stone

342. Medical management of renal stone.
343. Recurrent kidney stone former.

Lipid

344. Managing dyslipidemia in type 2 diabetes.
345. Atherogenic dyslipidemia.
346. Familial chylomicronemia syndrome.
347. PCSK9 inhibitors in familial hypercholesterolemia.
348. Statin intolerance.

Multiple endocrine neoplasia

349. Multiple endocrine neoplasia type 1.
350. Multiple endocrine neoplasia syndromes.

Metabolic syndrome

351. Hypertriglyceridemic Waist.
352. Lean Metabolic Syndrome.

Neuroendocrine Tumors (nets)

353. Gastrointestinal manifestations of neuroendocrine tumors: their investigation and management.
354. Management of neuroendocrine tumors in the twenty-first century.

NASH NAFLD

355. Cause, pathogenesis, and treatment of nonalcoholic steatohepatitis
356. Fatty kidney.
357. Fatty pancreas.

Obesity

358. Bariatric and metabolic surgery
359. The impact of bariatric surgery on type 2 diabetes mellitus.
360. Obesity pharmacotherapy.
361. Metabolically healthy obesity.
362. Sleeve gastrectomy.

PCOS

363. Polycystic ovary syndrome in adolescence: diagnostic and therapeutic strategies
364. Diagnosis and follow-up of type 2 diabetes in women with PCOS. A role of OGTT?
365. Polycystic Ovarian Morphology.
366. Hyperprolactinemia in PCOS.

Peripheral neuropathy

367. Corneal confocal microscopy as a tool for detecting diabetic polyneuropathy in a cohort with screen-detected type 2 diabetes
368. Diabetic peripheral neuropathy
369. Insensate neuropathy
370. Sensate(painful) neuropathy

Pituitary disorders

371. Diabetes Insipidus.
372. Genetics of Diabetes Insipidus.
373. Nephrogenic Diabetes Insipidus.
374. The clinical management of hyponatraemia.
375. Vasopressin receptor antagonists.
376. Water balance disorders after neurosurgery.
377. Empty sella syndrome.
378. Hypophysitis.
379. Hypopituitarism and mortality.
380. Imaging of the pituitary.
381. Sheehan syndrome.
382. Traumatic brain injury.
383. Aggressive pituitary tumors.
384. Cavernous invasion.
385. Clinically non-functioning pituitary adenomas.
386. Craniopharyngioma.
387. Familial pituitary adenoma.
388. Gonadotroph adenoma.
389. Malignant pituitary tumor.
390. Pituitary adenoma.
391. Pituitary incidentaloma.

392. Radiosurgery.
393. Rathke cleft cysts vs. cystic pituitary adenomas.
394. Rathke cleft cyst or simple cyst.
395. Efficacy of transsphenoidal surgery for pituitary adenoma
396. TSH-secreting pituitary adenomas.
397. Acromegaly.
398. Acromegaly and pregnancy.
399. Discrepancy growth hormone and IGF-I.
400. Dose escalation of octreotide-LAR.
401. Antipsychotic-induced hyperprolactinemia.
402. Cabergoline once weekly or twice weekly.
403. Hyperprolactinemia and the regular menstrual cycle in asymptomatic women.
404. Hyperprolactinemia and galactorrhea
405. Psychological effects of dopamine agonist treatment in patients with hyperprolactinemia and prolactin-secreting adenomas.
406. Invasive prolactinomas.
407. Macroprolactinemia.
408. Post prolactinoma infertility.
409. Prolactinoma CSF rhinorrhea and dopamine agonist.
410. Resistant prolactinoma.

Puberty disorders

411. Adrenarche – physiology, biochemistry and human disease.
412. Breast development girls.
413. Precocious puberty.
414. Testotoxicosis (familial male-limited precocious puberty)
415. Central precocious puberty.

Ramadan

416. Diabetes and Ramadan.
417. Hypothyroidism and Ramadan

Sport hormones Doping

418. Diagnosis and management of anabolic androgenic steroid use
419. Development of Selective Androgen Receptor Modulators (SARM)

Short stature and growth hormone

420. Adherence to growth hormone therapy.
421. Growth hormone deficiency diagnosis in children and adults.
422. Idiopathic short stature.
423. Priming before growth hormones.

Thyroid disorders

424. Amiodarone thyroid disease.
425. Autoimmune thyroid diseases.
426. Iodine deficiency.
427. Non thyroidal illness.
428. Resistance to thyroid hormone.
429. Subclinical thyroid disorder.
430. Assays for thyroid-stimulating hormone.
431. Biotin (B7) and thyroid.
432. Thyroid autoantibodies.
433. TSH Thyrotropin assay interference.
434. Euthyroid hyperthyroxinemia .
435. Hyperthyroidism.
436. Long-term antithyroid drug treatment.
437. Subclinical hyperthyroidism.
438. Toxic multinodular goiter.
439. Thyroid eye disease.
440. Thyroid pregnancy.
441. Trimester specific reference ranges.
442. Hypothyroidism.
443. Subclinical hypothyroidism.
444. Thyroxine malabsorption.
445. Thyroiditis.

446. Thyroid Imaging.
447. Thyroid nodule.
448. Thyroid cancer.
449. Thyroid surgery.

Transgender

450. Primary Care in Transgender Persons.
451. Hormone therapy in transgender adults.

Appendix C Laboratory Tests and Protocols

Minimum Laboratory tests and protocols to be done over 2 years by the candidate.

NB: the laboratory units should be conventional units with optional SI units using American English language

Daily tests for 22 days per month over 12 months (no. of tests/day)

Diabetes

- Glucose (fasting, random) plasma.(300 tests/day)
- Glucose tolerance test(GTT) 2 hour 75 gram plasma.(3 tests/day)
- GTT 3-hour 100-gram plasma.
- 50 gram glucose challenge test plasma.
- Microalbuminuria (UAC)urine. (30 tests/day)
- Urine dipstick. (300 tests/day)
- HbA1c (BioRad D10)-whole blood. (300 tests/day)
- C-peptide-serum. {Electrochemiluminescence (ECL)}. (3tests/day)
- Insulin-serum. ECL.(3 tests/day)
- Proinsulin -serum. ECL.(3 tests/day)
- Beta **beta-hydroxybutyric** acid-serum.(3 tests/day)

Pancreatic antibodies

- Glutamic acid decarboxylase (GAD) -serum. ELISA/ ECL.(10 tests/day)
- Islet cell antibodies (ICA) -serum. ELISA.(10 tests/day)
- Insulin antibodies (IAA) -serum. ELISA.(10 tests/day)

- Tyrosine phosphatase antibodies-serum. ELISA (1 test/day)

Pituitary

- Growth hormone-serum-serum. ECL.(5 tests/day)
- Insulin like growth factor-1 (IGF-1) -serum. ECL .(5 tests/day)
- IGF Binding Protein-3 (IGFBP-3) serum . ECL.(5 tests/day)
- Prolactin and Prolactin in dilution -serum. ECL.(15 tests/day)

Thyroid

- TSH-serum. ECL .(50 tests/day)
- Free T4-serum. ECL.(30 tests/day)
- Total T4-serum. ECL.(5 tests/day)
- Total T3-serum. ECL.(2 tests/day)
- rT3-serum. ECL.(2 tests/day)
- Thyroglobulin level. -serum. ECL.(2 tests/day)

Thyroid antibodies

- Thyroid peroxidase antibody (TPO). Serum. ECL.(10 tests/day)
- Thyroglobulin antibodies. Serum. ECL.(2 tests/day)
- Thyroid receptor antibodies (TRAB). Serum. ECL.(2 tests/day)

Adrenal

- Adrenocorticotrophic Hormone (ACTH) – plasma. ECL .(15 tests/day)
- Cortisol -serum. ECL. (15 tests/day)
- Cortisol, free - Urine 24 hr. ELISA/ ECL.(1 tests/week)
- Cortisol –saliva. ELISA/ ECL.(2 tests/day)
- Sex hormone-binding globulin (SHBG) -serum. ECL.(10 tests/day)
- 17-Hydroxyprogesterone -serum. ELISA.(2 tests/day)
- Dehydroepiandrosterone sulfate (DHEA-S)-serum. ECL .(15 tests/day)
- Androstenedione-serum. ECL.(2 tests/day)

- Normetanphrine - plasma. ELISA. (1 tests/day)
- Metanephrine - plasma. ELISA.(1 tests/day)
- Renin concentration - plasma. ELISA.(1 tests/day)
- Aldosterone-serum. ELISA.(1 tests/day)
- 21-Hydroxylase Antibody-serum. ELISA.(1 test/day)

Reproductive Endocrinology

- Testosterone, total (morning sample) -serum. ECL.(10 tests/day)
- Testosterone, free-serum. ECL.(5 tests/day)
- Estradiol (E2) -serum. ECL.(10 tests/day)
- Follicle-stimulating hormone (FSH) -serum. ECL(10 tests/day)
- Luteinizing hormone (LH) -serum. ECL(10 tests/day)
- Human chorionic gonadotropin (B-HCG) -serum. ECL(1 test/day)
- Progesterone -serum. ECL(1 tests/day)
- Inhibin b- serum. ECL(1 tests/day)
- Anti-Müllerian Hormone(AMH)-(1 test/day)

Lipid

- Cholesterol-total-serum .(25 tests/day)
- LDL-C-serum .(25 tests/day)
- HDL -C serum .(25 tests/day)
- LDL-C- direct estimation-serum. (25 tests/day)
- Triglycerides-serum. (25 tests/day)
- VLDL-C-serum. (25 tests/day)

Bone and mineral

- Parathyroid hormone (PTH) -serum. ECL(10 tests/day)
- 25-OH-vitamin D-serum. ECL(20 tests/day)
- Calcium-serum. (25 tests/day)
- Calcium (ionized) serum. (25 tests/day)
- Po4 -serum. (25 tests/day)

- Albumin-serum. (25 tests/day)
- Protein-serum. (25 tests/day)
- Alkaline phosphatase-serum. (25tests/day)
- Osteocalcin-serum (1test/day).
- Cross-linked N-telopeptide of type 1 collagen -serum (1test/day).

Tumor markers

- Calcitonin -serum. ELISA(1test/day)
- Gastrin-serum. ELISA(1test/day)
- Prostate-specific antigen-serum. (1 test/day)
- α-Subunit of pituitary glycoprotein-serum. (1 tests/day)

Miscellaneous

- Anti-tissue transglutaminase antibodies (TTGA) IgA-Serum. (1 test/day)
- Potassium- serum. (25 tests/day)
- Sodium- serum. (25 tests/day)
- Chloride- serum. (25 tests/day)
- ALT- serum. (25 tests/day)
- CPK- serum. (25 tests/day)
- Bicarbonate-serum. (10 tests/day)
- Blood Urea nitrogen(BUN)- serum . (25 tests/day)
- Creatinine- serum. (25 tests/day)
- Osmolality - plasma estimated. (25 tests/day)
- Urine calium-24 hour urine. (2 tests/day)

Dynamic Testing

- Insulin-hypoglycemia stimulation (insulin tolerance test).
- Gonadotropin releasing hormone (GnRH) stimulation test.
- GH stimulation tests (clonidine, exercise, glucagon).
- ACTH (cosyntropin) stimulation test).
- Dexamethasone suppression test.

- High-Dose dexamethasone suppression test overnight 8 mg.
- Water deprivation test.
- Desmopressin stimulation test.
- GnRH Stimulation Test.
- Rapid thyroxine absorption (tolerance) test.
- hCG stimulation test.
- HOMA-IR Homeostasis Model of Assessment - Insulin Resistance.

N.B.: Some of the tests are done as part of protocols of dynamic simulations or suppression test.