Endocrinology, Diabetes, and Metabolism
Certification Examination Blueprint

Purpose of the exam

The exam is designed to evaluate the knowledge, diagnostic reasoning, and clinical judgment skills expected of the certified endocrinologist in the broad domain of the discipline. The ability to make appropriate diagnostic and management decisions that have important consequences for patients will be assessed. The exam may require recognition of common as well as rare clinical problems for which patients may consult a certified endocrinologist.

Exam content

Exam content is determined by a pre-established blueprint, or table of specifications. The blueprint is developed by ABIM and is reviewed annually and updated as needed for currency. Trainees, training program directors, and certified practitioners in the discipline are surveyed periodically to provide feedback and inform the blueprinting process.

The primary medical content categories of the blueprint are shown below, with the percentage assigned to each for a typical exam:

<table>
<thead>
<tr>
<th>Medical Content Category</th>
<th>% of Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adrenal Disorders</td>
<td>10%</td>
</tr>
<tr>
<td>Pituitary Disorders</td>
<td>10%</td>
</tr>
<tr>
<td>Lipids, Obesity, and Nutrition</td>
<td>12%</td>
</tr>
<tr>
<td>Female Reproduction</td>
<td>7%</td>
</tr>
<tr>
<td>Male Reproduction</td>
<td>7%</td>
</tr>
<tr>
<td>Diabetes Mellitus and Hypoglycemia</td>
<td>24%</td>
</tr>
<tr>
<td>Calcium and Bone Disorders</td>
<td>15%</td>
</tr>
<tr>
<td>Thyroid Disorders</td>
<td>15%</td>
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<tr>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Exam questions in the content areas above may also address clinical topics in internal medicine, including some general pediatrics with an emphasis on adolescent medicine, that are important to the practice of endocrinology.
Exam format

The exam is composed of multiple-choice questions with a single best answer, predominantly describing patient scenarios. Questions ask about the work done (that is, tasks performed) by physicians in the course of practice:

- Making a diagnosis
- Ordering and interpreting results of tests
- Recommending treatment or other patient care
- Assessing risk, determining prognosis, and applying principles from epidemiologic studies
- Understanding the underlying pathophysiology of disease and basic science knowledge applicable to patient care

Clinical information presented may include various media illustrating relevant findings, such as diagnostic imaging studies, continuous glucose monitoring tracings, radiographic studies, or patient photographs. The certification exam may include the following adrenal imaging studies and procedures:

- Differentiate among imaging techniques for adrenal disease, including computed tomography, magnetic resonance imaging, meta-iodobenzylguanidine scintigraphy, indium-labeled pentetreotide scintigraphy, fludrooxyglucose positron emission tomography, and 68-Ga-DOTATATE positron emission tomography.
- Interpret imaging phenotype to predict the histologic type of adrenal disease—including: benign adenoma, pheochromocytoma, adrenocortical carcinoma, and adrenal metastases.
- Identify indications for computed tomography–guided adrenal fine-needle aspiration biopsy.
- Identify indications for adrenal venous sampling for aldosterone.
- Interpret results from adrenal venous sampling (with or without cosyntropin stimulation).

The following pituitary imaging studies and procedures may be included on the exam:

- Interpret typical imaging phenotypes on magnetic resonance imaging for primary pituitary tumors, pituitary cysts, pituitary hyperplasia, metastatic lesions to the pituitary, pituitary stalk lesions, and hypothalamic masses.
- Identify indications for inferior petrosal sinus sampling for corticotropin.
- Interpret results from inferior petrosal sinus sampling.

The blueprint can be expanded for additional detail as shown below. Each of the medical content categories is listed there, and below each major category are the content subsections and specific topics that may appear in the exam. Please note: actual exam content may vary.

### Adrenal Disorders

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage of Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Glucocorticoids</strong></td>
<td>4%</td>
</tr>
<tr>
<td>Cushing’s syndrome</td>
<td></td>
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<tr>
<td>Management of glucocorticoid therapy</td>
<td></td>
</tr>
<tr>
<td>Adrenal insufficiency</td>
<td></td>
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<tr>
<td>Glucocorticoid resistance</td>
<td></td>
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<tr>
<td><strong>Mineralocorticoids</strong></td>
<td>2%</td>
</tr>
<tr>
<td>Hyperaldosteronism</td>
<td></td>
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<tr>
<td>Hypoaldosteronism</td>
<td></td>
</tr>
<tr>
<td><strong>Adrenal androgens</strong></td>
<td>&lt;2%</td>
</tr>
<tr>
<td>Congenital adrenal hyperplasia</td>
<td></td>
</tr>
<tr>
<td><strong>Adrenal incidentaloma</strong></td>
<td>&lt;2%</td>
</tr>
<tr>
<td><strong>Adrenal medulla</strong></td>
<td>&lt;2%</td>
</tr>
<tr>
<td>Pheochromocytoma</td>
<td></td>
</tr>
<tr>
<td>Neurofibromatosis type 1</td>
<td></td>
</tr>
<tr>
<td>von Hippel-Lindau syndrome</td>
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<tr>
<td>Multiple endocrine neoplasia (MEN) types 2A and 2B</td>
<td></td>
</tr>
<tr>
<td>Familial paraganglioma syndromes</td>
<td></td>
</tr>
<tr>
<td>Familial paraganglioma-pheochromocytoma syndromes</td>
<td></td>
</tr>
<tr>
<td><strong>Adrenal cancer</strong></td>
<td>&lt;2%</td>
</tr>
</tbody>
</table>

### Pituitary Disorders

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage of Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prolactin</strong></td>
<td>&lt;2%</td>
</tr>
<tr>
<td>Hyperprolactinemia</td>
<td></td>
</tr>
<tr>
<td>Normoprolactinemic galactorrhea</td>
<td></td>
</tr>
<tr>
<td><strong>Growth hormone</strong></td>
<td>2%</td>
</tr>
<tr>
<td>Acromegaly</td>
<td></td>
</tr>
<tr>
<td>Deficiency</td>
<td></td>
</tr>
<tr>
<td><strong>Thyroid-stimulating hormone (TSH)</strong></td>
<td>&lt;2%</td>
</tr>
<tr>
<td>Thyroid-stimulating hormone–secreting adenoma</td>
<td></td>
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<tr>
<td>Hyperplasia secondary to longstanding primary hypothyroidism</td>
<td></td>
</tr>
<tr>
<td>Thyroid-stimulating hormone deficiency</td>
<td></td>
</tr>
<tr>
<td><strong>Gonadotropins</strong></td>
<td>&lt;2%</td>
</tr>
<tr>
<td>Gonadotroph pituitary tumors</td>
<td></td>
</tr>
<tr>
<td>Hypogonadotropic hypogonadism</td>
<td></td>
</tr>
</tbody>
</table>
Nonsecreting pituitary tumors <2%

Adrenocorticotropic hormone (ACTH) <2%
  Cushing's disease
  ACTH deficiency

Hypopituitarism <2%
  Clinical presentation
  Causes
    Tumors
    Pituitary apoplexy
    Sheehan's syndrome
    Hemochromatosis
    Lymphocytic hypophysitis
    Sarcoidosis
    Traumatic brain injury
    Iatrogenic (radiation, surgery)

Treatment
  Adjustment of growth hormone according to insulin-like growth factor 1 levels
  Monitoring of thyroid with free thyroxine (T4)
  Clinical adjustment of glucocorticoids

Empty sella syndrome <2%

Antidiuretic hormone (ADH) <2%
  Diabetes insipidus
  Syndrome of inappropriate antidiuretic hormone secretion (SIADH)

Craniopharyngioma <2%

Pituitary incidentaloma <2%

Lipids, Obesity, and Nutrition 12% of Exam

Hypercholesterolemia <2%
  Primary disorders
    Familial hypercholesterolemia
    Familial defective apolipoprotein B-100
    Lipoprotein (a)
    Elevated high-density lipoprotein cholesterol
  Secondary disorders

Hypertriglyceridemia <2%
  Primary disorders
    Familial hypertriglyceridemia
    Apoprotein and lipase disorders
  Secondary disorders
    Chylomicronemia
Mixed hyperlipidemia  2.5%
   Primary disorders
   Familial combined hyperlipidemia
   Familial dysbetalipoproteinemia (type III)
   Secondary disorders

Hypolipidemia  <2%
   Primary disorders
   Secondary disorders

Treatment of lipid disorders  2.5%
   Diet
   Drugs
   Lifestyle
   Indications for treatment

Obesity and nutrition  3%
   Primary disorders
   Secondary disorders
   Comorbidities
   Treatment of obesity
      Diet
      Drugs
      Lifestyle
   Indications for treatment

Female Reproduction  7% of Exam

Amenorrhea  <2%
   Primary
      Androgen insensitivity syndrome
      Turner syndrome
      Müllerian dysgenesis
      Congenital gonadotropin-releasing hormone (GnRH) deficiency
   Secondary

Hyperandrogenism  <2%
   Polycystic ovary syndrome
   Non-polycystic ovary syndromes
      Hyperthecosis
      Ovarian tumors
      Adrenal tumors
   Nonclassic congenital adrenal hyperplasia
Pregnancy-associated Anabolic steroids

**Premenstrual syndrome and premenstrual dysphoric disorder** <2%

**Endocrine causes of infertility** <2%

- Anovulation
- Age-associated infertility (diminished ovarian reserve)

**Hormonal contraception** <2%

- Combined estrogen-progestin contraceptives
- Progestin-only contraception

**Perimenopause and menopause** <2%

- Perimenopause
- Menopause
- Estrogen–progestin therapy

**Sexual differentiation** <2%

- Gender dysphoria
- Female-to-male transgender management

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### Male Reproduction 7% of Exam

**Hypogonadism** 2%

- Testosterone in hypogonadism
- Sex hormone binding globulin (SHBG)-dependent changes in testosterone
- Primary hypogonadism
- Secondary hypogonadism
- Genetic disorders of androgen production and action
- Testosterone therapy
- Gonadotropins

**Infertility** <2%

**Causes**

- Varicocele
- Cryptorchidism
- Klinefelter syndrome
- Cystic fibrosis and cystic fibrosis gene mutations
- Sertoli-cell-only syndrome
- Drug-induced infertility
- Obstructive azoospermia
- Idiopathic oligozoospermia
- Y-chromosome microdeletions

**Treatment**

- Gonadotropins
- Testicular sperm extraction
- Intracytoplasmic sperm injection
Gynecomastia

Causes
- Drug-induced gynecomastia
- Testicular tumors (Sertoli and Leydig cell tumors)
- Extratesticular tumors
- Androgen deprivation therapy for prostate cancer
- Hyperthyroidism
- Refeeding syndrome
- Pubertal gynecomastia
- Idiopathic gynecomastia
- Congenital and familial aromatase excess syndromes

Treatment
- Tamoxifen
- Aromatase inhibitors
- Mammoplasty and mastectomy

Erectile dysfunction

Causes
- Smoking
- Diabetes mellitus
- Hypertension
- Hyperlipidemia
- Peyronie's disease
- Pelvic and prostate surgery
- Obesity

Diagnostic tests
- Penile duplex Doppler ultrasound
- Corpus cavernosography

Treatment
- Phosphodiesterase-5 and nonspecific phosphodiesterase inhibitors
- Prostaglandin E1, intraurethral and intracavernosal
- Alpha-adrenergic blockers
- Penis pump (penile vacuum device)
- Penile implant

Testosterone in aging men

Abuse of androgens and anabolic steroids

Sexual differentiation

- Gender dysphoria
- Male-to-female transgender management

Ejaculatory dysfunctions

- Premature ejaculation
- Delayed ejaculation
## Diabetes Mellitus and Hypoglycemia

### Prediabetes
- Impaired fasting glucose
- Impaired glucose tolerance

### Screening
- Hemoglobin A\textsubscript{1C}
- Fructosamine and 1,5-anhydroglucitol
- Conventional glucose monitoring
- Ketone testing
- Continuous glucose monitoring (CGM)

### Monitoring glycemic control

<table>
<thead>
<tr>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin A\textsubscript{1C}</td>
</tr>
<tr>
<td>Fructosamine and 1,5-anhydroglucitol</td>
</tr>
<tr>
<td>Conventional glucose monitoring</td>
</tr>
<tr>
<td>Ketone testing</td>
</tr>
<tr>
<td>Continuous glucose monitoring (CGM)</td>
</tr>
</tbody>
</table>

### Type 1 diabetes mellitus
- Ketoacidosis
- Recent-onset type 1 diabetes
- Latent autoimmune diabetes of the adult (LADA)
- Hyperglycemia in type 1 diabetes
- Hypoglycemia due to insulin management
- Pathogenesis of type 1 diabetes

### Type 2 diabetes mellitus
- Hyperosmolar nonketotic state
- Hyperglycemia in type 2 diabetes
- Hypoglycemia due to oral agents and insulin management
- Pathogenesis of type 2 diabetes

### Additional types of diabetes mellitus
- Monogenic diabetes
- Ketosis-prone diabetes (KPD)
- New-onset diabetes after transplant (NODAT)
  - [post-transplant diabetes mellitus (PTDM)]
- Pancreatic diabetes
- Cystic fibrosis-related diabetes
- Drug-induced diabetes

### Recognition and management of associated conditions
- Hypertension
- Dyslipidemia
- Obesity
- Sleep apnea
- Fatty liver
- Thyroid disease
- Celiac disease
- Polycystic ovary syndrome
Eating disorders
Dead-in-bed syndrome

**Pregnancy**
Gestational diabetes
Pre-gestational diabetes

**Diabetes mellitus complications**
4.5%
Microvascular
  Retinopathy
  Nephropathy
  Neuropathy
Macular edema
Mononeuropathies
Macrovascular
  Coronary artery disease
  Heart failure
  Peripheral vascular disease
Diabetic foot
Skin disorders
  Lipohypertrophy
  Lipoatrophy
  Necrobiosis lipoidica
  Acanthosis nigricans
Neuropsychiatric

**Islet cell and pancreas transplantation**
<2%

**Hypoglycemia independent of diabetes mellitus**
2%
  Insulinoma
  Non-insulinoma causes
  Hypoglycemia unawareness

**Inpatient diabetes mellitus management**
<2%
  Intensive care unit
  Non-intensive care unit

<table>
<thead>
<tr>
<th><strong>Calcium and Bone Disorders</strong></th>
<th>15% of Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypercalcemia</strong></td>
<td>3%</td>
</tr>
</tbody>
</table>
  Parathyroid hormone-mediated
    Primary hyperparathyroidism
    Familial hypocalciuric hypercalcemia
    Lithium-induced
Non-parathyroid hormone–mediated
- Hypercalcemia of malignancy
- Milk-alkali syndrome
- Sarcoidosis, tuberculosis, and other granulomatous diseases
- Vitamin D intoxication
- Post-rhabdomyolysis
- Adynamic bone disease
- Myeloma
- Acute adrenal insufficiency
- Vitamin A

**Hypocalcemia** 2.5%
- Hypoparathyroidism
- Parathyroid hormone (PTH) resistance
- Hypomagnesemia
- Hyperphosphatemia
- Celiac disease
- Hypocalcemia (general)

**Osteoporosis** 4%
- In female
- In male
- Post-transplantation and glucocorticoid-induced
- Renal, hepatic, and gastrointestinal disease–related

**Paget's disease of bone** <2%

**Hypovitaminosis D** <2%
- Dietary deficiency
- Limited sun exposure
- Malabsorption
- Liver failure
- Renal insufficiency
- Vitamin D–dependent rickets types I and II
- Vitamin D–resistant rickets
- Drug-induced
- Bone disease
- Nonskeletal disorders

**Osteomalacia and rickets** <2%
- Chronic hypophosphatemia
- Inhibitors of mineralization

**Renal osteodystrophy** <2%

**Nephrolithiasis** <2%

**Osteogenesis imperfecta and bone dysplasias** <2%

**Fibrous dysplasia and other dysplastic syndromes** <2%
Calciphylaxis <2%

Hypophosphatemia <2%
Renal losses
Gastrointestinal malabsorption
Internal redistribution

<table>
<thead>
<tr>
<th>Thyroid Disorders</th>
<th>15% of Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hyperthyroidism</strong></td>
<td>3.5%</td>
</tr>
<tr>
<td>Graves’ disease</td>
<td></td>
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<tr>
<td>Toxic adenoma and multinodular goiter</td>
<td></td>
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<tr>
<td>Inappropriate thyroid-stimulating hormone (TSH) syndromes</td>
<td></td>
</tr>
<tr>
<td>TSH-secreting tumor</td>
<td></td>
</tr>
<tr>
<td>Thyroid hormone resistance syndromes</td>
<td></td>
</tr>
<tr>
<td>Artifactual TSH “derangements”</td>
<td></td>
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<tr>
<td>Thyrotoxicosis with low radioactive iodine uptake</td>
<td></td>
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<tr>
<td>Thyroiditis</td>
<td></td>
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<tr>
<td>Factitious, accidental, and iatrogenic thyrotoxicosis</td>
<td></td>
</tr>
<tr>
<td>Iodine-induced</td>
<td></td>
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<tr>
<td>Struma ovarii</td>
<td></td>
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<tr>
<td>Complicated thyrotoxicosis</td>
<td></td>
</tr>
<tr>
<td>Subclinical hyperthyroidism</td>
<td></td>
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</tbody>
</table>

| **Hypothyroidism** | 2.5% |
| Primary | |
| Secondary | |
| Subclinical hypothyroidism | |
| Complicated hypothyroidism | |
| TSH resistance in pseudohypoparathyroidism | |
| Therapy | |

**Nontoxic solitary nodules and multinodular goiter** 3%
Fine-needle aspiration and cytology interpretation
Roles of ultrasonography and radionuclide scanning
Treatment
| Surgery | |
| Levothyroxine suppression | |
| Radioactive iodine | |
| Chemotherapy and other treatments | |

**Thyroid cancer** 3.5%
Well-differentiated epithelial thyroid cancers
Hürthle cell cancer
Anaplastic cancer
Lymphoma
Medullary cancer

**Thyroid test abnormalities without thyroid disease** <2%
- Euthyroid hypothyroxinemia
- Euthyroid hyperthyroxinemia
- Effect of drugs on thyroid function tests
- Euthyroid sick syndrome
- Thyroid hormone antibodies
- Antibody interferences with TSH measurement

**Thyroid changes in pregnancy** <2%
- Hypothyroidism
- Hyperthyroidism
- Thyroid nodule and cancer

January, 2017