

## **ABIM invites diplomates to help develop the Endocrinology, Diabetes, and Metabolism MOC exam blueprint**

Based on feedback from physicians that MOC assessments should better reflect what they see in practice, in 2016 the American Board of Internal Medicine (ABIM) invited all certified endocrinologists to provide ratings of the relative frequency and importance of blueprint topics in practice.

This review process, which resulted in a new MOC exam blueprint, will be used on a periodic basis to inform and update all MOC assessments created by ABIM, including the Knowledge Check-In introduced in 2019. No matter what form ABIM's assessments ultimately take, they will need to be informed by front-line clinicians sharing their perspective on what is important to know.

A sample of over 300 endocrinologists, similar to the total invited population of endocrinologists in age, gender, geographic region, and time spent in direct patient care, provided the blueprint topic ratings. The ABIM Endocrinology, Diabetes, and Metabolism Exam Committee and Board have used this feedback to update the blueprint for MOC assessments (beginning with the Fall 2016 administration of the 10-year MOC exam).

To inform how exam content should be distributed across the major blueprint content categories, ABIM considered the average respondent ratings of topic frequency and importance in each of the content categories. A second source of information was the relative frequency of patient conditions in the content categories, as seen by certified endocrinologists and documented by national health care data (described further under *Content distribution* below).

To determine prioritization of specific exam content within each major medical content category, ABIM used the respondent ratings of topic frequency and importance to set thresholds for these parameters in the exam assembly process (described further under *Detailed content outline* below).

## **Purpose of the Endocrinology, Diabetes, and Metabolism MOC exam**

MOC assessments are designed to evaluate whether a certified endocrinologist has maintained competence and currency in the knowledge and judgment required for practice. The MOC assessments emphasize diagnosis and management of prevalent conditions, particularly in areas where practice has changed in recent years. As a result of the blueprint review by ABIM diplomates, MOC assessments place less emphasis on rare conditions and focus more on situations in which physician intervention can have important consequences for patients. For conditions that are usually managed by other specialists, the focus will be on recognition rather than on management.

## **Exam format**

The ten-year MOC exam contains up to 220 single-best-answer multiple-choice questions, of which up to 50 are new questions that do not count in the examinee's score. The Knowledge Check-In is composed of up to 90 single-best-answer multiple-choice questions, of which a small portion are new questions that do not count in the examinee's score (more information on how exams are developed can be found at [abim.org/about/exam-information/exam-development.aspx](http://abim.org/about/exam-information/exam-development.aspx)). Examinees taking the traditional ten-year MOC exam will have access to an external resource (e.g., UpToDate®) for the entire exam. Examinees taking the Knowledge Check-In will have access to an external resource for the entire exam. Most questions describe patient scenarios and ask about the work done (that is, tasks performed) by physicians in the course of practice:

- **Diagnosis:** making a diagnosis or identifying an underlying condition
- **Testing:** ordering tests for diagnosis, staging, or follow-up
- **Treatment/Care Decisions:** recommending treatment or other patient care
- **Risk Assessment/Prognosis/Epidemiology:** assessing risk, determining prognosis, and applying principles from epidemiologic studies
- **Pathophysiology/Basic Science:** understanding the pathophysiology of disease and basic science knowledge applicable to patient care

Clinical scenarios presented take place in outpatient or inpatient settings as appropriate to a typical Endocrinology, Diabetes, and Metabolism practice. Clinical information presented may include diagnostic imaging studies, continuous glucose monitoring tracings, radiographic studies, or patient photographs.

Tutorials for the traditional ten-year MOC exam and for the Knowledge Check-In, including examples of ABIM exam question format, can be found at [abim.org/maintenance-of-certification/exam-information/endocrinology-diabetes-metabolism/exam-tutorial.aspx](http://abim.org/maintenance-of-certification/exam-information/endocrinology-diabetes-metabolism/exam-tutorial.aspx).

## Content distribution

Listed below are the major medical content categories that define the domain for the Endocrinology, Diabetes, and Metabolism MOC ten-year exam and the Knowledge Check-In. The relative distribution of content is expressed as a percentage of the total exam. To determine the content distribution, ABIM considered the average respondent ratings of topic frequency and importance. To cross-validate these self-reported ratings, ABIM also considered the relative frequency of conditions seen in Medicare patients by a cohort of certified endocrinologists. Informed by these data, the Endocrinology, Diabetes, and Metabolism Board Exam Committee and Board determined the content category targets shown below.

CONTENT CATEGORY	TARGET %
Adrenal Disorders	9%
Pituitary Disorders	9%
Lipids, Obesity, and Nutrition	14%
Female Reproduction	6%
Male Reproduction	6%
Diabetes Mellitus and Hypoglycemia	26%
Calcium and Bone Disorders	15%
Thyroid Disorders	15%
<b>Total</b>	<b>100%</b>

The Endocrinology, Diabetes, and Metabolism MOC exam may cover other dimensions of medicine as applicable to the medical content categories, such as adolescent medicine.

## How the blueprint ratings are used to assemble the MOC exam

Blueprint reviewers provided ratings of relative frequency in practice for each of the detailed content topics in the blueprint and provided ratings of the relative importance of the topics for each of the tasks described in *Exam format* above. In rating importance, reviewers were asked to consider factors such as the following:

- High risk of a significant adverse outcome
- Cost of care and stewardship of resources
- Common errors in diagnosis or management
- Effect on population health
- Effect on quality of life
- When failure to intervene by the physician deprives a patient of significant benefit

Frequency and importance were rated on a three-point scale corresponding to low, medium, or high. The median importance ratings are reflected in the *Detailed content outline* below. The Endocrinology, Diabetes, and Metabolism Board Exam Committee and Board, in partnership with the physician community, have set the following parameters for selecting MOC exam questions according to the blueprint review ratings:




- At least 75% of exam questions will address high-importance content (indicated in green)
- No more than 25% of exam questions will address medium-importance content (indicated in yellow)
- No exam questions will address low-importance content (indicated in red)

Independent of the importance and task ratings, no more than 25% of exam questions will address low-frequency content (indicated by “LF” following the topic description).





































































The content selection priorities below are applicable beginning with the Fall 2016 MOC exam and are subject to change in response to future blueprint review.

**Note:** The same topic may appear in more than one medical content category.

## Detailed content outline for the Endocrinology, Diabetes, and Metabolism MOC exam and Knowledge Check-In

-  – **High Importance:** At least 75% of exam questions will address topics and tasks with this designation.
  – **Medium Importance:** No more than 25% of exam questions will address topics and tasks with this designation.
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**LF – Low Frequency:** No more than 25% of exam questions will address topics with this designation, regardless of task or importance.

<b>ADRENAL DISORDERS</b> (9% of exam)		<b>Diagnosis</b>	<b>Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
<b>GLUCOCORTICOIDS</b> (3.5% of exam)						
Cushing syndrome						
Management of glucocorticoid therapy		<i>Not Applicable</i>				
Adrenal insufficiency						
Glucocorticoid resistance	<b>LF</b>					
<b>MINERALOCORTICOIDS</b> (2% of exam)						
Hyperaldosteronism						
Hypoaldosteronism	<b>LF</b>					
<b>ADRENAL ANDROGENS</b> (<2% of exam)						
Congenital adrenal hyperplasia	<b>LF</b>					
<b>ADRENAL INCIDENTALOMA</b> (<2% of exam)						
Adrenal incidentaloma						
<b>ADRENAL MEDULLA</b> (<2% of exam)						
Pheochromocytoma and paraganglioma	<b>LF</b>					
Neurofibromatosis type 1	<b>LF</b>					
von Hippel Lindau syndrome	<b>LF</b>					
Multiple endocrine neoplasia (MEN) types 2A and 2B	<b>LF</b>					
Familial paraganglioma syndromes	<b>LF</b>					
Familial paraganglioma-pheochromocytoma syndromes	<b>LF</b>					

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<b>ADRENAL DISORDERS</b> <i>continued...</i> (9% of exam)		<b>Diagnosis</b>	<b>Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**ADRENAL CANCER** (<2% of exam)

Adrenal cancer	LF	⚠	⚠	⚠	⚠	⚠
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<b>PITUITARY DISORDERS</b> (9% of exam)		<b>Diagnosis</b>	<b>Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**PROLACTIN** (<2% of exam)

Hyperprolactinemia		✔	✔	✔	✔	✔
Normoprolactinemic galactorrhea		⚠	⚠	⚠	⚠	⚠

**GROWTH HORMONE** (<2% of exam)

Acromegaly	LF	✔	✔	✔	⚠	⚠
Deficiency	LF	⚠	⚠	⚠	⚠	⚠

**THYROID-STIMULATING HORMONE (TSH)** (<2% of exam)

TSH-secreting	LF	⚠	⚠	⚠	⚠	⚠
Hyperplasia secondary to longstanding primary hypothyroidism	LF	⚠	⚠	⚠	⚠	⚠
TSH deficiency	LF	✔	✔	✔	⚠	⚠

**GONADOTROPINS** (<2% of exam)

Gonadotroph pituitary tumors	LF	⚠	⚠	⚠	⚠	⚠
Hypogonadotropic hypogonadism		✔	✔	✔	✔	⚠

**NONSECRETING PITUITARY TUMORS** (<2% of exam)

Nonsecreting pituitary tumors		✔	✔	✔	⚠	⚠
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**ADRENOCORTICOTROPIC HORMONE (ACTH)** (<2% of exam)

Cushing disease	LF	✔	✔	✔	✔	⚠
ACTH deficiency	LF	✔	✔	✔	⚠	⚠

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PITUITARY DISORDERS <i>continued...</i> (9% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**HYPOPITUITARISM (<2% of exam)**

Clinical presentation	✔	✔	✔	✔	⚡
Causes					
Tumors	✔	✔	✔	⚡	⚡
Pituitary apoplexy LF	✔	✔	✔	⚡	⚡
Sheehan syndrome LF	✔	✔	✔	⚡	⚡
Hemochromatosis LF	⚡	⚡	⚡	⚡	⚡
Lymphocytic hypophysitis LF	⚡	⚡	⚡	⚡	⚡
Sarcoidosis LF	⚡	⚡	⚡	⚡	⚡
Traumatic brain injury LF	⚡	⚡	⚡	⚡	⚡
Iatrogenic (radiation, surgery)	✔	✔	✔	⚡	⚡
Treatment					
Adjustment of growth hormone according to insulin-like growth factor-1 (IGF-1) levels LF	Not Applicable		⚡	⚡	⚡
Monitoring of thyroid with free thyroxine (T4)	Not Applicable		✔	✔	✔
Clinical adjustment of glucocorticoids	Not Applicable		✔	✔	✔

**EMPTY SELLA SYNDROME (<2% of exam)**

Empty sella syndrome	✔	✔	✔	⚡	⚡
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**ANTIDIURETIC HORMONE (ADH) (<2% of exam)**

Diabetes insipidus LF	✔	✔	✔	✔	⚡
Syndrome of inappropriate antidiuretic hormone secretion (SIADH)	✔	✔	✔	⚡	⚡

**CRANIOPHARYNGIOMA (<2% of exam)**

Craniopharyngioma LF	⚡	⚡	⚡	⚡	⚡
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**PITUITARY INCIDENTALOMA (<2% of exam)**

Pituitary incidentaloma	✔	✔	✔	✔	⚡
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<b>LIPIDS, OBESITY, AND NUTRITION</b> (14% of exam)	<b>Diagnosis</b>	<b>Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**HYPERCHOLESTEROLEMIA** (<2% of exam)

Primary disorders					
Familial hypercholesterolemia	✔	✔	✔	⚡	⚡
Familial defective apolipoprotein B-100	LF	⚡	⚡	⚡	✘
Lipoprotein (a)	LF	⚡	⚡	✘	✘
Elevated high-density lipoprotein cholesterol	LF	⚡	⚡	⚡	✘
Secondary disorders					
		⚡	⚡	⚡	⚡

**HYPERTRIGLYCERIDEMIA** (2% of exam)

Primary disorders					
Familial hypertriglyceridemia		⚡	⚡	⚡	⚡
Apoprotein/lipase disorders	LF	⚡	⚡	✘	✘
Secondary disorders					
Chylomicronemia syndrome	LF	⚡	⚡	⚡	⚡

**ELEVATED TRIGLYCERIDES AND LOW-DENSITY LIPOPROTEIN CHOLESTEROL** (3% of exam)

Primary disorders					
Familial combined hyperlipidemia		⚡	⚡	⚡	⚡
Familial dysbetalipoproteinemia (type III)	LF	⚡	⚡	⚡	✘
Hypobetalipoproteinemia (Low LDL-c)	LF	⚡*	✘*	✘*	✘*
Secondary disorders					
		⚡	⚡	⚡	⚡

**HYPOLIPIDEMIA** (0% of exam)

Primary disorders	LF	✘	✘	✘	✘
Secondary disorders	LF	✘	✘	✘	✘

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LIPIDS, OBESITY, AND NUTRITION <i>continued...</i> (14% of exam)	Diagnosis		Testing		Treatment/ Care Decisions		Risk Assessment/ Prognosis/ Epidemiology		Pathophysiology/ Basic Science	
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**TREATMENT OF LIPID DISORDERS** (5% of exam)

Diet	Not Applicable		✔	✔	✔	✔	✔	✔	✔	⚡
Drugs	Not Applicable		✔	✔	✔	✔	✔	✔	✔	✔
Lifestyle	Not Applicable		✔	✔	✔	✔	✔	✔	✔	⚡
Indications for treatment	✔	✔	✔	✔	✔	✔	✔	✔	✔	⚡

**OBESITY AND NUTRITION** (2.5% of exam)

Genetic disorders	✔	✔	✔	✔	✔	✔	✔	✔	✔	⚡
Secondary disorders	⚡	⚡	✔	✔	✔	✔	✔	✔	✔	⚡
Comorbidities	✔	✔	✔	✔	✔	✔	✔	✔	✔	⚡

**Treatment of obesity**

Diet	Not Applicable		✔	✔	✔	✔	✔	✔	✔	⚡
Drugs	Not Applicable		✔	✔	✔	✔	✔	✔	✔	⚡
Lifestyle	Not Applicable		✔	✔	✔	✔	✔	✔	✔	✔
Surgery	⚡	⚡	✔	✔	✔	✔	✔	✔	✔	⚡
Indications for treatment	✔	✔	✔	✔	✔	✔	✔	✔	✔	⚡

**GENERAL NUTRITION** (<2% of exam)

Energy requirements	⚡	⚡	✔	✔	✔	✔	✔	✔	✔	⚡
Vitamin deficiency	⚡	⚡	✔	✔	✔	✔	✔	✔	✔	⚡
Enteral nutrition	⚡	⚡	✔	✔	✔	✔	✔	✔	✔	⚡

**COUNSELING** (<2% of exam)

Counseling	⚡	⚡	✔	✔	✔	✔	✔	✔	✔	⚡
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<b>FEMALE REPRODUCTION</b> (6% of exam)		<b>Diagnosis</b>	<b>Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**AMENORRHEA** (<2% of exam)

Primary						
Androgen insensitivity syndrome	LF	⚡	⚡	⚡	✘	✘
Turner syndrome	LF	⚡	⚡	⚡	⚡	⚡
Congenital gonadotropin-releasing hormone (GnRH) deficiency	LF	✘	✘	✘	✘	✘
Secondary						
		✔	✔	✔	⚡	⚡

**HYPERANDROGENISM** (<2% of exam)

Polycystic ovary syndrome		✔	✔	✔	✔	⚡
Non-polycystic ovary syndrome						
Hypertecosis	LF	⚡	⚡	⚡	✘	✘
Ovarian tumors	LF	⚡	⚡	⚡	✘	✘
Adrenal tumors		✔	✔	✔	⚡	⚡
Nonclassic congenital adrenal hyperplasia	LF	⚡	⚡	⚡	⚡	⚡
Pregnancy-associated	LF	⚡	⚡	⚡	✘	✘
Anabolic steroids	LF	⚡	⚡	⚡	✘	✘

**PREMENSTRUAL SYNDROME AND PREMENSTRUAL DYSPHORIC DISORDER** (<2% of exam)

Premenstrual syndrome and premenstrual dysphoric disorder	LF	⚡	⚡	⚡	✘	✘
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**ENDOCRINE CAUSES OF INFERTILITY** (<2% of exam)

Anovulation		⚡	⚡	⚡	✘	✘
Age-associated infertility (diminished ovarian reserve)	LF	⚡	⚡	✘	✘	✘

**HORMONAL CONTRACEPTION** (<2% of exam)

Combined estrogen-progestin contraception		Not Applicable		⚡	⚡	✘
Progestin-only contraception	LF	Not Applicable		⚡	⚡	✘



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<b>FEMALE REPRODUCTION</b> <i>continued...</i> (6% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**PERIMENOPAUSE AND MENOPAUSE** (<2% of exam)

Perimenopause	⚡	⚡	⚡	⚡	⚡
Menopause	✔	⚡	⚡	⚡	⚡
Estrogen-progestin therapy	Not Applicable		⚡	⚡	⚡

**SEXUAL DIFFERENTIATION** (<2% of exam)

Gender dysphoria	LF	⚡	⚡	⚡	⚡	✘
Female-to-male transition management	LF	Not Applicable	⚡	⚡	⚡	✘

<b>MALE REPRODUCTION</b> (6% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**HYPOGONADISM** (3% of exam)

Testosterone in hypogonadism		✔	✔	✔	✔	⚡
Sex hormone binding globulin (SHBG)-dependent changes in testosterone		✔	✔	⚡	⚡	⚡
Primary hypogonadism		✔	✔	✔	⚡	⚡
Secondary hypogonadism		✔	✔	✔	⚡	⚡
Genetic disorders of androgen production and action	LF	⚡	⚡	⚡	✘	✘
Testosterone therapy		Not Applicable		✔	✔	✔
Gonadotropins		Not Applicable		⚡	⚡	⚡

**INFERTILITY** (<2% of exam)

Causes						
Cryptorchidism	LF	⚡	✘	✘	✘	✘
Klinefelter syndrome	LF	✔	⚡	⚡	⚡	⚡
Cystic fibrosis and cystic fibrosis gene mutations	LF	⚡	✘	✘	✘	✘
Drug-induced infertility	LF	⚡	⚡	⚡	⚡	⚡
Obstructive azoospermia	LF	✘	✘	✘	✘	✘

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MALE REPRODUCTION <i>continued...</i> (6% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**INFERTILITY** *continued...* (<2% of exam)

Causes <i>continued...</i>						
Idiopathic oligozoospermia	LF	✘	✘	✘	✘	✘
Y-chromosome microdeletions	LF	✘	✘	✘	✘	✘
Treatment						
Gonadotropins	LF	Not Applicable		⚡	⚡	⚡
Testicular sperm extraction	LF	Not Applicable		✘	✘	✘
Intracytoplasmic sperm injection	LF	Not Applicable		✘	✘	✘

**GYNECOMASTIA** (<2% of exam)

Causes						
Drug-induced gynecomastia		✔	⚡	⚡	⚡	⚡
Testicular tumors (Sertoli and Leydig cell tumors)	LF	⚡	⚡	⚡	✘	✘
Extratesticular tumors	LF	⚡	✘	✘	✘	✘
Androgen deprivation therapy for prostate cancer	LF	⚡	⚡	⚡	⚡	✘
Hyperthyroidism	LF	✔	✔	✔	⚡	⚡
Pubertal gynecomastia	LF	⚡	⚡	⚡	⚡	⚡
Idiopathic and other rare causes of gynecomastia		⚡	⚡	⚡	⚡	⚡
Treatment						
Tamoxifen	LF	Not Applicable		⚡	⚡	✘
Aromatase inhibitors	LF	Not Applicable		⚡	⚡	✘
Mammoplasty and mastectomy	LF	Not Applicable		✘	✘	✘

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**ERECTILE DYSFUNCTION (<2% of exam)**

Causes					
Smoking	✔	⚠	⚠	⚠	⚠
Diabetes mellitus	✔	✔	✔	✔	✔
Hypertension	✔	✔	✔	✔	⚠
Hyperlipidemia	✔	✔	✔	⚠	⚠
Peyronie disease <b>LF</b>	✘	✘	✘	✘	✘
Pelvic and prostate surgery <b>LF</b>	✘	✘	✘	✘	✘
Obesity	✔	✔	✔	⚠	⚠

Diagnostic tests					
Diagnostic tests <b>LF</b>	<i>Not Applicable</i>	✘	<i>Not Applicable</i>		

Treatment					
Phosphodiesterase-5 and non-specific phosphodiesterase inhibitors	<i>Not Applicable</i>	✔	⚠	⚠	⚠
Prostaglandin E1, intraurethral and intracavernosal <b>LF</b>	<i>Not Applicable</i>	⚠	✘	✘	✘
Alpha-adrenergic blockers <b>LF</b>	<i>Not Applicable</i>	⚠	✘	✘	✘
Penis pump (penile vacuum device) <b>LF</b>	<i>Not Applicable</i>	✘	✘	✘	✘
Penile implant <b>LF</b>	<i>Not Applicable</i>	✘	✘	✘	✘

**TESTOSTERONE IN AGING MEN (<2% of exam)**

Testosterone in aging men	✔	✔	✔	✔	⚠
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**ABUSE OF ANDROGENS AND ANABOLIC STEROIDS (<2% of exam)**

Abuse of androgens and anabolic steroids	✔	✔	⚠	⚠	⚠
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<b>MALE REPRODUCTION</b> <i>continued...</i> (6% of exam)		<b>Diagnosis</b>	<b>Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**SEXUAL DIFFERENTIATION** (<2% of exam)

Gender dysphoria	LF	⚠	⚠	⚠	⚠	✘
Male-to-female transition management	LF	Not Applicable	⚠	⚠	⚠	✘

**EJACULATORY DYSFUNCTIONS** (<2% of exam)

Premature ejaculation	LF	✘	✘	✘	✘	✘
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<b>DIABETES MELLITUS AND HYPOGLYCEMIA</b> (26% of exam)		<b>Diagnosis</b>	<b>Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**PREDIABETES** (2% of exam)

Impaired fasting glucose		✔	✔	✔	✔	⚠
Impaired glucose tolerance		✔	✔	✔	✔	⚠
Screening		✔	✔	Not Applicable	✔	⚠
Diabetes prevention		⚠	⚠	⚠	⚠	⚠

**MONITORING GLYCEMIC CONTROL** (2% of exam)

Hemoglobin A1c		✔	✔	✔	✔	✔
Fructosamine and 1,5-anhydroglucitol	LF	⚠	⚠	⚠	⚠	⚠
Conventional glucose monitoring		✔	✔	✔	✔	✔
Ketone testing		⚠	⚠	⚠	⚠	⚠
Continuous glucose monitoring (CGM)		✔	✔	✔	⚠	⚠

**TYPE 1 DIABETES MELLITUS** (4% of exam)

Ketoacidosis		✔	✔	✔	✔	✔
Recent-onset type 1 diabetes		✔	✔	✔	✔	✔
Latent autoimmune diabetes of the adult (LADA)		✔	✔	✔	✔	⚠
Hyperglycemia in type 1 diabetes		✔	✔	✔	✔	⚠

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<b>DIABETES MELLITUS AND HYPOGLYCEMIA</b> <i>continued...</i> (26% of exam)	<b>Diagnosis</b>	<b>Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**TYPE 1 DIABETES MELLITUS** *continued...* (4% of exam)

Hypoglycemia due to insulin management	✔	✔	✔	✔	✔
Hypoglycemia unawareness	✔	✔	✔	✔	⚡
Pathogenesis of type 1 diabetes	✔	✔	✔	✔	⚡

**TYPE 2 DIABETES MELLITUS** (5% of exam)

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** (<2% of exam)

Monogenic diabetes	LF	⚡	⚡	⚡	⚡	⚡
Ketosis-prone diabetes (KPD)	LF	⚡	⚡	⚡	⚡	⚡
New-onset diabetes after transplant (NODAT) [posttransplant diabetes mellitus – PTDM]	LF	⚡	⚡	⚡	⚡	⚡
Pancreatic diabetes	LF	⚡	⚡	⚡	⚡	⚡
Cystic fibrosis-related diabetes	LF	⚡	⚡	⚡	⚡	⚡
Drug-induced diabetes		⚡	⚡	✔	⚡	⚡

**RECOGNITION AND MANAGEMENT OF ASSOCIATED CONDITIONS** (2% of exam)

Hypertension		✔	✔	✔	✔	⚡
Dyslipidemia		✔	✔	✔	✔	⚡
Obesity		✔	✔	✔	✔	⚡
Sleep apnea		✔	✔	⚡	⚡	⚡
Fatty liver		✔	✔	✔	⚡	⚡
Thyroid disease		✔	✔	✔	✔	⚡
Celiac disease	LF	⚡	⚡	⚡	⚡	⚡

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<b>DIABETES MELLITUS AND HYPOGLYCEMIA</b> <i>continued...</i> (26% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**RECOGNITION AND MANAGEMENT OF ASSOCIATED CONDITIONS** *continued...* (2% of exam)

Polycystic ovary syndrome	✔	✔	✔	✔	⚠
Eating disorders	LF	⚠	⚠	⚠	⚠

**PREGNANCY** (<2% of exam)

Gestational diabetes	✔	✔	✔	✔	⚠
Pre-gestational diabetes	✔	✔	✔	⚠	⚠

**DIABETES MELLITUS COMPLICATIONS** (5% of exam)

Microvascular					
Retinopathy	✔	✔	⚠	⚠	⚠
Nephropathy	✔	✔	✔	✔	⚠
Neuropathy	✔	✔	✔	⚠	⚠
Macular edema	⚠	⚠	⚠	⚠	⚠
Mononeuropathies	LF	⚠	⚠	⚠	✘
Macrovascular					
Coronary artery disease	✔	✔	✔	✔	⚠
Heart failure	⚠	⚠	⚠	⚠	⚠
Peripheral vascular disease	✔	✔	⚠	⚠	⚠
Diabetic foot	✔	✔	✔	✔	⚠
Skin disorders					
Lipohypertrophy	LF	⚠	⚠	⚠	⚠
Lipoatrophy	LF	⚠	⚠	⚠	⚠
Necrobiosis lipoidica	LF	⚠	✘	✘	✘
Acanthosis nigricans	✔	⚠	⚠	⚠	⚠
Neuropsychiatric	LF	⚠	⚠	⚠	✘

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**ISLET CELL AND PANCREAS TRANSPLANTATION** (<2% of exam)

Islet cell and pancreas transplantation	LF	⚡	⚡	⚡	⚡	⚡
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**HYPOGLYCEMIA INDEPENDENT OF DIABETES** (2% of exam)

Insulinoma	LF	✔	✔	✔	⚡	⚡
Noninsulinoma	LF	✔	✔	⚡	⚡	⚡

**INPATIENT DIABETES MANAGEMENT** (<2% of exam)

Intensive care unit		✔	✔	✔	⚡	⚡
Non-intensive care unit		✔	✔	✔	✔	⚡

<b>CALCIUM AND BONE DISORDERS</b> (15% of exam)		Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**HYPERCALCEMIA** (3% of exam)

Parathyroid hormone-mediated						
Primary hyperparathyroidism		✔	✔	✔	✔	⚡
Familial hypocalciuric hypercalcemia	LF	✔	✔	✔	⚡	⚡
Lithium-induced	LF	⚡	⚡	⚡	⚡	⚡

Non-parathyroid hormone-mediated						
Hypercalcemia of malignancy		✔	✔	✔	⚡	⚡
Milk-alkali syndrome	LF	⚡	⚡	⚡	⚡	⚡
Sarcoidosis, tuberculosis, and other granulomatous diseases	LF	⚡	⚡	⚡	⚡	⚡
Vitamin D intoxication	LF	⚡	✔	⚡	⚡	⚡
Post-rhabdomyolysis	LF	⚡	⚡	⚡	✘	✘
Adynamic bone disease	LF	⚡	⚡	⚡	⚡	⚡
Myeloma	LF	⚡	⚡	⚡	⚡	⚡
Acute adrenal insufficiency	LF	✔	✔	✔	⚡	⚡
Vitamin A	LF	⚡	⚡	⚡	✘	✘

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<b>CALCIUM AND BONE DISORDERS</b> <i>continued...</i> (15% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**HYPOCALCEMIA** (3% of exam)

Hypoparathyroidism	✔	✔	✔	⚠	⚠
Parathyroid hormone (PTH) resistance	LF ⚠	⚠	⚠	✘	⚠
Hypomagnesemia	LF ⚠	⚠	⚠	⚠	⚠
Hyperphosphatemia	LF ⚠	⚠	⚠	⚠	⚠
Celiac disease	LF ⚠	⚠	⚠	⚠	⚠
Hypocalcemia (general)	✔	✔	✔	⚠	⚠

**OSTEOPOROSIS** (4% of exam)

In female	✔	✔	✔	✔	✔
In male	✔	✔	✔	✔	✔
Post-transplant and glucocorticoid-induced	✔	✔	✔	⚠	⚠
Renal, hepatic, and gastrointestinal disease related	⚠	⚠	⚠	⚠	⚠

**PAGET DISEASE OF BONE** (<2% of exam)

Paget disease of bone	LF ✔	✔	⚠	⚠	⚠
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**HYPOVITAMINOSIS D** (<2% of exam)

Dietary deficiency	✔	✔	✔	⚠	⚠
Limited sun exposure	⚠	⚠	⚠	⚠	⚠
Malabsorption	✔	✔	✔	⚠	⚠
Liver failure	LF ⚠	⚠	⚠	✘	✘
Renal insufficiency	⚠	⚠	⚠	⚠	⚠
Vitamin D dependent rickets type I and II	LF ⚠	⚠	⚠	✘	⚠
Vitamin D resistant rickets	LF ⚠	⚠	⚠	✘	⚠
Drug-induced	LF ⚠	⚠	⚠	✘	⚠
Bone disease	✔	⚠	⚠	⚠	⚠
Nonskeletal disorders	LF ⚠	⚠	⚠	✘	✘



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**OSTEOMALACIA AND RICKETS (<2% of exam)**

Chronic hypophosphatemia	LF	⚡	⚡	⚡	✘	⚡
Inhibitors of mineralization	LF	⚡	⚡	⚡	✘	✘

**RENAL OSTEODYSTROPHY (<2% of exam)**

Renal osteodystrophy		⚡	⚡	⚡	⚡	⚡
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**NEPHROLITHIASIS (<2% of exam)**

Nephrolithiasis		⚡	⚡	⚡	⚡	⚡
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**OSTEOGENESIS IMPERFECTA AND BONE DYSPLASIAS (<2% of exam)**

Osteogenesis imperfecta and bone dysplasias	LF	⚡	⚡	⚡	✘	✘
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**FIBROUS DYSPLASIA AND OTHER DYSPLASTIC SYNDROMES (<2% of exam)**

Fibrous dysplasia and other dysplastic syndromes	LF	✘	✘	✘	✘	✘
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**CALCIPHYLAXIS (<2% of exam)**

Calciophylaxis	LF	⚡	⚡	⚡	✘	✘
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**HYPOPHOSPHATEMIA (<2% of exam)**

Renal losses	LF	⚡	⚡	⚡	✘	✘
Gastrointestinal malabsorption	LF	⚡	⚡	⚡	✘	✘
Internal redistribution	LF	✘	✘	✘	✘	✘

**RARE BONE DISEASES (<2% of exam)**

Hypophosphatasia	LF	⚡*	⚡*	⚡*	✘*	✘*
Fibrodysplasia ossificans progressiva	LF	⚡*	⚡*	✘*	✘*	✘*
Osteopetrosis	LF	✘*	✘*	✘*	✘*	✘*

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<b>THYROID DISORDERS</b> (15% of exam)	<b>Diagnosis</b>	<b>Testing</b>	<b>Treatment/ Care Decisions</b>	<b>Risk Assessment/ Prognosis/ Epidemiology</b>	<b>Pathophysiology/ Basic Science</b>
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**HYPERTHYROIDISM** (3.5% of exam)

Graves disease	✔	✔	✔	✔	✔
Toxic adenoma and multinodular goiter	✔	✔	✔	✔	⚡
Inappropriate thyroid-stimulating hormone syndromes					
TSH-secreting tumor <b>LF</b>	⚡	⚡	⚡	⚡	⚡
Resistance to thyroid hormone and thyroid hormone action <b>LF</b>	⚡	⚡	⚡	⚡	⚡
Artifactual TSH “derangements” <b>LF</b>	✔	✔	✔	⚡	⚡
Thyrotoxicosis with low radioactive iodine uptake					
Thyroiditis	✔	✔	✔	✔	⚡
Factitious, accidental, and iatrogenic thyrotoxicosis <b>LF</b>	✔	✔	✔	⚡	⚡
Iodine-induced <b>LF</b>	⚡	⚡	✔	⚡	⚡
Struma ovarii <b>LF</b>	⚡	⚡	⚡	✘	✘
Complicated thyrotoxicosis <b>LF</b>	✔	✔	✔	⚡	⚡
Subclinical hyperthyroidism	✔	✔	✔	✔	⚡

**HYPOTHYROIDISM** (2.5% of exam)

Primary	✔	✔	✔	✔	✔
Secondary	✔	✔	✔	⚡	⚡
Subclinical hypothyroidism	✔	✔	✔	✔	⚡
Complicated hypothyroidism <b>LF</b>	✔	✔	✔	⚡	⚡
TSH resistance <b>LF</b>	✘	✘	✘	✘	✘
Therapy	<i>Not Applicable</i>		✔	✔	✔

**NONTOXIC SOLITARY NODULES AND MULTINODULAR GOITER** (2.5% of exam)

Fine-needle aspiration/cytology and genetic test interpretation	✔	✔	<i>Not Applicable</i>	✔	✔
Roles of ultrasound and radionuclide scanning	✔	✔	<i>Not Applicable</i>	✔	✔

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THYROID DISORDERS <i>continued...</i> (15% of exam)	Diagnosis	Testing	Treatment/ Care Decisions	Risk Assessment/ Prognosis/ Epidemiology	Pathophysiology/ Basic Science
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**NONTOXIC SOLITARY NODULES AND MULTINODULAR GOITER** *continued...* (2.5% of exam)

Treatment					
Surgery		Not Applicable	✔	✔	⚡
Radioactive iodine		Not Applicable	✔	✔	⚡
Minimally invasive and noninvasive treatments	LF	Not Applicable	⚡	⚡	✘

**THYROID CANCER** (3.5% of exam)

Well-differentiated epithelial cancers		✔	✔	✔	✔	⚡
Hürthle cell cancer	LF	✔	✔	✔	⚡	⚡
Anaplastic cancer	LF	✔	⚡	⚡	⚡	✘
Lymphoma	LF	⚡	⚡	⚡	⚡	✘
Medullary cancer	LF	✔	✔	✔	⚡	⚡

**THYROID TEST ABNORMALITIES WITHOUT THYROID DISEASE** (2.5% of exam)

Euthyroid hypothyroxinemia		✔	✔	⚡	⚡	⚡
Euthyroid hyperthyroxinemia	LF	⚡	✔	⚡	⚡	⚡
Effect of drugs on thyroid function tests		✔	✔	✔	⚡	⚡
Euthyroid sick syndrome		✔	✔	✔	⚡	⚡
Thyroid hormone antibodies		✔	✔	⚡	⚡	⚡
Antibody interferences with TSH measurement	LF	⚡	⚡	⚡	⚡	⚡

**THYROID DISEASES IN PREGNANCY** (<2% of exam)

Hypothyroidism		✔	✔	✔	✔	✔
Hyperthyroidism		✔	✔	✔	✔	✔
Thyroid nodule and cancer		✔	✔	✔	✔	⚡