CHAPTER 11
ENDOCRINE SYSTEM

CHAPTER CONTENTS

MEDIA LIBRARY 417

LECTURE NOTES

Objective 1: Combining forms and suffixes 418
Objective 2: Spell and pronounce 418
Objective 3: Organs 420
Objective 4: Hormones 423
Objective 5: Word building 424
Objective 6: Vocabulary 425
Objective 7: Pathology 426
Objective 8: Diagnostic procedures 428
Objective 9: Therapeutic procedures 429
Objective 10: Pharmacology 430
Objective 11: Abbreviations 431

WORKSHEETS 433

QUIZZES 439

ANSWER KEYS 453

MEDIA LIBRARY

Student DVD-ROM

- Twelve different interactive learning games
- Flash card generator
- Audio Glossary
- Professional Profile video—Speech-Language Pathology
- Body Rhythms
- Terminology Translator

Companion Website

- Multiple Choice, True/False, and Fill-in-the-Blank practice questions
- Labeling exercises
- Case study
- Additional Professional Profile information
- New York Times link for research into specific pathologies
- Web Destination activities

- Audio Glossary
- Link to VangoNotes
- Link to drug updates

IRDVD

- Animation
- 3D interactive animation of Endocrine System glands
- Drag-and-drop labeling activity
- Endocrine System glands
- Video
- Diabetes
- Digital library of all figures from text chapter, labeled and unlabeled
- Test bank with 200 objective questions per chapter plus two short answer questions
- 20 classroom response questions
- PowerPoint presentation for classroom or online utilization
OBJECTIVE 1
Identify and define the combining forms and suffixes introduced in this chapter.

Text page: 356; PowerPoint slides: 6–9

LECTURE NOTES
Combining Forms
acr/o extremities
adren/o adrenal glands
adrenal/o adrenal glands
andr/o male
calc/o calcium
crin/o secrete
estr/o female
glyc/o sugar
glycos/o sugar
gonad/o sex glands
home/o sameness
kali/sodium
ophthalm/o eye
pancreat/o pancreas
parathyroid/o parathyroid gland
pineal/o pineal gland
pituitari/o pituitary gland
thym/o thymus gland
thyr/o thyroid gland
thryoid/o thyroid gland
toxic/o poison

Suffixes
crine to secrete
dipsia thirst
-prandial relating to a meal
tropin stimulate

TEACHING STRATEGIES
• Encourage/remind students to add new word parts to their flash cards

Medical Terminology Bee
• Create PowerPoint flash cards of new combining forms and suffixes presented in this chapter; have all students stand and then define word part; if student is correct, he or she remains standing; if student is wrong, he or she sits down; continue until only one student is standing.

LEARNING ACTIVITIES
Worksheet 11A
• New Combining Form and Suffix Hand-out

Worksheet 11B
• Medical Term Analysis

Quiz 11A
• May be used as worksheet

Text
• Practice Exercises

Student DVD-ROM
• Learning games
• Make flash cards

CW
• Practice questions

ASSESSMENTS
Quiz 11A—New Word Parts Quiz
Test Bank—Fill-in-the-Blank questions

OBJECTIVE 2
Correctly spell and pronounce medical terms and major anatomical structures relating to the endocrine system.

LECTURE NOTES
Pronunciation for medical terms in this chapter can be found:
• In parentheses following key terms
• In the Audio Glossary on Student DVD-ROM
• In the Audio Glossary at Companion Website

TEACHING STRATEGIES
Emphasize to students:
• Importance of correctly spelling terms
• How sounding out terms can assist in learning how to spell the terms.
Say each new term in class and have students repeat it.
Pop Questions
• Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension of spelling strategies.

LEARNING ACTIVITIES
Worksheet 11B
• Medical Term Analysis

Terminology Checklist
• Can be used to practice pronunciation using the Audio Glossary as reference.

Text
• Practice Exercises

Flash cards
• Look at the definition and write out/pronounce terms

Student DVD-ROM
• Audio Glossary
• Spelling Challenge game
• Crossword and Word Search puzzles

ASSESSMENTS
Quiz 11B—Spelling Quiz
Suggested terms:
1. homeostasis
2. luteinizing
3. Langerhans
4. circadian
5. thalamus
6. adrenocorticotropin
7. testosterone
8. triiodothyronine
9. exophthalmos
10. gynecomastia
11. hirsutism
12. pheochromocytoma
13. ketoacidosis
14. insulinoma
15. Recklinghausen
16. panhypopituitarism
17. cretinism
18. thyrotoxicosis
19. radioimmunoassay
20. adrenalectomy

Test Bank—questions
OBJECTIVE 3
Locate and describe the major organs of the endocrine system and their functions.
Text pages: 358–366; PowerPoint slides: 10–48

LECTURE NOTES

• Collection of glands that secrete hormones directly into bloodstream

• Hormones are chemicals that act on target organs to either increase or decrease target’s activity level; in this way endocrine system is instrumental in maintaining homeostasis, adjusting activity level of most of tissues and organs of body to maintain stable internal environment

• Body actually has two distinct types of glands: exocrine glands and endocrine glands

• Exocrine glands release secretions into duct that carries them to outside of body; for example, sweat glands release sweat into sweat duct that travels to surface of body

• Endocrine glands release hormones directly into bloodstream; for example, thyroid gland secretes its hormones directly into bloodstream; because endocrine glands have no ducts, also referred to as ductless glands

• Consists of two adrenal glands, two ovaries in female, four parathyroid glands, pancreas, pineal gland, pituitary gland, two testes in male, thymus gland, and thyroid gland

Adrenal Glands

• Two adrenal glands

• Located above each kidneys (see Figure 11.1)

• Each gland is composed of two sections: adrenal cortex and adrenal medulla

• Outer adrenal cortex manufactures several different families of hormones: mineralocorticoids, glucocorticoids, and steroid sex hormones

• All hormones secreted by adrenal cortex are steroid hormones; collectively referred to as corticosteroids

• Example of mineralocorticoid hormones is aldosterone; regulates sodium (Na+) and potassium (K+) levels in body

• Example of glucocorticoid hormones is cortisol; regulates carbohydrates in body

• Adrenal cortex of both men and women secretes steroid sex hormones: androgens, estrogen, and progesterone; hormones regulate secondary sexual characteristics

• Inner adrenal medulla is responsible for secreting hormones epinephrine, also called adrenaline, and norepinephrine; hormones are critical during emergency situations because they increase blood pressure, heart rate, and respiration levels; helps body perform better during emergencies or otherwise stressful times

Ovaries

• Two ovaries are located in lower abdominopelvic cavity of female (see Figure 11.2)

• Female gonads; organs that produce gametes or reproductive sex cells; in females, gametes are ova; of importance to endocrine system, ovaries produce female sex hormones, estrogen and progesterone

TEACHING STRATEGIES

Visual Aids

• Use full-size anatomical charts and models to illustrate the location of different endocrine glands and their target organs.

IRDVD

• See PowerPoint presentation on the Instructor’s Resource DVD for a 3D animation showing the endocrine glands.

• See PowerPoint presentation on the Instructor’s Resource DVD for a drag-and-drop endocrine gland activity; display on screen and have students discuss and place labels during class.

Pop Questions

• Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Group Activity

• Divide class into groups and assign each group a gland; have each group study conditions due to hypersecretion and hyposecretion of its hormones; list signs and symptoms of each; activity is applicable for Objectives 3 and 4.

Worksheet 11C

• Chapter Review

Text


• Practice Exercises

Student DVD-ROM

• Labeling exercise

• Learning games

CW

• Labeling exercise

• Practice questions

Quizzes 11C & 11D

• May be used as worksheets

ASSESSMENTS

Quizzes 11C & 11D—Labeling Diagrams

Test Bank—questions
• Estrogen is responsible for appearance of female sexual characteristics and regulation of menstrual cycle; progesterone helps maintain suitable uterine environment for pregnancy

Pancreas
• Pancreas located along lower curvature of stomach (see Figure 11.3A)
• Only organ in body that has both endocrine and exocrine functions; exocrine portion of pancreas releases digestive enzymes through duct into duodenum; endocrine sections of pancreas, islets of Langerhans; islet cells produce two different hormones: insulin and glucagon (see Figure 11.3B)
• Insulin, produced by beta (β) islet cells, stimulates cells of body to take in glucose from bloodstream, lowering blood sugar level; occurs after you have eaten meal and absorbed carbohydrates into your bloodstream; cells obtain glucose they need for cellular respiration
• Another set of islet cells, alpha (α) cells, secrete different hormone, glucagon; stimulates liver to release glucose, thereby raising blood glucose level; glucagon is released when body needs more sugar, such as at beginning of strenuous activity or several hours after last meal has been digested
• Insulin and glucagon have opposite effects on blood sugar level; insulin will reduce blood sugar level, while glucagon will increase it

Parathyroid Glands
• Four tiny parathyroid glands located on dorsal surface of thyroid gland (see Figure 11.4)
• Parathyroid hormone (PTH) secreted by these glands regulates amount of calcium in blood
• If blood calcium levels fall too low, parathyroid hormone levels in blood are increased; stimulates bone breakdown to release more calcium into blood

Pineal Gland
• Small pine cone-shaped gland that is part of thalamus region of brain (see Figure 11.5)
• Secretes melatonin, hormone not well understood, but plays role in regulating body's circadian rhythm: the 24-hour clock that governs our periods of wakefulness and sleepiness

Pituitary Gland
• Located underneath brain (see Figure 11.6); small marble-shaped gland divided into anterior lobe and posterior lobe; both lobes are controlled by hypothalamus, region of brain active in regulating automatic body responses
• Anterior pituitary secretes several different hormones (see Figure 11.7)
• Growth hormone (GH), also called somatotropin, promotes growth of body by stimulating cells to rapidly increase in size and divide
• Thyroid-stimulating hormone (TSH) regulates function of thyroid gland
• Adrenocorticotropic hormone (ACTH) regulates function of adrenal cortex
• Prolactin (PRL) stimulates milk production in breast following pregnancy and birth

© 2009 Pearson Education, Inc.
• Follicle-stimulating hormone (FSH) and luteinizing hormone (LH) both exert their influence on male and female gonads; these two hormones together are referred to as gonadotropins; follicle-stimulating hormone is responsible for development of ova in ovaries and sperm in testes; also stimulates ovary to secrete estrogen; luteinizing hormone stimulates secretion of sex hormones in both males and females and plays role in releasing ova in females
• Melanocyte-stimulating hormone (MSH) stimulates melanocytes to produce more melanin, thereby darkening skin
• Posterior pituitary secretes two hormones, antidiuretic hormone (ADH) and oxytocin
• Antidiuretic hormone promotes water reabsorption by kidney tubules
• Oxytocin stimulates uterine contractions during labor and delivery; after birth release of milk from mammary glands

Testes
• Two oval glands located in scrotal sac of male (see Figure 11.8)
• Male gonads, produce male gametes, sperm, and male sex hormone, testosterone; testosterone produces male secondary sexual characteristics and regulates sperm production

Thymus Gland
• In addition to role as part of immune system, thymus also one of endocrine glands
• Secretes hormone thymosin
• Thymosin important for proper development of immune system
• Located in mediastinal cavity anterior and superior to heart (see Figure 11.9)
• Present at birth and grows to its largest size during puberty; at puberty it begins to shrink and eventually is replaced with connective and adipose tissue
• Function is development of immune system in newborn; essential to growth and development of thymic lymphocytes or T cells, which are critical for body’s immune system

Thyroid Gland
• Resembles butterfly in shape, has right and left lobes (see Figure 11.10)
• Located on either side of trachea and larynx; thyroid cartilage, or Adam’s apple, is located just above thyroid gland
• Produces hormones thyroxine (T4) and triiodothyronine (T3); produced from mineral iodine; help regulate production of energy and heat in body to adjust body’s metabolic rate
• Also secretes calcitonin in response to hypercalcemia (too high blood calcium level); action is opposite of parathyroid hormone; stimulates increased deposition of calcium into bone, thereby lowering blood levels of calcium
### OBJECTIVE 4
List the major hormones secreted by each endocrine gland and describe their functions.

Text pages: 358–359; PowerPoint slides: 10–48

#### LECTURE NOTES

<table>
<thead>
<tr>
<th>Gland and Hormone</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adrenal Cortex</strong></td>
<td></td>
</tr>
<tr>
<td>Glucocorticoids—Cortisol</td>
<td>regulate carbohydrate levels in the body</td>
</tr>
<tr>
<td>Mineralocorticoids—Aldosterone</td>
<td>regulate electrolytes and fluid volume in body</td>
</tr>
<tr>
<td>Steroid sex hormones—Androgen, estrogen, progesterone</td>
<td>responsible for reproduction and secondary sexual characteristics</td>
</tr>
<tr>
<td><strong>Adrenal Medulla</strong></td>
<td></td>
</tr>
<tr>
<td>Epinephrine (adrenaline)</td>
<td>intensifies response during stress; “fight-or-flight” response</td>
</tr>
<tr>
<td>Norepinephrine</td>
<td>chiefly a vasoconstrictor</td>
</tr>
<tr>
<td><strong>Ovaries</strong></td>
<td></td>
</tr>
<tr>
<td>Estrogen</td>
<td>stimulates development of secondary sex characteristics in females; regulates menstrual cycle</td>
</tr>
<tr>
<td>Progesterone</td>
<td>prepares for conditions of pregnancy</td>
</tr>
<tr>
<td><strong>Pancreas</strong></td>
<td></td>
</tr>
<tr>
<td>Glucagon</td>
<td>stimulates liver to release glucose into blood</td>
</tr>
<tr>
<td>Insulin</td>
<td>regulates and promotes entry of glucose cells</td>
</tr>
<tr>
<td><strong>Parathyroid Glands</strong></td>
<td></td>
</tr>
<tr>
<td>Parathyroid hormone (PTH)</td>
<td>stimulates bone breakdown; regulates calcium level in blood</td>
</tr>
<tr>
<td><strong>Pituitary Anterior Lobe</strong></td>
<td></td>
</tr>
<tr>
<td>Adrenocorticotropic hormone (ACTH)</td>
<td>regulates function of adrenal cortex</td>
</tr>
<tr>
<td>Follicle-stimulating hormone (FSH)</td>
<td>stimulates growth of eggs in females and sperm in males</td>
</tr>
<tr>
<td>Growth hormone (GH)</td>
<td>stimulates growth of body</td>
</tr>
<tr>
<td>Luteinizing hormone (LH)</td>
<td>regulates function of male and female gonads; plays role in releasing ova in females</td>
</tr>
<tr>
<td>Melanocyte-stimulating hormone (MSH)</td>
<td>stimulates pigment in skin</td>
</tr>
<tr>
<td>Prolactin</td>
<td>stimulates milk production</td>
</tr>
<tr>
<td>Thyroid-stimulating hormone (TSH)</td>
<td>regulates function of thyroid gland</td>
</tr>
<tr>
<td><strong>Pituitary Posterior Lobe</strong></td>
<td></td>
</tr>
<tr>
<td>Antidiuretic hormone (ADH)</td>
<td>stimulates reabsorption of water by kidneys</td>
</tr>
<tr>
<td>Oxytocin</td>
<td>stimulates uterine contractions and releases milk into ducts</td>
</tr>
</tbody>
</table>

#### TEACHING STRATEGIES

**Pop Questions**
- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

#### LEARNING ACTIVITIES

**Group Activity**
- Divide the class into groups and assign each group a gland; have each group the conditions due to hypersecretion and hyposecretion of its hormones; list signs and symptoms of each; activity is applicable for Objectives 3 and 4.

**Worksheet 11C**
- Chapter Review

**Text**
- Practice Exercises

**Student DVD-ROM**
- Learning games

**CW**
- Practice questions

#### ASSESSMENTS

**Quiz 11G**—Chapter Review

**Test Bank**—questions
Testes
Testosterone promotes sperm production and development of secondary sex characteristics in males

Thymus
Thymosin promotes development of cells in immune system

Thyroid Gland
Calcitonin stimulates deposition of calcium into bone
Thyroxine (T4) stimulates metabolism in cells
Triiodothyronine (T3) stimulates metabolism in cells

OBJECTIVE 5
Build and define endocrine system medical terms from word parts.

Text pages: 366–368; PowerPoint slides: 49–54

LECTURE NOTES

<table>
<thead>
<tr>
<th>Combining Form</th>
<th>Medical Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>adren/o</td>
<td>adrenal</td>
<td>pertaining to adrenal glands</td>
</tr>
<tr>
<td></td>
<td>adrenomegaly</td>
<td>enlarged adrenal gland</td>
</tr>
<tr>
<td></td>
<td>adenopathy</td>
<td>adrenal gland disease</td>
</tr>
<tr>
<td>adrenal/o</td>
<td>adrenalectomy</td>
<td>removal of adrenal glands</td>
</tr>
<tr>
<td></td>
<td>adrenalitis</td>
<td>inflammation of adrenal gland</td>
</tr>
<tr>
<td>calc/o</td>
<td>hypercalcemia</td>
<td>excessive calcium in blood</td>
</tr>
<tr>
<td></td>
<td>hypocalcemia</td>
<td>low calcium in blood</td>
</tr>
<tr>
<td>crin/o</td>
<td>endocrinologist</td>
<td>specialist in endocrine system</td>
</tr>
<tr>
<td></td>
<td>endocrinopathy</td>
<td>endocrine system disease</td>
</tr>
<tr>
<td>glyc/o</td>
<td>hyperglycemia</td>
<td>excessive sugar in blood</td>
</tr>
<tr>
<td></td>
<td>hypoglycemia</td>
<td>low sugar in blood</td>
</tr>
<tr>
<td>kal/i</td>
<td>hyperkalemia</td>
<td>excessive potassium in blood</td>
</tr>
<tr>
<td></td>
<td>hypokalemia</td>
<td>low sodium in blood</td>
</tr>
<tr>
<td>n atr/o</td>
<td>hyponatremia</td>
<td>pertaining to parathyroid gland</td>
</tr>
<tr>
<td>parathyroid/o</td>
<td>parathyroidal</td>
<td>removal of parathyroid gland</td>
</tr>
<tr>
<td></td>
<td>parathyroidectomy</td>
<td>state of excessive parathyroid</td>
</tr>
<tr>
<td></td>
<td>hyperparathyroidism</td>
<td>state of insufficient parathyroid</td>
</tr>
<tr>
<td></td>
<td>hypoparathyroidism</td>
<td></td>
</tr>
<tr>
<td>pancreat/o</td>
<td>pancreatic</td>
<td>pertaining to pancreas</td>
</tr>
<tr>
<td>pituitar/o</td>
<td>pituitary</td>
<td>pertaining to pituitary gland</td>
</tr>
<tr>
<td></td>
<td>hypopituitarism</td>
<td>state of insufficient pituitary</td>
</tr>
<tr>
<td></td>
<td>hyperpituitarism</td>
<td>state of excessive pituitary</td>
</tr>
<tr>
<td>thym/o</td>
<td>thymic</td>
<td>pertaining to thymus gland</td>
</tr>
<tr>
<td></td>
<td>thymectomy</td>
<td>removal of thymus</td>
</tr>
<tr>
<td></td>
<td>thymitis</td>
<td>thymus inflammation</td>
</tr>
<tr>
<td></td>
<td>thymoma</td>
<td>thymus tumor</td>
</tr>
</tbody>
</table>

TEACHING STRATEGIES

- Reinforce how many endocrine system terms can be constructed from word parts.
- Read aloud chapter terms that are made up of word parts; have students identify parts and define terms, either aloud or individually on paper.
- Write sentences on the board using common words; have students substitute correct medical terms.

Pop Questions
- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Worksheet 11A
- New Combining Form and Suffix Handout

Worksheet 11B
- Medical Term Analysis

Worksheet 11C
- Chapter Review

Quiz 11E
- May be used as a worksheet

Text
- Practice Exercises
- Terminology Checklist
OBJECTIVE 6
Identify and define endocrine system vocabulary terms.

Text page: 368; PowerPoint slides: 55–57

LECTURE NOTES

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>acidosis</td>
<td>excessive acidity of body fluids due to accumulation of acids, as in diabetic acidosis</td>
</tr>
<tr>
<td>edema</td>
<td>body tissues contain excessive amounts of fluid</td>
</tr>
<tr>
<td>endocrinology</td>
<td>branch of medicine involving diagnosis and treatment of conditions and diseases of endocrine glands; physician is endocrinologist</td>
</tr>
<tr>
<td>exophthalmos</td>
<td>condition in which eyeballs protrude, such as in Graves’ disease; generally caused by overproduction of thyroid hormone</td>
</tr>
<tr>
<td>gynecomastia</td>
<td>development of breast tissue in males; may be symptom of adrenal feminization</td>
</tr>
<tr>
<td>hirsutism</td>
<td>condition of having excessive amount of hair; generally used to describe females who have adult male pattern of hair growth; can be result of hormonal imbalance</td>
</tr>
<tr>
<td>hypersecretion</td>
<td>excessive hormone production by endocrine gland</td>
</tr>
<tr>
<td>hyposecretion</td>
<td>deficient hormone production by endocrine gland</td>
</tr>
<tr>
<td>obesity</td>
<td>having abnormal amount of fat in body</td>
</tr>
<tr>
<td>syndrome</td>
<td>group of symptoms and signs that, when combined, present clinical picture of disease or condition</td>
</tr>
</tbody>
</table>

TEACHING STRATEGIES

• Write sentences on the board using common words; have students substitute correct medical terms.

Jeopardy Game
• Have students create questions for terms in this section for a Jeopardy game to be played in class—may be combined with Pathology, Diagnostic, and Therapeutic terms.

Pop Questions
• Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Worksheet 11C
• Chapter Review

Text
• Practice Exercises
• Terminology Checklist
• Medical Record Analysis
• Chart Note Transcription

Student DVD-ROM
• Learning games
• Flash cards

CW
• Practice questions
• Case Study

ASSESSMENTS
Quiz 11E—Word Building Quiz
Quiz 11G—Chapter Review
Test Bank—questions
OBJECTIVE 7
Identify and define selected endocrine system pathology terms.

Text pages: 369–371; PowerPoint slides: 58–72

Lecture Notes

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adrenal Glands</td>
<td></td>
</tr>
<tr>
<td>Addison's disease</td>
<td>results from deficiency in adrenocortical hormones; increased pigmentation of skin, generalized weakness, and weight loss</td>
</tr>
<tr>
<td>adrenal feminization</td>
<td>development of female secondary sexual characteristics (such as breasts) in male; result of increased estrogen secretion by adrenal cortex</td>
</tr>
<tr>
<td>adrenal virilism</td>
<td>development of male secondary sexual characteristics (such as deeper voice and facial hair) in female; result of increased androgen secretion by adrenal cortex</td>
</tr>
<tr>
<td>Cushing's syndrome</td>
<td>set of symptoms results from hypersecretion of adrenal cortex; may be result of tumor of adrenal glands; may present symptoms of weakness, edema, excess hair growth, skin discoloration, and osteoporosis</td>
</tr>
<tr>
<td>Pheochromocytoma</td>
<td>usually benign tumor of adrenal medulla that secretes epinephrine; symptoms include anxiety, heart palpitations, dyspnea, profuse sweating, headache, and nausea</td>
</tr>
<tr>
<td>Pancreas</td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus (DM)</td>
<td>chronic disorder of carbohydrate metabolism; results in hyperglycemia and glycosuria; two distinct forms of diabetes mellitus: insulin-dependent diabetes mellitus (IDDM) or type 1, and non–insulin-dependent diabetes mellitus (NIDDM) or type 2</td>
</tr>
<tr>
<td>Diabetic retinopathy</td>
<td>secondary complication of diabetes that affects blood vessels of retina, resulting in visual changes and even blindness</td>
</tr>
<tr>
<td>Insulin-dependent diabetes mellitus (IDDM)</td>
<td>also called type 1 diabetes mellitus; develops early in life when pancreas stops insulin production; patient must take daily insulin injections</td>
</tr>
<tr>
<td>Insulinoma</td>
<td>tumor of islets of Langerhans cells of pancreas; secretes an excessive amount of insulin</td>
</tr>
</tbody>
</table>

Teaching Strategies

- Select two students to do 5-minute presentations of their Internet research in class.
- Write sentences on the board using common words; have students substitute correct medical terms.

Jeopardy Game

- Have students create questions for terms in this section for a Jeopardy game to be played in class—may be combined with Vocabulary, Diagnostic, and Therapeutic terms.

IRDVD

- See PowerPoint presentation on the Instructor's Resource DVD for a video on the topic of diabetes.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

Learning Activities

Internet Research

- Have students select a specific pathology and use Internet resources to research its symptoms, diagnosis, and treatments.

Worksheet 11C

- Chapter Review

Text

- Practice Exercises
- Terminology Checklist
- Medical Record Analysis
- Chart Note Transcription

Student DVD-ROM

- Learning games
- Flash cards

CW

- Practice questions
- Case Study
- Web Destination activities on hypopituitarism and diabetes mellitus
- New York Times link for research into specific pathologies

Assessments

Quiz 11G—Chapter Review
Test Bank—questions

426 Chapter 11/ENDOCRINE SYSTEM © 2009 Pearson Education, Inc.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ketoacidosis</td>
<td>acidosis due to excess of acidic ketone bodies (waste products); serious condition requiring immediate treatment; can result in death for diabetic patient if not reversed; also called diabetic acidosis</td>
</tr>
<tr>
<td>non–insulin-dependent diabetes mellitus</td>
<td>also called type 2 diabetes mellitus; typically develops later in life; pancreas produces normal to high levels of insulin but cells fail to respond to it; patients may take oral hypoglycemics to improve insulin function, or may eventually have to take insulin</td>
</tr>
<tr>
<td>peripheral neuropathy</td>
<td>damage to nerves in lower legs and hands as result of diabetes mellitus; symptoms include either extreme sensitivity or numbness and tingling</td>
</tr>
<tr>
<td>Parathyroid Glands</td>
<td>tetany nerve irritability and painful muscle cramps resulting from hypocalcemia; hypoparathyroidism is one cause</td>
</tr>
<tr>
<td></td>
<td>Recklinghausen disease excessive production of parathyroid hormone; results in degeneration of bones</td>
</tr>
<tr>
<td>Pituitary Gland</td>
<td>acromegaly chronic disease of adults; results in elongation and enlargement of bones of head and extremities; can also be mood changes; due to excessive amount of growth hormone in adult</td>
</tr>
<tr>
<td></td>
<td>diabetes insipidus (DI) disorder caused by inadequate secretion of antidiuretic hormone by posterior lobe of pituitary gland; may be polyuria and polydipsia</td>
</tr>
<tr>
<td></td>
<td>dwarfism condition of being abnormally short in height; may be result of hereditary condition or lack of growth hormone</td>
</tr>
<tr>
<td></td>
<td>gigantism excessive development of body due to overproduction of growth hormone by pituitary gland in child or teenager; opposite of dwarfism</td>
</tr>
<tr>
<td></td>
<td>panhypopituitarism deficiency in all hormones secreted by pituitary gland; often recognized because of problems with glands regulated by pituitary—adrenal cortex, thyroid, ovaries, and testes</td>
</tr>
<tr>
<td>Thyroid Gland</td>
<td>cretinism congenital condition in which lack of thyroid hormones; results in arrested physical and mental development</td>
</tr>
<tr>
<td></td>
<td>goiter enlargement of thyroid gland</td>
</tr>
<tr>
<td></td>
<td>Graves’ disease results in overactivity of thyroid gland; can cause crisis situation; symptoms include exophthalmos and goiter; type of hyperthyroidism</td>
</tr>
<tr>
<td></td>
<td>Hashimoto’s disease chronic autoimmune form of thyroiditis; results in hyposecretion of thyroid hormones</td>
</tr>
</tbody>
</table>
myxedema  condition resulting from hyposecretion of thyroid gland in adult; symptoms can include anemia, slow speech, swollen facial features, edematous skin, drowsiness, and mental lethargy

thyrotoxicosis  condition resulting from marked overproduction of thyroid gland; symptoms include rapid heart action, tremors, enlarged thyroid gland, exophthalmos, and weight loss

**All Glands**

adenocarcinoma  cancerous tumor in gland that is capable of producing hormones secreted by gland; one cause of hypersecretion pathologies

---

**OBJECTIVE 8**

Identify and define selected endocrine system diagnostic procedures.

Text pages: 371–372; PowerPoint slides: 73–76

---

**LECTURE NOTES**

**Terms**

**Clinical Laboratory Tests**

- **blood serum test**  blood test to measure level of substances such as calcium, electrolytes, testosterone, insulin, and glucose; used to assist in determining function of various endocrine glands
- **fasting blood sugar (FBS)**  blood test to measure amount of sugar circulating throughout body after 12-hour fast
- **glucose tolerance test (GTT)**  test to determine blood sugar level; measured dose of glucose given to patient either orally or intravenously; blood samples drawn at certain intervals to determine ability of patient to use glucose; used for diabetic patients to determine their insulin response to glucose
- **protein-bound iodine test (PBI)**  Blood test to measure concentration of thyroxine ($T_4$) circulating in bloodstream; iodine becomes bound to protein in blood and can be measured; useful in establishing thyroid function
- **radioimmunoassay (RIA)**  test used to measure levels of hormones in the plasma of blood
- **thyroid function test (TFT)**  blood test used to measure levels of thyroxine, triiodothyronine, and thyroid-stimulating hormone in bloodstream to assist in determining thyroid function
- **total calcium**  blood test to measure total amount of calcium to assist in detecting parathyroid and bone disorders

---

**TEACHING STRATEGIES**

- Write sentences on the board using common words; have students substitute correct medical terms.
- **Jeopardy Game**  Have students create questions for terms in this section for a Jeopardy game to be played in class—may be combined with Vocabulary, Pathology, and Therapeutic terms.
- **Pop Questions**  Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

**LEARNING ACTIVITIES**

**Worksheet 11C**

- Chapter Review
- Practice Exercises
- Terminology Checklist
- Medical Record Analysis
- Chart Note Transcription

**Student DVD-ROM**

- Learning games
- Flash cards

**CW**

- Practice questions
- Case Study
- *New York Times* link for research into specific diagnostic procedures

---

© 2009 Pearson Education, Inc.
two-hour postprandial glucose tolerance test—blood test to assist in evaluating glucose metabolism; patient eats high carbohydrate diet and then fasts overnight before test; then blood sample is taken two hours after meal

**Diagnostic Imaging**

- **thyroid echogram**—ultrasound examination of thyroid that can assist in distinguishing thyroid nodule from cyst
- **thyroid scan**—test in which radioactive iodine is administered that localizes in thyroid gland; gland can then be visualized with scanning device to detect pathology such as tumors

---

**OBJECTIVE 9**

Identify and define selected endocrine system therapeutic procedures.

Text page: 372; PowerPoint slides: 77–78

---

**LECTURE NOTES**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medical Procedures</strong></td>
<td></td>
</tr>
<tr>
<td>chemical thyroidec-</td>
<td>dose of radioactive iodine is given to kill thyroid gland cells without</td>
</tr>
<tr>
<td>tomy</td>
<td>having to actually do surgery</td>
</tr>
<tr>
<td>hormone replacement</td>
<td>artificial replacement of hormones in patients with hyposecretion disorders;</td>
</tr>
<tr>
<td>therapy</td>
<td>may be oral pills, injections, or adhesive skin patches</td>
</tr>
<tr>
<td><strong>Surgical Procedures</strong></td>
<td></td>
</tr>
<tr>
<td>laparoscopic adrena-</td>
<td>removal of adrenal gland through small incision in abdomen and using</td>
</tr>
<tr>
<td>lec-tomy</td>
<td>endoscopic instruments</td>
</tr>
<tr>
<td>lobectomy</td>
<td>removal of lobe from organ; in this case, one lobe of thyroid gland</td>
</tr>
</tbody>
</table>

---

**TEACHING STRATEGIES**

- Write sentences on the board using common words; have students substitute correct medical terms.
- **Jeopardy Game**
  - Have students create questions for terms in this section for a Jeopardy game to be played in class—may be combined with Vocabulary, Pathology, and Diagnostic terms.
- **Pop Questions**
  - Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

**LEARNING ACTIVITIES**

- **Worksheet 11C**
  - Chapter Review
- **Text**
  - Practice Exercises
  - Terminology Checklist
  - Medical Record Analysis
  - Chart Note Transcription
- **Student DVD-ROM**
  - Learning games
  - Flash cards
- **CW**
  - Practice questions
  - Case Study
  - Web Destination activity on kidney transplants

© 2009 Pearson Education, Inc.
OBJECTIVE 10
Identify and define selected medications relating to the endocrine system.

Text page: 373; PowerPoint slides: 79–80

LECTURE NOTES

<table>
<thead>
<tr>
<th>Classification</th>
<th>Action</th>
<th>Generic and Brand Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>antithyroid agents</td>
<td>blocks production of thyroid hormones in patients with hypersecretion disorders</td>
<td>methimazole, Tapazole; propylthiouracil</td>
</tr>
<tr>
<td>corticosteroids</td>
<td>strong anti-inflammatory action; used to treat severe chronic inflammatory diseases such as rheumatoid arthritis; long-term use has adverse side effects such as osteoporosis and symptoms of Cushing’s disease; also used to treat adrenal cortex hyposecretion disorders such as Addison’s disease</td>
<td>prednisone, Deltasone</td>
</tr>
<tr>
<td>human growth hormone therapy</td>
<td>hormone replacement therapy with human growth hormone; stimulates skeletal growth; treats children with abnormally short stature</td>
<td>somatropin, Genotropin; somatrem, Protropin</td>
</tr>
<tr>
<td>insulin</td>
<td>replaces insulin for type 1 diabetics or to treat severe type 2 diabetics</td>
<td>human insulin, Humulin L</td>
</tr>
<tr>
<td>oral hypoglycemic agents</td>
<td>causes decrease in blood sugar; not used for insulin-dependent patients</td>
<td>metformin, Glucophage; glipizide, Glucotrol</td>
</tr>
<tr>
<td>thyroid replacement hormone</td>
<td>hormone replacement therapy for patients with hypothyroidism or who have had thyroidectomy</td>
<td>levothyroxine, Levo-T; liothyronine, Cytomel</td>
</tr>
<tr>
<td>vasopressin</td>
<td>controls diabetes insipidus and promote reabsorption of water in kidney tubules</td>
<td>desmopressin acetate, Desmopressin; conivaptan, Vaprisol</td>
</tr>
</tbody>
</table>

TEACHING STRATEGIES

Pop Questions
- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES
- Have students use a PDR and/or the Internet to look up additional information regarding these medications, such as dosage, side effects, and contraindications.

Worksheet 11C
- Chapter Review

Text
- Practice Exercises
- Terminology Checklist

Student DVD-ROM
- Learning games
- Flash cards

CW
- Practice questions

ASSESSMENTS

Quiz 11G—Chapter Review
Test Bank—questions
OBJECTIVE 11
Define selected abbreviations associated with the endocrine system.

Text page: 373; PowerPoint slides: 81–84

**Lecture Notes**

α  αlpha
ACTH  adrenocorticotropic hormone
ADH  antidiuretic hormone
β  βeta
BMR  basal metabolic rate
DI  diabetes insipidus
DM  diabetes mellitus
FBS  fasting blood sugar
FSH  follicle-stimulating hormone
GH  growth hormone
GTT  glucose tolerance test
IDDM  insulin-dependent diabetes mellitus
K+  potassium
LH  luteinizing hormone
MSH  melanocyte-stimulating hormone
Na+  sodium
NIDDM  non–insulin-dependent diabetes mellitus
NPH  neutral protamine Hagedorn (insulin)
PBI  protein-bound iodine
PRL  prolactin
PTH  parathyroid hormone
RAI  radioactive iodine
RIA  radioimmunoassay
T3  triiodothyronine
T4  thyroxine
TFT  thyroid function test
TSH  thyroid-stimulating hormone

**Teaching Strategies**

- Emphasize the importance of learning abbreviations and their full meanings; point out how some abbreviations, such as FBS, IDDM, ACTH, FSH, and RIA are typically used rather than full terms.
- Encourage students to add abbreviations to their flash cards.
- Write sentences on the board using common words; have students substitute correct abbreviations.

**Memory Game**

- Have students assist in creating a memory game to be played in class.

**Pop Questions**

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

**Learning Activities**

**Worksheet 11C**
- Chapter Review

**Quiz 11F**
- May be used as worksheet

**Text**
- Practice Exercises

**Student DVD-ROM**
- Learning games
- Flash cards

**CW**
- Practice questions

**Assessments**

**Quiz 11F**—Abbreviations Quiz
**Quiz 11G**—Chapter Review
**Test Bank**—questions
## Worksheet 11A

**New Combining Form and Suffix Handout**

Directions: For each combining form below, write out its meaning and then locate a new term from the chapter that uses the combining form or suffix.

<table>
<thead>
<tr>
<th>Combining Forms</th>
<th>Meaning</th>
<th>Chapter Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. act/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. adren/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. adrenal/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. andr/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. calc/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. crin/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. estr/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. glyc/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. glycos/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. gonad/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. home/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. kal/i</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. natr/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. ophthalm/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. pancreat/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. parathyroid/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. pineal/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. pituitar/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. thym/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. thyr/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. thyroid/o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. toxic/o</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(Continued)*
<table>
<thead>
<tr>
<th>Combining Forms</th>
<th>Meaning</th>
<th>Chapter Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suffixes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. -crine</td>
<td>__________</td>
<td>__________</td>
<td>__________</td>
</tr>
<tr>
<td>24. -dipsia</td>
<td>__________</td>
<td>__________</td>
<td>__________</td>
</tr>
<tr>
<td>25. -prandial</td>
<td>__________</td>
<td>__________</td>
<td>__________</td>
</tr>
<tr>
<td>26. -tropin</td>
<td>__________</td>
<td>__________</td>
<td>__________</td>
</tr>
</tbody>
</table>
# Worksheet 11B
## Medical Term Analysis

Directions: Below are terms built from word parts used in this chapter that are not analyzed in the Word Building Table. Many are built from word parts you have learned in previous chapters. Analyze each term presented below and list and define the word parts used to build each term.

<table>
<thead>
<tr>
<th>Medical Term</th>
<th>Word Part Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. endocrine</td>
<td>___________________</td>
</tr>
<tr>
<td>2. homeostasis</td>
<td>___________________</td>
</tr>
<tr>
<td>3. androgen</td>
<td>___________________</td>
</tr>
<tr>
<td>4. estrogen</td>
<td>___________________</td>
</tr>
<tr>
<td>5. adrenocorticotropin</td>
<td>___________________</td>
</tr>
<tr>
<td>6. gonadotropin</td>
<td>___________________</td>
</tr>
<tr>
<td>7. somatotropin</td>
<td>___________________</td>
</tr>
<tr>
<td>8. endocrinology</td>
<td>___________________</td>
</tr>
<tr>
<td>9. gynecomastia</td>
<td>___________________</td>
</tr>
<tr>
<td>10. retinopathy</td>
<td>___________________</td>
</tr>
<tr>
<td>11. neuropathy</td>
<td>___________________</td>
</tr>
</tbody>
</table>

(Continued)
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>acromegaly</td>
</tr>
<tr>
<td>13.</td>
<td>panhypopituitarism</td>
</tr>
<tr>
<td>14.</td>
<td>thyrotoxicosis</td>
</tr>
<tr>
<td>15.</td>
<td>adenocarcinoma</td>
</tr>
<tr>
<td>16.</td>
<td>postprandial</td>
</tr>
<tr>
<td>17.</td>
<td>lobectomy</td>
</tr>
</tbody>
</table>
Worksheet 11C
Chapter Review

Anatomy and Physiology

1. The endocrine system is a collection of ______________ that secrete ______________ directly into the bloodstream.

2. The adrenal glands are located directly above the ______________ and are divided into a ______________ and ______________.

3. The female gonad is the ______________, and the male gonad is the ______________.

4. The ______________ is the only endocrine gland that is both an exocrine and endocrine gland.

5. Parathyroid hormone is responsible for regulating the level of ______________ in the bloodstream.

6. ______________ from the pineal gland is responsible for regulating circadian rhythm.

7. Prolactin stimulates ______________ production by the ______________.

8. Follicle-stimulating hormone and luteinizing hormone are collectively referred to as ______________.

9. Antidiuretic hormone and oxytocin are secreted by the ______________.

10. Thyroid gland hormones are produced from the mineral ______________.

Word Building

Directions: Build a term that means:

1. adrenal gland disease __________________________________________________________________

2. excessive calcium in the blood ___________________________________________________________

3. low sugar in the blood __________________________________________________________________

4. state of excessive parathyroid __________________________________________________________

5. inflammation of pancreas __________________________________________________________________

6. thymus tumor _______________________________________________________________________

7. state of insufficient thyroid __________________________________________________________________

8. sugar in the urine _______________________________________________________________________

9. many (excessive) thirst ___________________________________________________________________

10. enlarged thyroid _______________________________________________________________________

(Continued)
### Matching

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. edema</td>
<td>a. tumor of adrenal medulla</td>
</tr>
<tr>
<td></td>
<td>2. exophthalmos</td>
<td>b. secrete into a duct</td>
</tr>
<tr>
<td></td>
<td>3. gynecomastia</td>
<td>c. type 1 diabetes mellitus</td>
</tr>
<tr>
<td></td>
<td>4. hirsutism</td>
<td>d. a pituitary gland hormone</td>
</tr>
<tr>
<td></td>
<td>5. syndrome</td>
<td>e. breast development in a male</td>
</tr>
<tr>
<td></td>
<td>6. virilism</td>
<td>f. enlarged thyroid gland</td>
</tr>
<tr>
<td></td>
<td>7. pheochromocytoma</td>
<td>g. tumor of islets of Langerhans</td>
</tr>
<tr>
<td></td>
<td>8. acidosis</td>
<td>h. test using radioactive iodine</td>
</tr>
<tr>
<td></td>
<td>9. diabetes mellitus</td>
<td>i. tissues contain excessive amount of fluid</td>
</tr>
<tr>
<td></td>
<td>10. IDDM</td>
<td>j. short stature</td>
</tr>
<tr>
<td></td>
<td>11. insulinoma</td>
<td>k. lab test for sugar level of blood</td>
</tr>
<tr>
<td></td>
<td>12. tetany</td>
<td>l. development of male sex characteristics</td>
</tr>
<tr>
<td></td>
<td>13. acromegaly</td>
<td>m. bulging eyeballs</td>
</tr>
<tr>
<td></td>
<td>14. dwarfism</td>
<td>n. marked overproduction of thyroid hormones</td>
</tr>
<tr>
<td></td>
<td>15. goiter</td>
<td>o. enlargement of bones of extremities</td>
</tr>
<tr>
<td></td>
<td>16. Hashimoto's disease</td>
<td>p. measures levels of hormones in the blood</td>
</tr>
<tr>
<td></td>
<td>17. thyrotoxicosis</td>
<td>q. excessive amount of hair</td>
</tr>
<tr>
<td></td>
<td>18. FBS</td>
<td>r. ultrasound examination</td>
</tr>
<tr>
<td></td>
<td>19. radioimmunoassay</td>
<td>s. nerve irritability</td>
</tr>
<tr>
<td></td>
<td>20. thyroid echogram</td>
<td>t. treats diabetes insipidus</td>
</tr>
<tr>
<td></td>
<td>21. thyroid scan</td>
<td>u. group of symptoms occurring together</td>
</tr>
<tr>
<td></td>
<td>22. vasopressin</td>
<td>v. autoimmune form of thyroiditis</td>
</tr>
<tr>
<td></td>
<td>23. hyperkalemia</td>
<td>w. symptoms are hyperglycemia and glycosuria</td>
</tr>
<tr>
<td></td>
<td>24. GH</td>
<td>x. too much potassium in the blood</td>
</tr>
<tr>
<td></td>
<td>25. exocrine</td>
<td>y. excess acid in the body tissues</td>
</tr>
</tbody>
</table>
Quiz 11A

New Word Parts Quiz

Directions: Define the combining form or suffix in the spaces provided.

1. acr/o ______________________________________________________________________________
2. adren/o ______________________________________________________________________________
3. andr/o _______________________________________________________________________________
4. calc/o _______________________________________________________________________________
5. crin/o ______________________________________________________________________________
6. estr/o ______________________________________________________________________________
7. glycos/o ____________________________________________________________________________
8. gonad/o ____________________________________________________________________________
9. home/o _____________________________________________________________________________
10. kal/i _______________________________________________________________________________
11. natr/o _____________________________________________________________________________
12. ophthalm/o _________________________________________________________________________
13. pancreat/o _________________________________________________________________________
14. parathyroid/o _______________________________________________________________________
15. pineal/o __________________________________________________________________________
16. pituitar/o __________________________________________________________________________
17. thym/o ____________________________________________________________________________
18. adrenal/o __________________________________________________________________________
19. thyr/o _____________________________________________________________________________
20. toxic/o ___________________________________________________________________________
21. glyc/o _____________________________________________________________________________
22. -crine ______________________________________________________________________________
23. -dipsia ______________________________________________________________________________
24. -prandial __________________________________________________________________________
25. -tropin _____________________________________________________________________________
Quiz 11B
Spelling Quiz

Directions: Write each term as your instructor pronounces it.

1. _________________________________________________________

2. _________________________________________________________

3. _________________________________________________________

4. _________________________________________________________

5. _________________________________________________________

6. _________________________________________________________

7. _________________________________________________________

8. _________________________________________________________

9. _________________________________________________________

10. _________________________________________________________

11. _________________________________________________________

12. _________________________________________________________

13. _________________________________________________________

14. _________________________________________________________

15. _________________________________________________________

16. _________________________________________________________

17. _________________________________________________________

18. _________________________________________________________

19. _________________________________________________________

20. _________________________________________________________
Quiz 11C
Labeling Diagram

Directions: Label the glands of the endocrine system.

1. __________________
2. __________________
3. __________________
4. Insulin-secreting cell
5. Glucagon-secreting cell
6. __________________
Quiz 11D
Labeling Diagram

Directions: Label the hormones and target organs of the anterior pituitary gland.

1. __________________
2. (target)______________
3. (hormone)_____________
4. (target)______________
5. (hormone)_____________
6. (target)______________
7. (hormone)_____________
8. (target)______________
9. (hormone)_____________
10. (target)______________
11. (hormone)_____________
12. (target)______________
13. (hormone)_____________
Quiz 11E

Word Building Quiz

Directions: Build a single medical term for each phrase below.

1. thymus inflammation ________________________________________________
2. pertaining to the parathyroid gland _________________________________
3. pertaining to the pancreas _____________________________________________
4. pertaining to the thymus gland _________________________________________
5. pertaining to the thyroid gland _________________________________________
6. removal of the thyroid ________________________________________________
7. state of insufficient pituitary __________________________________________
8. low sodium in the blood _____________________________________________
9. excessive potassium in the blood _________________________________________
10. specialist in the endocrine system _________________________________
11. excessive calcium in the blood _________________________________________
12. low sugar in the blood ______________________________________________
13. adrenal gland disease _______________________________________________
14. enlarged extremities ________________________________________________
15. condition of too much urine __________________________________________
Quiz 11F
Abbreviations Quiz

Directions: Write the medical term for which each abbreviation stands.

1. ACTH ____________________________________________________________
2. ADH _____________________________________________________________
3. BMR _____________________________________________________________
4. DI ______________________________________________________________
5. DM ______________________________________________________________
6. FBS _____________________________________________________________
7. FSH _____________________________________________________________
8. GH ______________________________________________________________
9. GTT ______________________________________________________________
10. IDDM ___________________________________________________________
11. K+ ______________________________________________________________
12. Na+ _____________________________________________________________
13. α ______________________________________________________________
14. PBI _____________________________________________________________
15. PRL _____________________________________________________________
16. PTH _____________________________________________________________
17. RIA _____________________________________________________________
18. T3 ______________________________________________________________
19. T4 ______________________________________________________________
20. TFT _____________________________________________________________
21. TSH _____________________________________________________________
22. NIDDM __________________________________________________________
23. β ______________________________________________________________
24. LH ______________________________________________________________
25. MSH _____________________________________________________________
Quiz 11G
Chapter Review

PART I: Multiple Choice
Directions: Circle the correct answer.

1. The hormone that aids the body in regulating carbohydrates is
   a. cortisol.
   b. epinephrine.
   c. aldosterone.
   d. oxytocin.

2. Which of the following is NOT an endocrine gland?
   a. thyroid
   b. pancreas
   c. pituitary
   d. lacrimal

3. Which hormone is NOT secreted by the anterior lobe of the pituitary gland?
   a. prolactin
   b. antidiuretic hormone
   c. thyroid-stimulating hormone
   d. growth hormone

4. Insulin-dependent diabetes mellitus is also known as
   a. type 1.
   b. Recklinghausen disease.
   c. type 2.
   d. myxedema.

5. The term hyperkalemia is defined as
   a. excess potassium in the blood.
   b. excess sugar in the blood.
   c. excess sodium in the blood.
   d. excess calcium in the blood.

6. The term for a condition of painful muscle cramps resulting from a low amount of calcium in the blood is
   a. myxedema.
   b. tetany.
   c. goiter.
   d. acidosis.

7. The term for the condition of having an excessive amount of hair is
   a. cretinism.
   b. syndrome.
   c. gynecomastia.
   d. hirsutism.

8. Thyroid function tests are
   a. tests in which a radioactive element is administered.
   b. blood test used to measure the levels of T₃, T₄, and TSH.
   c. ultrasound examination of the thyroid.
   d. procedure where the thyroid is destroyed.

9. The disease resulting from hypersecretion by the adrenal cortex is
   a. Addison’s disease.
   b. Grave’s disease.
   c. Cushing’s syndrome.
   d. Hashimoto’s disease.

10. Goiter is enlargement of the
    a. adrenal glands.
    b. pituitary gland.
    c. parathyroid glands.
    d. thyroid gland.

(Continued)
PART II: Matching
Directions: Match the term with its definition.

<table>
<thead>
<tr>
<th></th>
<th>1. growth hormone</th>
<th>a. test for thyroid function</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
<td>------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>---</td>
<td>------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>---</td>
<td>------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>---</td>
<td>------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td></td>
<td>2. hormone replacement therapy</td>
<td>b. excess body fluids</td>
</tr>
<tr>
<td></td>
<td>3. protein-bound iodine test</td>
<td>c. may result in blindness</td>
</tr>
<tr>
<td></td>
<td>4. myxedema</td>
<td>d. secreted by the pancreas</td>
</tr>
<tr>
<td></td>
<td>5. diabetic retinopathy</td>
<td>e. hyposecretion of thyroid in children</td>
</tr>
<tr>
<td></td>
<td>6. gynecomastia</td>
<td>f. treats children with abnormal short stature</td>
</tr>
<tr>
<td></td>
<td>7. edema</td>
<td>g. secreted by the posterior pituitary gland</td>
</tr>
<tr>
<td></td>
<td>8. glucagon</td>
<td>h. hyposecretion of thyroid in adults</td>
</tr>
<tr>
<td></td>
<td>9. antidiuretic hormone</td>
<td>i. symptom of adrenal feminization</td>
</tr>
<tr>
<td></td>
<td>10. cretinism</td>
<td>j. treatment for hyposecretion disorders</td>
</tr>
</tbody>
</table>

PART III: Abbreviations
Directions: Write the full meaning of the following abbreviations.

1. IDDM _________________________________________________________________________________
2. PBI ________________________________________________________________________________
3. FBS ________________________________________________________________________________
4. Na⁺ _________________________________________________________________________________
5. T₄ ________________________________________________________________________________
Chapter 11 Answer Keys

Worksheet 11A Answer Key

1. extremities
2. adrenal glands
3. adrenal glands
4. male
5. calcium
6. secrete
7. female
8. sugar
9. sugar
10. sex glands
11. sameness
12. potassium
13. sodium
14. eye
15. pancreas
16. parathyroid gland
17. pineal gland
18. pituitary gland
19. thymus gland
20. thyroid gland
21. thyroid gland
22. poison

Suffixes
23. to secrete
24. thirst
25. relating to a meal
26. stimulate

Worksheet 11B Answer Key

1. endo- = within; -crine = to secrete
2. home/o = sameness; -stasis = standing still
3. andr/o = male; -gen = producing
4. estr/o = female; -gen = producing
5. adren/o = adrenal gland; cortic/o = cortex; -tropin = to stimulate
6. gonad/o = sex gland; -tropin = to stimulate
7. somat/o = body; -tropin = to stimulate
8. endo- = within; crin/o = to secrete; -logy = study of
9. gynec/o = female; mast/o = breast; -ia = condition
10. retin/o = retina; -pathy = disease
11. neur/o = nerve; -pathy = disease
12. acr/o = extremites; -megaly = enlarged
13. pan- = all; hypo- = deficient; pituitary/o = pituitary gland; -ism = state of
14. thyri/o = thyroid gland; toxic/o = poison; -osis = abnormal condition
15. aden/o = gland; carcin/o = cancer; -oma = tumor
16. post- = after; -prandial = pertaining to a meal
17. lob/o = lobe; -ectomy = surgical removal

Worksheet 11C Answer Key

Anatomy and Physiology

1. glands; hormones
2. kidneys; cortex, medulla
3. ovary; testis
4. pancreas
5. calcium
6. melatonin
7. milk; breasts
8. gonadotropins
9. posterior pituitary gland
10. iodine

Word Building

1. adrenopathy
2. hypercalcemia
3. hypoglycemia
4. hyperparathyroidism
5. pancreatitis
6. thymoma
7. hypothyroidism
8. glycosuria
9. polydipsia
10. thyromegaly

© 2009 Pearson Education, Inc.
Matching
1. i 14. j
2. m 15. f
3. e 16. v
4. q 17. n
5. u 18. k
6. l 19. p
7. a 20. r
8. y 21. h
9. w 22. t
10. c 23. x
11. g 24. d
12. s 25. b
13. o

Quiz 11A Answer Key
1. extremities 14. parathyroid gland
2. adrenal glands 15. pineal gland
3. male 16. pituitary gland
4. calcium 17. thymus gland
5. secrete 18. adrenal gland
6. female 19. thyroid gland
7. sugar 20. poison
8. sex glands 21. sugar
9. sameness 22. to secrete
10. potassium 23. thirst
11. sodium 24. relating to a meal
12. eye 25. stimulate
13. pancreas

Quiz 11B Answer Key
1. homeostasis 11. hirsutism
2. luteinizing 12. pheochromocytoma
3. Langerhans 13. ketoacidosis
4. circadian 14. insulinoma
5. thalamus 15. Recklinghausen
6. adrenocorticotropic 16. panhypopituitarism
7. testosterone 17. cretinism
8. triiodothyronine 18. thyrotoxicosis
9. exophthalmos 19. radioimmunoassay
10. gynecomastia 20. adrenalectomy

Quiz 11C Answer Key
1. pineal gland 5. pituitary gland
2. thyroid and parathyroid glands 6. thymus gland
3. adrenal glands 7. ovary
4. pancreas 8. testis
Quiz 11D Answer Key
1. pituitary gland
2. bone and soft tissue
3. GH
4. testes
5. FSH, LH
6. ovary
7. FSH, LH

8. thyroid gland
9. TSH
10. adrenal cortex
11. ACTH
12. breast
13. PRL

Quiz 11E Answer Key
1. thymitis
2. parathyroidal
3. pancreatic
4. thymic
5. thyroidal
6. thyroidectomy
7. hypopituitarism
8. hyponatremia

9. hyperkalemia
10. endocrinologist
11. hypercalcemia
12. hypoglycemia
13. adrenopathy
14. acromegaly
15. polyuria

Quiz 11F Answer Key
1. adrenocorticotropic hormone
2. antidiuretic hormone
3. basal metabolic rate
4. diabetes insipidus
5. diabetes mellitus
6. fasting blood sugar
7. follicle-stimulating hormone
8. growth hormone
9. glucose tolerance test
10. insulin-dependent diabetes mellitus
11. potassium
12. sodium
13. alpha

14. protein-bound iodine
15. prolactin
16. parathyroid hormone
17. radioimmunoassay
18. triiodothyronine
19. thyroxine
20. thyroid function test
21. thyroid-stimulating hormone
22. non-insulin-dependent diabetes mellitus
23. beta
24. luteinizing hormone
25. melanocyte-stimulating hormone

Quiz 11G Answer Key
Multiple Choice
1. A
2. D
3. B
4. A
5. A
6. B
7. D
8. B
9. C
10. D
Matching
1. f          6. i
2. j          7. b
3. a          8. d
4. h          9. g
5. c          10. e

Abbreviations
1. insulin-dependent diabetes mellitus  4. sodium
2. protein-bound iodine                 5. thyroxine
3. fasting blood sugar