Requirements for Board Certification of the Division of Endocrine Surgery (DES)

Endocrine Surgery

This curriculum is aimed to form the basis for accreditation to a high level of competence in Endocrine Surgery.

Candidates for accreditation in endocrine surgery must have in addition to a proper knowledge and experience of the principles and practice of general surgery:

A) a firm grounding in the basic and clinical science aspects of the organs and diseases with they should be familiar (Appendix A)
B) a training in an endocrine surgical unit for a minimum of 2 years (Appendix B)
C) an apprecition of relevant current research and clinical developments gleaned from attendance of at least 4 specialist meetings or postgraduate courses (Appendix C)
D) a defined minimum of operative experience in endocrine surgery (Appendix D).

APPENDIX A:
Basic and Clinical Science Curriculum

Basic science curriculum
* Understanding of the development of the endocrine glands and a detailed knowledge of their anatomy including variations in position.
* Endocrine physiology as outlined below and pathogenesis of endocrine tumors.
* Possibilities and limitations of detection devices used clinically and in research including knowledge in molecular biology and assay methods

Clinical science curriculum
* Understanding of the principles of endocrine investigation (including history, clinical examination and biochemical, radiological, isotopic, cytological and histological investigations and its limitations)
* Knowledge in interpretation of cervical ultrasound findings
* Strategies for minimizing intervention and costs
* Knowledge of actual controversies in indication and extent of endocrine procedures

Topics
1. Thyroid
   * 1.1. Physiology and pathophysiology

   * 1.2. Embryology, pathology, cytology, classifications, genetics
      embryological development of the thyroid gland; histology of benign thyroid disorders; classification of thyroid tumors, FNA, classification of FNA; limitations of FNA; TNM Staging; genetics of hereditary thyroid malignancies (PTC, MTC)

   * 1.3. Clinical presentation and clinical workup
      solitary thyroid nodule, goiter, hyperthyroidism (Plummer's disease, Graves' disease), thyroiditis (Hashimoto, De Quervain, Riedel), well differentiated thyroid cancer, MTC, UTC; thyroglossal cyst; ultrasound; radionuclide-imaging

   * 1.4. Perioperative management
      preoperative medical therapy of hyperthyroidism, thyroxine-replacement therapy, laryngoscopy

   * 1.5. Indications, operative techniques, management of complications
      alternative medical or radioisotope therapies, thyroidectomy, lymphadenectomy (central/lateral), techniques for preservation of the recurrent laryngeal nerve/external branch of the superior laryngeal nerve and parathyroid function, management of complications (recurrent nerve palsy, postoperative hypoparathyroidism, postoperative hemorrhage), retrosternal goiter, "minimally invasive" techniques and their controversies, operative strategies of recurrent disease

2. Parathyroids
   * 2.1. Physiology and pathophysiology
      understanding of the metabolism of calcium, magnesium and of phosphate. Activity of PTH on kidney, gut and bone. D Vitamins and its function. Measurement of PTH and an appreciation of the different terminal components. Functions of nephrogenic cyclic AMP in parathyroid physiology

   * 2.2. Embryology, anatomy, pathology, genetics
      embryological development and migration of parathyroid glands; typical, atypical and ectopic localisations; Histopathologic morphology of pHPT/HPT; genetics of familial forms of pHPT

   * 2.3. Clinical presentation and clinical workup
      clinical presentation of pHPT/HPT; lithium-induced HPT; bone mineral density; ultrasound; Sestamibi-scan

   * 2.4. Perioperative management
      management of hypercalcemic crisis, management of preoperative vitamin D insufficiency; postoperative supplementation medication, workup of recurrent HPT

   * 2.5. Indications, operative techniques, management of complications
      controversies and indication in asymptomatic pHPT; principles of RPTH-monitoring and interpretations of its results, role of frozen section, bilateral neck exploration, focused parathyroidectomy; operative strategies in pHPT and familial/lithium-induced HPT; management of parathyroid carcinoma, indication and management of recurrent HPT

3. Adrenals
   * 3.1. Physiology and pathophysiology
      Adrenal cortex: the biosynthesis of glucocorticoids. Physiology of glucocorticoids including their relevance to immunological mechanisms and would healing. Metabolism of cortisol and knowledge of those metabolites which are measured in clinical practice. Physiology of adrenal

**Adrenal medulla:** metabolic pathways of adrenaline and noradrenaline production. Assessment of adrenal medullary function. Action on aldosterone on distal tubule function. Aldosterone response to alterations in electrolyte levels.

3.2. Pathology, classifications, genetics
Classification of adrenal tumors; histopathological morphology of hyperaldosteronism, hypercortisolism; classification of adrenocortical carcinoma; genetics of familial adrenal disease (MEN1, MEN2, VHL, SDHB, SDHD, NF1)

3.3. Clinical presentation and clinical workup
Workup and management of incidentalomas; knowledge of tests of adrenal cortical function and adrenal responsiveness (dexamethasone suppression / ACTH stimulation test); diagnostic imaging (CT/MRI); specific radionuclide imaging; adrenal venous sampling.

3.4. Perioperative management
Preoperative medical treatment (hyperaldosteronism, pheochromocytoma/paraganglioma); perioperative steroid management in patients with hypercortisolism.

3.5. Indications, operative techniques, management for complications
Surgical approaches (conventional/endoscopic); concepts of subtotal adrenalectomy, bilateral adrenalectomy; adrenalectomy for metastasis, Addisonian crisis.

4. Pituitary
4.1. Physiology and pathophysiology
Structure, cells of origin, the basic metabolism and function of anterior pituitary hormones with no feedback loops (growth hormone and prolactin) and those with feedback loops. Corticotrophin releasing factor and its relationship to ACTH. Physiology of ACTH and TSH including diurnal variation. ACTH changes in response to stress, illness and trauma.

4.2. Clinical presentation and clinical workup
Cushing's syndrome, hyperprolactinemia, acromegaly

4.3. Therapy
5. Diffuse endocrine system of the gastro-entero-pancreatic tract
Principals of therapy in Cushing's syndrome, hyperprolactinemia, acromegaly

5. Diffuse endocrine system of the gastro-entero-pancreatic tract
5.1. Physiology and pathophysiology
Appreciation of the physiology and pathophysiology of the secretion of serotonin, histamine, gastrin, insulin, glucagon, pancreatic polypeptide, VIP, secretin and somatostatin. The identification of cells of origin of gut hormones by immunocytochemistry.

5.2. Embryology, pathogenesis, pathology, classifications, genetics
Origin and particularities of the different endocrine cell-types of the gastro-entero-pancreatic tract; TNM-staging; WHO-classification; proliferation indexes; genetics of MEN1

5.3. Clinical presentation and clinical workup
Clinical presentation of histamine- and serotonin-induced carcinoid syndrome, carcinoid tumors of the gut, ECLomas of the stomach, hypergastrinemia, hyperinsulinism; Ctossectional imaging and specific radionuclide-imaging

5.4. Perioperative medical management
Somatostatin analogs; PPI;

5.5. Indications, operative techniques
For carcinoid tumors of the gut, for sporadic or MEN1-associated hypergastrinemia, for hyperinsulinism

5.6. Palliative concepts in the management of neuroendocrine tumors
Biotherapy; chemotherapy, principals in the management of metastatic liver disease (surgery, radiofrequency ablation, chemoembolization), peptide receptor radionuclide therapy

APPENDIX B
Requirements for an endocrine surgical unit
* Under the responsibility of a specialized endocrine surgeon (preferably certified by the European Board of Surgery Qualification)
* At least 150 endocrine surgical procedures per year
* In house endocrinologist or endocrine department
* Multidisciplinary board or clinic at least monthly
* Access to:
  * Scintigraphic investigations (sestamibi, MIBG, SRS)
  * Radiological investigations (US, CT, MRI)
  * Fine needle aspiration and cytology
  * Hormone assays and genetic investigations

APPENDIX C
Required attendance of at least 4 specialist meetings or postgraduate courses in endocrine surgery

Approved meetings and courses are
* ESES biennial meetings or workshops
* Annual/biennial meetings of national or international societies of endocrine surgeons (for example: AFCE, CAEK, BAETS, AAES, AsAES, IAES)
* Postgraduate courses in endocrine surgery (for example: IAES-courses)

APPENDIX D:
Recommended minimal operative experience
This operative experience will be assessed from a Log Book and must be achieved within the last 3 years before applying to the exam.
## Operations

<table>
<thead>
<tr>
<th>Operation</th>
<th>Performed</th>
<th>Assisted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thyroid resections</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Recurrent thyroid operation</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Central compartmental lymphnode clearance</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Lateral compartmental lymphnode clearance</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Parathyroidectomy in HPT</td>
<td>15*</td>
<td>20*</td>
</tr>
<tr>
<td>Adrenalectomy</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Resection for NET of the GI tract</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
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*) at least 10 bilateral explorations demanded