**Study Guide**

**Medical Terminology**

By

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**About the Author**

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# *INSTRUCTIONS*

### INTRODUCTION

Welcome to your course on medical terminology. You’re taking this course because you’re most likely interested in pursuing a health and science career, which entails ­proficiency­in­communicating­with­healthcare­professionals­such­as­physicians,­nurses,or dentists.

As an aspiring member of a healthcare team, accurate understanding, pronunciation, spelling,­and­definition­of­frequently­used­medical­terms­is­imperative.­The­textbook­entitled *Quick & Easy Medical Terminology,* 8th Edition*,* by Peggy C. Leonardwill provide basic knowledge and understanding of medical terminologies. Competence in using medical language doesn’t happen instantaneously. A strong medical vocabulary is a product of excellent time management skills and fervent commitment by the student.

### COURSE OBJECTIVES

When you complete this section, you’ll be able to do the following:

QQ Identify word parts and write medical terms accurately

QQ Utilize­suffixes­to­build­medical­terminologies­related­to­surgical­procedures,­medical conditions, specialists, and specialties

QQ Recognize­and­use­prefixes­in­writing­medical­terms

QQ Distinguish and analyze medical terms associated with the digestive system

QQ Identify and be familiar with medical terminologies pertaining to the integumentary system

### COURSE MATERIALS

This course includes the following materials:

1. This study guide, which contains an introduction to your course, plus

QQ A lesson assignments page with a schedule of study assignments, as well as exams for the lessons you’ll complete during this course

QQ Individual sections that cover each of the main points of each lesson

QQ Self-checks and answers to help you assess your understanding of the material

1. Your course textbook, *Quick and Easy Medical Terminology,* 8th Edition*,* which contains the assignment reading material

**Instructions**

### YOUR TEXTBOOK

Your textbook, *Quick and Easy Medical Terminology,* 8th Edition, by Peggy C. Leonard contains the material on which you’ll be tested. You need to become familiar with this textbook before beginning your studies.

You’ll want to begin by skimming the table of contents. This will give you an overview of the entire textbook. Read the preface as a brief introduction to the textbook. Appendices, found at the end of the text, provide medical abbreviations, word parts and their meanings, and answers to self-check questions. Following the appendices are a bibliography and photo credits, as well as an index.

### STUDY PLAN

Think of this study guide as a blueprint for your course. You should read it carefully. Using the­following­procedures­should­help­you­receive­the­maximum­benefit­from­your­studies:

QQ Read the lessons in the study guide to introduce you to concepts that are discussed in the textbook. The lessons emphasize the important material discussed in the text and provide additional tips or examples to help you grasp the material.

QQ Note the chapters for each assignment in the textbook and read the assignment in the textbook to get a general idea of its content. Study the assignment, paying attention to all details, especially the main concepts.

As you can see, even if you have never heard of the word “antibacterial,” the word parts provide clues that it is something that protects against bacteria. Therefore, it can be helpful to take into consideration the meaning of word parts, in addition to the context of the sentence or paragraph that the word is in, to decipher an unfamiliar word’s meaning. Also, keep in mind that while many medical terms contain all three word parts, others will contain varying

QQ Answer the questions and problems provided in the self-checks in the study guide. This will serve as a review of the material covered.

QQ After answering the suggested questions, check your answers with those given in the back of the study guide. If you miss any questions, review the pages of the textbook covering those questions. The self-checks are designed to reveal weak points that you need to review. Do not send the self-check answers to the school. They’re for you to evaluate your understanding of the material. Complete each assignment in this way.

QQ After you’ve completed and checked the self-checks for Lesson 1, go to your student­portal­and­complete­your­first­exam.

QQ Follow this procedure for all lessons. At any time, you can contact your instructor for information regarding the materials.

|  |
| --- |
| Remember to check your student portal regularly. Additional resources to enhance your learning experience may be posted. |

**Instructions**

# *READING ASSIGNMENTS*

***Lesson 1: The Fundamentals of Medical Terminology* Read in the study guide: Read in the textbook:**

|  |  |
| --- | --- |
| Section 1.1 | Chapter 1 |
| Section 1.2 | Chapter 2 |
| Section 1.3 | Chapter 3 |

**Examination 427782RR**

***Lesson 2: Diagnosis, Intervention, and Human Body Terms* Read in the study guide: Read in the textbook:**

|  |  |
| --- | --- |
| Section 2.1 | Chapter 4 |
| Section 2.2 | Chapter 5 |

**Examination 427783RR**

***Lesson 3: Musculoskeletal, Circulatory, and Respiratory***

***System Terms***

|  |  |
| --- | --- |
| **Read in the study guide:** | **Read in the textbook:** |
| Section 3.1 | Chapter 6 |
| Section 3.2 | Chapter 7 |
| Section 3.3 | Chapter 8 |

**Examination 427784RR**

***Lesson 4: Digestive, Urinary, and Reproductive System Terms* Read in the study guide: Read in the textbook:**

|  |  |
| --- | --- |
| Section 4.1 | Chapter 9 |
| Section 4.2 | Chapter 10 |
| Section 4.3 | Chapter 11 |

**Examination 427785RR**

### MEDICAL TERMINOLOGY

**Reading Assignments**

***Lesson 5: Integumentary, Nervous, and Endocrine System Terms* Read in the study guide: Read in the textbook:**

|  |  |
| --- | --- |
| Section 5.1 | Chapter 12 |
| Section 5.2 | Chapter 13 |
| Section 5.3 | Chapter 14 |
| Section 5.4 | Chapter 15 |

**Examination 427786RR**

*Note:* To access and complete any of the examinations for this study guide, click the appropriate **Take Exam** icon on your student portal. You shouldn’t have to enter the examination numbers. These numbers are for reference only if you have reason to contact Student Services.

**MEDICAL TERMINOLOGY**

**Reading Assignments**

# *LESSON 1: THE FUNDAMENTALS OF MEDICAL TERMINOLOGY*

### INTRODUCTION

For­a­layperson,­learning­medical­language­may­seem­difficult,­but­it­becomes­easier­asone gets to know the origin and meaning of medical terms. For healthcare professionals, it’s already second nature. The majority of the medical terms are borrowed from Latin and Greek, but it’s unnecessary for you to learn these languages to become experts in the use of and understanding of medical terms. All you need to do is to study and learn word parts.

### SECTION 1.1: SIMPLIFIED MEDICAL LANGUAGE

**Read the following section, then read Chapter 1 in your textbook.**

***Objectives***

When you complete this section, you’ll be able to identify word parts and write medical terms properly.

### SIMPLIFIED MEDICAL LANGUAGE

The building block for most medical terms is the *word root*, or the primary body of a word. At times, a medical term can be made up of compound words. A compound word may consist of two word roots, such as in the case of collarbone (*collar* + *bone*).

To facilitate the pronunciation of words, a combining vowel is placed in between word roots.­A­significant­number­of­medical­terms­use­the­vowel­“o”.­However,­it’s­good­to­notethat­“o”­isn’t­the­only­vowel.

The following table demonstrates examples of roots and combining forms.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Word Root** | **Combining Vowel** | | **Combining Form** | **Meaning** | **Use in a Word** |
| acr | + | o | acr/o | extremity | acrocyanosis |
| psych | + | o | psych/o | mind | psychology |
| chol | + | e | chol/e | bile | cholesterase |

### PREFIXES AND SUFFIXES

Prefixes­and­suffixes­may­accompany­a­word­root­to­alter­its­meaning.­A­*prefix* is attached before the word, while a *suffix* is placed at the end of a word root. Sometimes, a word­may­consist­of­a­prefix­and­a­suffix­only.

|  |
| --- |
| *Prefix* + *Combining form* + *Suffix electro* + *cardi/o* + *gram*  (electrocardiogram)  *Prefix* + *Suffix hyper* + *emia*  (hyperemia) |

By­now,­you’ve­already­learned­word­parts.­Word­roots,­combining­forms,­prefixes,­andsuffixes­are­all­word­parts.­

### WRITING MEDICAL TERMS

Building words follows certain guidelines. Table 2 presents some common rules in word building.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Guidelines** | **Examples** | |
| Linking combining forms | In most instances, the combining vowel is retained amid combining forms. | leuk/o + cyte cardi/o + logy | leukocyte cardiology |
| Linking combining forms­and­suffixes | Use a combining vowel if­the­suffix­begins­with­aconsonant. | crani/o + tomy derm/a + tology | craniotomy dermatology |
| Linking combining forms­and­suffixeswith initial vowels | Omit the combining vowel if­the­suffix­begins­with­avowel. | appendic/o + itis enter/o + ic | appendicitis enteric |
| Linking other word parts­and­prefixes | Usually,­prefixes­need­not­bechanged when linked with other word parts. | dys + pepsia intra +dermal | dyspepsia intradermal |

To better recognize the parts that make up a medical term, word division is commonly used throughout this course. For instance, appendectomy may be written as *append* + *ectomy* to highlight its component parts.

### EPONYMS

*Eponyms* are names derived from a proper noun. They may originate from the name of­a­person,­place,­or­thing.­In­the­medical­field,­diseases,­organs,­procedures,­orbody functions can be eponyms; hence, they are frequently capitalized. Examples of eponyms include Alzheimer’s disease, after Alois Alzheimer, and Babinski sign, after Joseph Babinski.

### ABBREVIATIONS AND PHARMACOLOGY

An *abbreviation* is a shortened form of a word or phrase. Abbreviations can be in the form of:

QQ Letters: The abbreviation for chest x-ray is CXR.

QQ Shortened­words:­The­abbreviation­“tab”­is­short­for­“tablet.”

QQ Acronyms: The acronym CPR stands for cardiopulmonary resuscitation.

*Note*: Abbreviations and symbols should be used cautiously, especially when medications are involved. The Institute for Safe Medication Practices (ISMP) and The Joint Commission (TJC) provide a list of unsafe abbreviations and symbols.

The branch of science that deals with the preparation, properties, uses, and actions of drugs is known as *pharmacology.* Drugs, most commonly referred to as medicines, are used in the prevention and treatment of diseases. Concepts related to drugs include the following:

QQ Route of administration: ways in which drugs can be given (usually via the mouth or via an injection)

QQ Generic name: nonproprietary name of the drug (for example, ibuprofen)

QQ Trade name: company name, otherwise known as the brand name (for example,

Motrin)

### PLURALS

The plural form of many medical terms follows the rules used in common language.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Word endings** | | **Singular form** | | | **Plural Form** | |
| Consonants other than s, h, or y | | contusion | | | contusions | |
| s, ch, sh | | virus | | | viruses | |
| y | | allergy | | | allergies | |
| **General Guidelines in Forming Plurals of Nouns with Special Endings** | | | | | | |
| **Singular**  **Ending** | **Plural Ending** | | **Examples (Singular)** | | | **Examples (Plural)** |
| is | es | | diagnosis, anastomosis | | | diagnoses, anastomoses |
| \*Some words ending in *is* take on their plural form by omitting the *is* and adding *ides*, as in arthritis and arthritides | | | | | | |
| um | a | | atrium, ostium | | | atria, ostia |
| us | i | | bronchus, alveolus | | | bronchi, alveoli |
| \*Some words ending in *us* take on their plural form by omitting the *us* and adding *era* or *ora*, as in viscus to viscera and corpus to corpora. | | | | | | |
| a | ae | cava, vertebra | | cavae, vertebrae | | |
| ix | ices | appendix, cervix | | appendices, cervices | | |
| ex | ices | apex | | apices | | |
| ax | aces | thorax | | thoraces | | |
| ma | s or mata | condyloma | | condylomas or condylomata | | |
| on | a | spermatozoon | | spermatozoa | | |
| \*Some words ending in *on* take on their plural form by adding *s*, as in chorion to chorions | | | | | | |
| nx | nges | phalanx | | phalanges | | |

After you’ve carefully read Chapter 1 in your textbook, complete Self-Check 1.1. When you completely understand the material from Section 1.1, move on to Section 1.2.

Self-Check 1.1

**At the end of each section of *Quick and Easy Medical Terminology,*****8th Edition, you’ll be asked to pause and check your understanding of what you’ve just read by completing a self-check. Writing the answers to these questions will help you review what you have learned so far. Please complete *Self-Check 1.1* now.**

**Complete Practice Exercises A–H at the end of Chapter 1 of your textbook.**

**Check your answers with those in Appendix III of your textbook.**

### SECTION 1.2: SUFFIXES AND COMBINING FORMS MADE EASY

**Read the following section, then read Chapter 2 in your textbook.**

***Objective***

When­you­complete­this­section,­you’ll­be­able­to­utilize­suffixes­to­build­medicalterminologies related to surgical procedures, medical conditions, specialists, and specialties.

### MEDICAL SPECIALISTS AND THEIR SPECIALTIES

Identifying medical specialists and their specialties is made easy by recognizing the meanings­of­the­suffixes­attached­to­the­word­root.­For­example,­the­suffix­*-logy* refers to the­“study­or­science­of.”­*Anesthesiology*­is­the­branch­of­medical­science­that­specificallydeals­with­the­study­of­anesthesia­or­anesthetics.­On­the­other­hand,­the­suffix­*-logist* means­“one­who­studies”­or­“specialist.”­An­*anesthesiologist* is a physician who specializes in anesthesia. It’s important not to confuse anesthesiologist with anesthetist. The suffix­*-ist*­means­“one­who”;­hence,­an­*anesthetist* is one who administers anesthesia. An anesthetist can be a physician or a nurse, while an anesthesiologist is a medical doctor or­physician.­Study­the­following­suffixes­and­their­meanings.­

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **SUFFIXES: MEDICAL SPECIALISTS AND THEIR SPECIALTIES** | | | |  |
|  | **Medical Specialists** | | **Medical Specialties** | |  |
| **Suffix** | **Meaning** | **Example** | **Suffix** | **Meaning** | **Example** |
| -er, -ist | one who | internist | -ac, -al, -ic, ical | pertaining to | obstetrical |
| -iatrician | practitioner | pediatrician | -logic, -logical | pertaining to the study of | psychological |
| -logist | one who studies, specialist | pulmonologist | -iatrics, -iatry | medical profession or treatment | pediatrics |
|  |  |  | -logy | study or science of | gynecology |

The following table lists some of the most common combining forms associated with medical specialties and specialists.

|  |  |  |  |
| --- | --- | --- | --- |
| **Combining Form** | **Meaning** | **Medical Specialty** | **Medical Specialist** |
| cardi/o | heart | cardiology | cardiologist |
| dermat/o | skin | dermatology | dermatologist |
| esthesi/o | feeling or sensation | anesthesiology | anesthesiologist |
| gynec/o | female | gynecology | gynecologist |
| immune/o | immune | immunology | immunologist |
| ne/o, nat/o | new, birth | neonatology | neonatologist |
| ophthalm/o | eye | ophthalmology | ophthalmologist |
| path/o | disease | pathology | pathologist |
| radi/o | radiation or radius | radiology | radiologist |
| ur/o | urinary tract or urine | urology | urologist |

### SURGICAL PROCEDURES

A­significant­number­of­medical­terms­refer­to­surgical­procedures.­Generally,­the­suffixes­used­will­give­you­an­idea­about­the­type­of­surgery­or­procedure­performed.­Forinstance,­the­suffix­*-ectomy* means surgical removal. *Polypectomy* and *adrenalectomy* refer to the excision or removal of polyps and adrenal glands, respectively. Knowing a familiar­word­related­to­the­suffix­makes­it­easier­to­analyze­a­medical­term.­This­processis known as word *association*. Take a look at the following table.

|  |  |  |
| --- | --- | --- |
| **SUFFIXES: SURGICAL PROCEDURES** | | |
| **Suffix** | **Meaning** | **Word Association** |
| -centesis | surgical puncture to aspirate or remove­fluid | *Paracentesis* is a puncture of the peritoneal­cavity­to­remove­fluid­for­diagnosticor therapeutic purposes. |
| -ectomy | excision (surgical removal or cutting out) | Excision of the appendix is referred to as an *appendectomy*. |
| -lysis | process of loosening, freeing, or destroying | This­suffix­can­also­mean­dissolving­ordestruction, as in *hydrolysis*. |
| -pexy | surgical­fixation­(securing­in­afixed­position) | *Nephropexy*­is­a­surgical­fixation­of­akidney that descends when the patient stands up. |
| -plasty | surgical repair | *Rhinoplasty* is a plastic surgery of the nose and is done for several reasons. |
| -rrhaphy | suture (fusing a wound by stitches) | *Herniorraphy* is surgical repair of the hernia with suture of the abdominal wall. |
| -scopy | visual examination with the use of a lighted instrument | *Colonoscopy* is a means of visualizing the­colon­with­the­use­of­a­fiber-opticinstrument. |
| -stomy | creation of an opening | *Colostomy* is a surgical procedure that creates an opening for the colon or large intestine through the abdomen. |
| -tome | an instrument used for cutting | A *microtome* is used to cut thin sections of tissue. |
| -tomy | incision (cutting into tissue) | *Sternotomy* is an incision of the sternum usually performed during heart surgery. |
| -tripsy | surgical crushing, breaking, or pulverizing | *Lithotripsy* is the surgical crushing of a renal calculus or stone. |

### BODY STRUCTURES

Some of the combining forms for body structures have already been introduced when naming medical specialists. In this section, you’ll be presented with additional combining forms and the most frequent word associations used. *Hepat/o* is one of the most common combining­forms­used­in­the­medical­field.­Note­that­*hepat/o* means liver; hence, *hepatitis* refers­to­an­inflammatory­condition­of­the­liver.­More­examples­are­presented­in­thefollowing table.

|  |  |  |
| --- | --- | --- |
| **COMBINING FORMS FOR A NUMBER OF BODY STRUCTURES** | | |
| **Combining Form** | **Meaning** | **Word Association** |
| aden/o | gland | *Adenopathy* refers to the enlargement of the glands. |
| angi/o | vessel | *Angioplasty* is a procedure used to reestablish­blood­flow­through­partially­orfully blocked blood vessels. |
| bi/o | life or living | *Biopsy* is a procedure used to extract cells or tissues for examination. |
| blephar/o | eyelid | *Blepharitis* is an infection of the eyelids. |
| cerebr/o, encephal/o | brain | *Cerebrospinal* fluid­is­a­clear,­colorlessfluid­found­in­the­brain­and­the­spinalcord.  *Encephalopathy* is a general term that refers to a disorder or disease of the brain. |
| col/o | colon or large intestine | *Colitis*­is­an­inflammation­of­the­colon’sinner lining. |
| faci/o | face | *Facial* relates to the face. |
| hepat/o | liver | *Hepatomegaly* is enlargement of the liver. |
| mamm/o, mast/o | breast | *Mammogram* is an x-ray of the breast.  *Mastitis* is an infection of the breast tissue. |
| muscul/o, my/o | muscle | The *musculoskeletal* system is an organ system responsible for movement and activity.  *Myosin* is one of the muscle proteins. |
| myel/o | bone marrow or spinal cord | *Myelogram* is a means of examining the spinal canal using a combination of dye and x-ray. |
| oste/o | bone | *Osteoporosis* is a disease that weakens the bones, thereby increasing the risk for fractures. |
| pulm/o, pulmon/o, pneum/o, pneumon/o | lungs | *Pulmonary* refers to the lungs.  *Pneumatic* refers to gas or air.  *Pneumothorax* is the accumulation of air or gas in the chest. |
| tonsil/o | tonsil | *Tonsillectomy* is the surgical removal of the tonsils. |
| trache/o | trachea (windpipe) | *Tracheitis*­is­an­inflammation­of­thetrachea. |
| vas/o | vessel | Widening of the blood vessels is known as *vasodilation*. |

### SYMPTOMS OR DIAGNOSIS

Symptom­and­diagnosis­are­common­terms­used­in­the­medical­field.­A­*symptom* indicates a disorder or disease in which changes in health status are perceived by the client. For­instance,­a­client­says:­“My­stomach­hurts.”­*Diagnosis*, on the other hand, is the scientific­determination­of­a­disease­process­or­condition­after­evaluation.­“Peptic­ulcerdisease”­is­an­example­of­a­medical­diagnosis.­

|  |  |  |
| --- | --- | --- |
| **SUFFIXES: SYMPTOMS OR DIAGNOSIS** | | |
| **Suffix** | **Meaning** | **Word Association** |
| -algia, -dynia | pain | *Arthralgia* is joint pain. *Vulvodynia* is a chronic pain condition affecting a woman’s external genitalia. |
| -cele | hernia (results when organ pushes through the organ or muscle that contains it) | *Omphalocele* is an abdominal wall defect in which the abdominal organs protrude through an opening at the base of the umbilical cord. |
| -ectasia, -ectasis | dilatation | *Telangiectasia* is the dilation of the superficial­blood­vessels.­  *Lymphangiectasis* is the dilation of the lymphatic vessels. |
| -edema | swelling | *Edema* denotes the presence of excess fluid­in­the­tissues,­causing­swelling.  *Angioedema* involves the precipitous swelling of the tissues under the skin, usually due to an allergic reaction. |
| -emesis | vomiting | *Emesis* denotes vomiting.  *Hyperemesis* means excessive vomiting. |
| -emia | condition of the blood | *Anemia* refers to a decrease in red blood cells or hemoglobin in the blood. |
| -ia, -iasis | condition | *Hysteria* is a mental disorder attributed to women in the nineteenth century.  *Filariasis* is a parasitic disease caused by microscopic worms. |
| -itis | inflammation | Inflammation­of­the­voice­box­or­larynx­isknown as *laryngitis*. |
| -ith | stone or calculus | *Fecalith* is a hard mass consisting of feces. |
| -malacia | soft, softening | *Chondromalacia patella* is the softening of the cartilage underneath the knee. |
| -mania | excessive preoccupation | *Pyromania* is a compulsion to set things on­fire.­ |
| -megaly | enlargement | *Cardiomegaly* is the enlargement of the heart. |

(*Continued*)

|  |  |  |
| --- | --- | --- |
| **SUFFIXES: SYMPTOMS OR DIAGNOSIS (continued)** | | |
| **Suffix** | **Meaning** | **Word Association** |
| -oid | resembling | *Mucoid* means similar to mucus. |
| -oma | tumor | *Lymphoma* refers to a group of blood cancers originating from the lymphatic system. |
| -osis | condition (usually an abnormal condition, occasionally refers to an increase) | *Psychosis* is a group of disorders affecting the mind. |
| -pathy | disease | *Cardiomyopathy* is a group of diseases affecting the cardiac muscle. |
| -penia | deficiency | *Neutropenia* refers to abnormally low levels of neutrophils, a type of white blood cell. |
| -phobia | abnormal fear | *Phobia* refers to extremely strong fear or dislike of something. Fear of being in an enclosed space or area is known as *claustrophobia*. |
| -ptosis | prolapse (sagging) | Drooping eyelids is *ptosis.* |
| -rrhage, -rrhagia | excessive bleeding | *Hemorrhage* means bleeding, which can be external or internal. |
| -rrhea | flow­or­discharge | *Amenorrhea* is the absence of menstrual flow. |
| -rrhexis | rupture | Rupture of the bowels is referred to as *enterorrhexis.* |
| -spasm | cramp, twitching | *Vasospasm* is the spasm of the blood vessels. |
| -stasis | stopping, controlling | *Hemostasis* is the normal bodily response to stop bleeding or hemorrhaging. |

### MISCELLANEOUS SUFFIXES

Aside­from­the­suffixes­categorized­earlier,­there­are­other­various­suffixes­that­arewidely utilized by healthcare professionals. As you go further into the course, you should­become­more­familiar­with­these­suffixes.­The­following­is­a­list­of­selectmiscellaneous­suffixes.­

|  |  |  |
| --- | --- | --- |
| **MISCELLANEOUS SUFFIXES** | | |
| **Suffix** | **Meaning** | **Examples** |
| -able, -ible | capable of, able to | injectable, edible |
| -ac, -al, -an, -ar, -ary,  -eal, -ic, -ive, -tic | pertaining to | iliac, dermal, median, ulnar, capillary, meningeal, hepatic, invasive, cyanotic |
| -ase | enzyme | lipase, amylase |
| -eum, -ium | membrane | peritoneum, myocardium |
| -ia, -ism | condition or theory | paranoia,­dwarfism |
| -iac | one who suffers | hemophiliac |
| -opia | vision | hyperopia |
| -ose | sugar | fructose |
| -ous | pertaining to or characterized by | cancerous |
| -y | state or condition | atrophy |

### MISCELLANEOUS WORD PARTS

These­word­parts­aren’t­categorized­under­a­specific­group,­but­note­that­they’re­frequently used in medical terminologies. The word *microscope* (word part= *micro*), for example, is used not only by healthcare professionals but in customary language as well.

|  |  |  |
| --- | --- | --- |
| **MISCELLANEOUS WORD PARTS** | | |
| **Word Part** | **Meaning** | **Word Association** |
| adip/o, lip/o | fat | adipose, hyperlipidemia |
| amyl/o | starch | amylase |
| glyc/o | sugar | hyperglycemia |
| hemat/o | blood | hematology |
| lact/o | milk | lactation |
| litho/o | stone | lithotripsy |
| micro- | small | microscopy |
| muc/o | mucus | mucous |
| prote/o, protein/o | protein | proteolysis, proteinuria |
| pyr/o | fire | pyromania |

Self-Check 1.2

**Complete Practice Exercises A–H in Chapter 2 of your textbook, then answer questions below.**

**Choose the correct answer.**

­ 1.­The­presence­of­abnormally­large­amounts­of­fluid­in­the­tissues­that­results­inswelling is called

|  |  |
| --- | --- |
| a. dilatation. | c. emesis. |
| b. edema.  2. Surgical repair of the eye is | d. ptosis. |
| a. ophthalmalgia. | c. ophthalmoplasty. |
| b. ophthalmological. | d. ophthalmorrhagia. |

­ 3.­Herniation­of­the­brain­through­an­opening­in­the­skull­is­called

1. craniectomy. c. encephalocele.
2. craniotomy. d. encephalopathy.
3. Which of the following terms means dilation of a blood or lymph vessel?
   1. Angioplasty c. Vascular
   2. Vasotomy d. Angiectasis
4. The medical specialty that studies the nature and cause of disease is

|  |  |
| --- | --- |
| a. cardiology. | c. pathology. |
| b. dermatology.  6. A term that means excessive vomiting is | d. urology. |
| a. edema. | c. hypoglycemia. |
| b. hyperemesis. | d. hysteria. |

*(Continued)*

Self-Check 1.2

7. A term that means pertaining to the eye is

|  |  |
| --- | --- |
| a. adenic. | c. otic. |
| b. ophthalmic.  8. Excision of a gland is called | d. vascular. |
| a. adenectomy. | c. neurectomy. |
| b. appendectomy.   1. *Dermatoplasty* is    1. any disease of the skin.    2. pertaining to the skin.    3. skin grafting.    4. the science that studies the skin. 2. An instrument for incising brain tissue is a/an | d. tonsillectomy. |
| a. cerebrotomy. | c. encephalotome. |
| b. cerebrectomy. | d. encephalocele. |

1. A 78-year-old man who had a blood vessel removed during surgery is likely to have which term documented in his chart?

|  |  |
| --- | --- |
| a. Angiectomy | c. Angiotomy |
| b. Angiogram | d. Angioscopy |

1. During a physical examination, a physician can visualize the eardrum using a tool called an

|  |  |
| --- | --- |
| a. ophthalmoplasty. | c. otoplasty. |
| b. ophthalmoscope. | d. otoscope. |

**Check your answers to the Practice Exercises with those on Appendix III of your textbook. Check your answers to questions 1–12 with those at the end of this study guide.**

### SECTION 1.3: ESSENTIAL PREFIXES AND MORE

**Read the following section, then read Chapter 3 in your textbook.**

***Objectives***

When­you­complete­this­section,­you’ll­be­able­to­identify­and­use­prefixes­in­writingmedical terms.

### NUMBERS AND QUANTITIES

The­medical­field,­like­any­other­group­of­professions,­makes­use­of­terms­related­tonumbers­and­quantities.­The­prefixes­used­in­these­medical­terms­are­the­same­oneswe­use­in­everyday­language.­For­example,­the­prefix­*bi-*­is­a­prefix­which­means­two.Examples­of­words­associated­with­this­prefix­include­*bicycle* (a vehicle with two wheels) and *biannual* (an event occurring twice a year)*.* The­prefix­*bi-* has the same meaning when used in medical language. *Bicuspid* means two cusps or valves, as in the case of heart valves. Study the following table for more examples.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **PREFIXES: NUMBERS AND QUANTITIES** | | |
|  | **NUMBERS** | | |
| **Prefix** | **Meaning** | **Example** | **Word Association** |
| mono-, uni- | one | mononuclear, unilateral | *Mononuclear* refers to a cell made up of one nucleus.  *Unilateral* means one side. |
| bi-, di- | two | bicuspid, disaccharide | *Bicuspid* means having two cusps, as in the bicuspid valves of the heart.  A *disaccharide* is a type of carbohydrate that is made up of two simple sugars. |
| tri- | three | tricuspid | *Tricuspid* means having three cusps, as in the tricuspid valve of the heart. |
| quad-, quadri-, tetra- | four | quadriplegia | The paralysis of all four extremities is known as *quadriplegia*. |
| centi- | one hundred, one-hundredth | centigrade | The *centigrade* or Celsius scale is a unit of measurement for temperature, which is divided into 100 degrees. |
|  | (*Continued*) | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **PREFIXES: NUMBERS AND QUANTITIES (continued)** | | | |
| **NUMBERS** | | | |
| **Prefix** | **Meaning** | **Example** | **Word Association** |
| milli- | one-thousandth | milliunit | A *milliunit* is 1/1000 of a unit. |
| **QUANTITIES** | | | |
| diplo- | double | diplopia | *Diplopia* means double vision or the perception of two images of a single object. |
| hemi-, semi- | half, partly | hemiparesis, semi-fowler’s | *Hemiparesis* refers to weakness of one entire side of the body.  *Semi-fowler’s* position is a position assumed when a client is supine on a bed with the head of the bed elevated at about 30–45 degrees. |
| hyper- | excessive, more than normal | hyperglycemia | *Hyperglycemia* is excessive blood sugar. |
| hypo- | under, less than normal | hypoglycemia | Decreased blood sugar in the blood is known as *hypoglycemia.* |
| multi-, poly- | many | multigravid, polyuria | *Multigravid* means multiple pregnancies.  *Polyuria* means excessive production or passage of urine. |
| nulli- | none | nulliparous | A woman who hasn’t  given birth is referred to as *nulliparous*. |
| pan- | all | pancytopenia | *Pancytopenia* occurs when all blood cell types are decreased. |
| primi- | first | primigravida | *Primigravida* refers to a woman being­pregnant­for­the­firsttime. |
| super-, ultra- | excessive, above or superior | superior, supraspinatus, ultraviolet | *Superior* vena cava is a large-diameter blood vessel that drains blood from the upper parts of the body.  *Ultraviolet* light is a form of radiation. |

### POSITION OR DIRECTION

Knowledge­of­the­prefixes­used­in­identifying­positions­or­directions­is­essential­in­understanding medical terminologies. You might have heard the word *postoperative*. This term refers­to­the­period­following­surgery.­Note­that­the­prefix­*post-* means after. Inversely, *pre-* denotes before. Thus, the term *preoperative* refers to the period prior to surgery.

More­positional­or­directional­suffixes­are­outlined­in­the­following­table.­

|  |  |  |
| --- | --- | --- |
| **PREFIXES: POSITION OR DIRECTION** | | |
| **Prefix** | **Meaning** | **Word Association** |
| ab- | away from | *Abduction* is movement of a body part away from the midline. |
| ad- | toward | *Adduction* is movement of a body part toward the midline. |
| ante-, pre- | before in time or in place | *Antepartum* refers to the period before childbirth.  *Preoperative* refers to the period before surgery. |
| circum-, peri- | around | The circular movement of a body part is known as *circumduction.*  *Periorbital* edema is swelling around the eyes. |
| contra- | contralateral | *Contralateral* pertains to the opposite side. |
| dia- | through | *Diaphoresis* is the passage of moisture through the pores of the skin. |
| ecto-, ex-, exo-, extra- | outside, without, away from | *Ectoderm* is the outermost primary germ layer of the embryo.  *Exocrine* glands secrete substances externally through a duct. |
| en-, end-, endo- | inside | *Endolymph* is­the­fluid­found­within­themembranous labyrinth of the ear. |
| epi- | above, on | The outermost layer of the sclera is known as *episclera*. |
| hypo-, infr-, sub- | beneath, under | *Hypodermis* refers to the area below the skin.  *Infraclavicular* pertains to the area below the clavicle.  *Subdural* hematoma results from the collection of blood beneath the skull. |
| inter- | between | *Interphalangeal* joints are formed between the phalanges. |
| intra- | within | *Intraosseous* means within the bone. |

(*Continued*)

|  |  |  |
| --- | --- | --- |
| **PREFIXES: POSITION OR DIRECTION (continued)** | | |
| **Prefix** | **Meaning** | **Word Association** |
| ipsi- | same | *Ipsilateral* pertains to the same side |
| meso-, mid- | middle | The middle tissue layer during embryonic development is the *mesoderm*. |
| para- | near, beside, or abnormal | *Paralysis* is the loss of motor function in a body part. |
| per- | through or by | *Percutaneous* means through or via the skin. |
| post- | after, behind | *Postoperative* means after surgery. |
| retro- | behind, backward | *Retrograde* means going back in position or time. |
| super-, supra- | above, beyond | *Superficial* indicates being near or on the­surface,­as­in­superficial­veins.  *Supraclavicular* means above the clavicle. |
| sym-, syn- | joined, together | The relationship between two dissimilar organisms pertains to *symbiosis.*  *Syndactyly* is a condition where two or more digits of the hands are fused. |
| trans- | across | *Transference* occurs when one’s feelings are unconsciously redirected to another. |

### MISCELLANEOUS PREFIXES

Miscellaneous­prefixes­are­easy­to­remember­since­most­of­them­are­being­usedfrequently, even in lay conversations. To promote organization of content, these miscellaneous­prefixes­are­categorized­into­the­following:­(1)­related­to­description,­(2)­related­totime, (3) related to size, and (4) related to negation.

|  |  |  |
| --- | --- | --- |
|  | **MISCELLANEOUS PREFIXES** | |
| **Prefix** | **Meaning** | **Word Association** |
|  | ***Description*** | |
| anti-, contra- | against | *Antidiuretics* are medications that decrease or inhibit urination.  *Contraception* refers to methods or devices that prevent pregnancy. |
| brady- | slow | *Bradypnea* means decreased respiratory rate. |
| dys- | bad,­difficult | Difficulty­swallowing­is­referred­to­as*dysphagia*. |

(*Continued*)

|  |  |  |
| --- | --- | --- |
|  | **MISCELLANEOUS PREFIXES (continued)** | |
| **Prefix** | **Meaning** | **Word Association** |
| eu- | good, normal | *Eupnea* pertains to normal respirations. |
| mal- | bad | *Malabsorption* results from the inability of the gastrointestinal tract to properly absorb food nutrients. |
| pro- | favoring, supporting | *Probiotics* are live microorganisms that are­believed­to­be­beneficial­to­one’shealth. |
| tachy- | fast | *Tachypnea* refers to abnormally fast respirations. |
|  | ***Time*** | |
| ante-, pre-, pro- | before | *Antemortem* means before death.  *Premature* births refer to neonates being born before 37 weeks of gestation. |
| post- | after or behind | *Postpartum* pertains to the period immediately after birth. |
|  | ***Size*** | |
| macro-, mega-, megalo- | large or great | *Macrocephaly* refers to a condition where the head is abnormally large.  *Megaloblasts* are abnormally large red blood cells.  Large blood cells in the bone marrow are referred to as *megakaryocytes*. |
| micro- | small | *Microcephaly* is a condition where the head is abnormally small. |
|  | ***Negation*** | |
| a-, an- | no, not, without | *Apathy* pertains to lack of or absence of emotion.  *Analgesia* refers to absence of sensibility to pain. |
| in- | not or inside (in) | *Indifferent* pertains to having no interest.  *Intubate* means putting a tube inside an airway. |

### COMBINING FORMS FOR COLORS

Medical terms also utilize combining forms for colors. Unlike the combining forms discussed in the earlier chapters, these forms are not generally used in everyday conversations. Most of these forms are used in the health sciences. The following table lists the most common combining forms for colors and their meanings.

.

|  |  |  |  |
| --- | --- | --- | --- |
| **COMBINING FORMS FOR COLORS** | | | |
| **Combining**  **Form** | **Meaning** | **Examples** | **Word Association** |
| alb/o, albin/o, leuk/o (leuc/o) | white | albinism, leukocytosis | *Albinism* is a genetic disorder resulting in minimal or absence of skin, hair, or eye pigmentation.  An increase in the white blood cell count is known as *leukocytosis.* |
| chlor/o | green | chlorophyll | *Chlorophyll* is the green coloring matter found in leaves and plants. |
| cyano/o | blue | cyanosis | Lack of oxygen in the blood can cause a bluish discoloration of the skin  and mucous membranes known as *cyanosis*. |
| erythr/o | red | erythema | *Erythema* refers to the redness of the skin or mucous membrane. |
| melan/o | black | melanin | *Melanin* is a dark brown or black substance that forms a natural part of a person’s hair, skin, and eyes. |
| xanth/o | yellow | xanthophyll | The yellow pigment in plants is *xanthophyll*.  *Xanthophobia* is the fear of the color yellow. |

### COMBINING FORMS AND RELATED SUFFIXES

Some­combining­forms­are­closely­associated­with­suffixes­that­are­commonly­used­towrite­medical­terms.­These­suffixes­can­be­used­to­form­nouns­and­adjectives.­Notethat­all­the­suffixes­in­the­following­list­form­nouns­except­for­those­ending­in­*-ic* and *-tic*, which are used to form adjectives. For example, *phagocytes* (with­the­suffix­*-cyte*) refer to cells that ingest foreign matter. *Phagocytic* (with­the­suffix­*-tic*), on the other hand, refers to a cell capable of functioning as a phagocyte. More examples follow.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **COMBINING FORMS AND RELATED SUFFIXES** | | |
| **Combining**  **Form** | **Suffixes** | **Meaning** | **Examples** |
| cyt/o | -cyte | cell | karyocyte |
| gen/o | -genic  -genesis | beginning, origin produced by or in producing or forming | genetic carcinogenic spermatogenesis |

(*Continued*)

|  |  |  |  |
| --- | --- | --- | --- |
| **COMBINING FORMS AND RELATED SUFFIXES (continued)** | | | |
| **Combining**  **Form** | **Suffixes** | **Meaning** | **Examples** |
| gram/o | -gram  -graph  -graphy | to record a record instrument for recording process of recording | echocardiogram electrocardiograph echocardiography |
| kinesi/o | -kinesia  -kinesis | movement, motion | bradykinesia |
| leps/o | -lepsy | seizure | epilepsy |
| lys/o | -lysin  -lysis  -lytic | destruction, dissolving that which destroys process of destroying  capable of or producing destruction | lysozyme  cytolysin hemolysis hemolytic |
| malac/o | -malacia | soft, softening abnormal softening | osteomalacia |
| megalo/o | -megalo | large, enlarged, enlargement | megaloblasts |
| metr/o | -meter    -metry | measure, uterine, tissue  instrument used to measure process of measuring | endometrium goniometer    densitometry |
| path/o | -pathy | disease | coagulopathy |
| phag/o | -phagia,  -phagic, -phagy | eat, ingest eating, swallowing | phagocytosis dysphagia |
| phas/o | -phasia | speech | aphasia |
| pleg/o | -plegia | paralysis | hemiplegia |
| schis/o, schiz/o, schist/o | -schisis | split, cleft | schizophrenia |
| scler/o | -sclerosis | hard hardening | scleroderma atherosclerosis |
| scop/o | -scope  -scopy | to examine, to view  instrument used for viewing  process of examining visually | microscope  bronchoscopy |
| troph/o | -trophic, -trophy | nutrition | hypertrophy |

### MISCELLANEOUS COMBINING FORMS

Miscellaneous­combining­forms­are­named­as­such­because­they­can’t­be­classifiedunder­a­specific­category,­but­are­frequently­used.­Combining­forms­such­as­*therm/o* (in thermometer) and *carcin/o* (in carcinogenic) are usual examples. Study the following combining forms and their word associations.

|  |  |  |
| --- | --- | --- |
| **MISCELLANEOUS COMBINING FORMS** | | |
| **Combining Form** | **Meaning** | **Word Association** |
| aer/o | air | *Aerobic* microorganisms are those that need oxygen in order to survive. |
| blast/o | embryonic form | *Erythroblasts* are immature red blood cells. |
| cancer/o, carcin/o | cancer | *Carcinogenic* means any substance or agent that can cause cancer. |
| cephal/o | head | *Cephalohematoma* is the collection of blood under the skull. |
| cry/o | cold | *Cryosurgery* utilizes extreme cold temperature to destroy or remove diseased tissue. |
| crypto/o | hidden | Undescended­or­“hidden”­testis­is­referred­to­as*cryptorchidism*. |
| dips/o | thirst | Excessive thirst is *polydipsia*. |
| electr/o | electricity | *Electrocardiography* is a test that detects problems with the electrical activity of the heart. |
| fibr/o | fiber | *Fibrous* pertains to anything that contains, resembles,­or­consists­of­fiber. |
| hist/o | tissue | *Histology* is the study of the microanatomy of cells and tissues of plants and animals. |
| myc/o | fungus | The branch of botany that focuses on the study of fungi is *mycology.* |
| narc/o | stupor | *Narcotics* may cause stupor or insensibility. |
| necr/o | dead | *Necropsy* or autopsy is the examination of a person who has died. |
| optic/o, opt/o | vision | The *optic* nerve carries electrical impulses from the eye to the brain.  *Optometry* is concerned with the diagnosis, treatment, and prevention of eye and vision problems. |
| phon/o | voice | *Bronchophony* refers to the normal voice sounds heard over the bronchus. |
| phot/o | light | *Phototherapy* or light therapy pertains to treatment using a special kind of light. |
| py/o | pus | *Pyogenesis* refers to pus formation. |
| therm/o | heat | *Thermometer* is an instrument used to measure temperature. |
| top/o | position, place | A *topical* medication is applied to the skin. |
| trache/o | trachea | A *tracheostomy* is a surgical procedure that creates an opening in the trachea (windpipe) to facilitate breathing. |

Self-Check 1.3

**Complete Practice Exercises A–G found in Chapter 3 of your textbook, then answer questions below.**

**Choose the correct answer.**

1. Which of the following terms contains a word part that means yellow?

|  |  |  |
| --- | --- | --- |
|  | a. Chloropia | c. Melancholy |
|  | b. Cyanotic  ­ 2.­Painful­or­difficult­movement­is | d. Xanthosis |
|  | a. bradykinesia. | c. kinesiotherapy. |
|  | b. dyskinesia.  3. *Cephalometry* is | d. yachykinesia. |
|  | a. a headache. |  |
|  | b. an instrument used to measure the head. |  |
|  | c. measurement of the head. |  |
|  | d. study of the head.  4. A *lipoma* is |  |
|  | a. the breakdown of lipids in digestion. |  |
|  | b. a benign tumor composed of fatty tissue. |  |
|  | c. surgical crushing of a stone. |  |
|  | d. an ectopic pregnancy.  5. *Aphonia* is |  |
|  | a. absence of speech. | c. rapid speech. |
| ­ | b.­difficult­speech.­  6. A term that means pertaining to the skin is | d.­absence­or­loss­of­voice. |
|  | a. cryotherapy. | c. dermal. |
|  | b. cyanosis. | d. dysphagia. |

*(Continued)*

Self-Check 1.3

1. *Cryptorchidism* means
   1. tissue compatibility. c. within a vein.
   2. undescended testicle. d. without water.
2. A record or tracing of the electrical impulses of the heart is called an
   1. electrocardiograph. c. electrocardiography.
   2. electrocardiogram. d. electrocardiopathy.
3. A term for a large cell, usually restricted to mean an extremely large red blood cell, is

|  |  |
| --- | --- |
| a. erythrocyte. | c. microcyte. |
| b. megalocyte. | d. phagocyte. |

­10.­A­patient­who­has­a­stroke­usually­displays­deficits­on­the­other­side­of­the­body.For instance, a patient with a right-side stroke has left hemiparesis. Which term best describes the location of the weakness in relation to the area of the stroke?

* 1. Bilateral c. Ipsilateral
  2. Contralateral d. Unilateral

1. A woman who has just given birth is considered to be
   1. antepartum. c. primigravida.
   2. postpartum. d. multigravida.
2. A 54-year-old woman had \_\_\_\_\_\_\_ to check for seizure activity in her brain.
   1. electrocardiography c. echoencephalography
   2. electroencephalography d. computed tomography

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–12 with those at the end of this study guide.**

# *LESSON 2: DIAGNOSIS, INTERVENTION, AND HUMAN BODY TERMS*

#### INTRODUCTION

By this time, you’re already accustomed to the basic components of medical word-building as presented in Chapters 1–3 of your textbook. Now, you’ll begin to learn about diagnoses, interventions, and body structures. In Chapters 4 and 5 of your textbook, you’ll study diagnostic procedures, therapeutic interventions, and anatomy and physiology of the human body.

#### SECTION 2.1: DIAGNOSES AND INTERVENTIONS

**Read the following section, then read Chapter 4 in your textbook.**

***Objectives***

When you complete this section, you’ll be able to match diagnostic terms and therapeutic interventions with their meanings.

To better understand medical terms related to diagnoses and interventions, you need to familiarize­yourself­with­the­definitions­of­the­following­terms:

QQ *Normal range:* acceptable limit

QQ *Pathologic:* pertains to a condition involving a disease process

QQ *Diagnosis:*­naming­a­disease­or­condition­based­on­scientific­evaluation

QQ *Prognosis:* anticipated outcome of a disease

As you can see, even if you have never heard of the word “antibacterial,” the word parts provide clues that it is something that protects against bacteria. Therefore, it can be helpful to take into consideration the meaning of word parts, in addition to the context of the sentence or paragraph that the word is in, to decipher an unfamiliar word’s meaning. Also, keep in mind that while many medical terms contain all three word parts, others will contain varying

Before studying concepts related to pathology, you need to recognize the functions that occur when the body is in a healthy state. To evaluate if bodily functions are normal, several tests are usually performed. These tests may include clinical studies, laboratory tests, and radiologic (*radio* + *logic*) studies. Apart from these tests, the healthcare practitioner also needs to check for *signs* and *symptoms* of a disease. Signsare observable characteristics that have been gathered through the use of the senses. For instance, when the examiner *auscultates*

(listens)­for­breath­sounds,­and­hears­that­the­lung­fieldsare­clear,­it­is­documented­as­“clear­breath­sounds.”­On­the­other­hand,­symptoms­aresubjective­data.­These­are­statements­made­by­the­client­or­significant­others­based­ontheir perception. A *“*severe throbbing headache*”* is an example of a symptom. The results of these studies help establish a *diagnosis.* When a client is diagnosed with a disease, it’s­often­classified­as­either­*acute* (occurs over a short duration)or *chronic* (exists over an extended period of time)*.*

#### BASIC EXAMINATION PROCEDURES

When a healthcare practitioner checks for signs of a disease, they usually perform two basic functions: (1) measuring vital signsand (2) performing a physical examination.

##### Vital Signs

*Vital signs* are clinical measurements that indicate the state of a client’s life-sustaining functions. There are three to six signs being measured, depending on the institution’s protocol. The basic ones are pulse, respiration, and temperature. Some facilities include blood pressure, oxygen saturation, and pain.

|  |  |
| --- | --- |
| **Vital Sign** | **Points To Remember** |
| Pulse | QQ may be abbreviated as P  QQ refers to recurrent expansion of an artery referred to as heart beats  QQ pulse rate (PR) is the number of heart beats per minute |
| Respiration | QQ may be abbreviated as R  QQ denotes the exchange of oxygen and carbon dioxide in the body  QQ otherwise known as ventilation or breathing  QQ measured by counting the rise and fall of the chest during breathing |
| Temperature | QQ defined­as­the­balance­between­heat­lost­and­heatproduced by the body  QQ thermometer  Q therm/o = heat  Q -meter = instrument used to measure  QQ different routes of measurement: oral, axilla, rectal, tympanic  QQ measured in Centigrade and Fahrenheit |

(*Continued*)

|  |  |
| --- | --- |
| **Vital Sign** | **Points To Remember** |
| Blood pressure | QQ refers to the pressure of the circulating blood on the blood vessel walls  QQ millimeters­of­mm­Hg­(mercury)­is­the­standard­unit­ofmeasure  QQ expressed as fraction:  QQ systolic: maximum arterial pressure (contraction)  QQ diastolic: pressure during relaxation |
| Oxygen saturation | QQ refers to the measure of the concentration of oxygen  QQ measured using a pulse oximeter |
| Pain | QQ an unpleasant feeling caused by intense or damaging stimuli |

##### Four Techniques in Physical Examination

*Physical examination* is a means of gathering clinical data from the client using the examiner’s senses, namely the senses of sight, hearing, and touch.

|  |  |  |  |
| --- | --- | --- | --- |
| **Technique** | **Sense Involved** | **Skill** | **Example** |
| Inspection | sight | Eyes are used to observe. | Checking for skin color |
| Palpation | touch | Hands­are­used­to­feelfor the texture, size, consistency, and location of body parts. | Feeling for lumps |
| Percussion | hearing | The­fist­or­fingertips­areused to tap the body part to determine the size, borders, and consistency of body organs. | Performing­“kidneypunch”­ |
| Auscultation | hearing | A stethoscope is used to listen for sounds within the body. | Listening for breath sounds |

#### COMMON DIAGNOSTIC TESTS AND PROCEDURES

In Lesson 1, you’ve been introduced to the word parts commonly used in diagnostic tests and procedures. Review the following word parts and their meanings:

|  |  |  |
| --- | --- | --- |
| **Word Part** | **Meaning** | **Example** |
| -gram | a record | echocardiogram |
| -graph | instrument for recording | radiograph |
| -graphy | process of recording | radiography |

(*Continued*)

|  |  |  |
| --- | --- | --- |
| **Word Part** | **Meaning** | **Example** |
| -meter | instrument used to measure | thermometer |
| -metry | process of measuring | optometry |
| -scope | instrument used in visual examination | endoscope |
| -scopy | visual examination with a lighted instrument | endoscopy |

*Endoscopy* (*endo* = inside + *scopy* = visual examination using a lighted instrument) is one of the most common visualization procedures used in healthcare. It makes use of an *endoscope* (*endo* + *scope*) to view the internal body cavities or organs.

*Catheters* and *cannulas* are instruments inserted into a body cavity. Both instruments are hollow­and­flexible­and­have­several­purposes,­such­as­withdrawal­and­instillation­of­fluids, or visualization of vessels or cavities.

##### Diagnostic Radiology

The domain of medicine related to the diagnosis of diseases with the use of x-rays, radioactive substances, and radiant energy is known as *radiology.* The following table lists word parts related to radiology.

|  |  |  |
| --- | --- | --- |
| **Combining Form** | **Meaning** | **Example** |
| ech/o, son/o | sound | echocardiogram, sonography |
| electr/o | electricity | electroconvulsive |
| fluor/o | emitting­or­reflecting­light | fluoroscopy |
| radi/o | radiant energy | radiography |
| tom/o | to cut | tomography |
| ultra- *(prefix)* | excessive | ultrasonography |

Diagnostic imaging modalities include:

1. *Radiography*
   1. uses­film­images­of­internal­structures­(commonly­referred­to­as­x-ray)

QQ radiopaque: substances that don’t allow x-rays to pass through

QQ radiolucent: substances that allow the passage of x-rays

1. *Computed tomography*

QQ ionizing radiation is used to produce a cross-section of a tissue

QQ painless and noninvasive

1. *Magnetic resonance imaging*
   1. radio­wave­pulses­and­magnetic­field­are­used­to­produce­a­notable­soft tissue resolution, which differentiates adjoining structures
2. *Ultrasonography*
   1. otherwise known as *ultrasound imaging* or *sonography*

QQ makes use of high-frequency sound waves to produce images of deep body structures

1. *Fluoroscopy*
   1. uses a *fluoroscope* to visually examine an internal organ

QQ can produce continuous images of internal structures, even with movement

1. *Contrast imaging*
   1. radiopaque materials are used to visualize internal structures on x-ray images

QQ a contrast medium may be used to enhance visualization

1. *Nuclear imaging*
   1. uses *radiopharmaceuticals* to form an image of an organ or system QQ radi/o = radiant energy + *pharmaceut/i* = drugs or medicine + *al =* pertaining to

##### Radiation and Other Therapeutic Interventions

As presented in the earlier part of this section, the use of radioactive materials and x-rays­is­advantageous­in­disease­identification.­Apart­from­this­purpose,­radiation­isalso useful in treating tumors or cancer cells. This method is known as *radiotherapy* or *radiation oncology.* However,­radiotherapy­not­only­destroys­cancer­cells,­but­it­alsoleads to destruction of normal cells; hence, the client may present with side effects such as hair loss, nausea and vomiting, bone marrow suppression, and drying of the mucous membranes.

The word *therapeutic* pertains to therapy. The following table lists word parts related to treatment.

|  |  |  |
| --- | --- | --- |
| **Combining Form** | **Meaning** | **Example** |
| algesi/o | sensitivity to pain | analgesic |
| chem/o | chemical | chemotherapy |
| pharmac/o, pharmaceuti/i | drugs or medicine | pharmacokinetics |
| plast/o | repair | neoplastic |
| therapeut/o | treatment | thermotherapy |
| tox/o | poison | toxicology |
| -therapy *(suffix)* | treatment | cryotherapy |

**Complete Practice Exercises 1–10 and A–G found in Chapter 4 of your textbook, then answer questions 1–13 below.**

**Choose the correct answer.**

1. The term that means the introduction of a catheter is
   1. catheter. c. catheterize.

­ b.­catheterization.­ d.­fluoroscopy.

1. The procedure in which the image is digitized and immediately displayed on a monitor­or­recorded­on­film­is
   1. auscultation. c. endoscopy.
   2. computed radiography. d. thermometry.

­ 3.­The­term­for­tapping­the­body­with­the­fingertips­or­fist­to­evaluate­internal­organsor­to­evaluate­fluid­in­a­body­cavity­is

|  |  |
| --- | --- |
| a. auscultation. | c. palpation. |
| b. inspection.  4. The number of breaths per minute is the | d. percussion. |
| a. blood pressure. | c. pulse. |
| b. heart rate. | d. respiration rate. |

1. On day 5, Dr. Norris removed the sutures that had resulted from a small cut on Sean’s leg. The surgeon tells his mother that excellent healing had resulted, the small­scar­will­fade­significantly­with­time,­and­this­should­cause­no­additionalproblems for Sean. What’s the name of the report that the surgeon is giving to Sean’s mother?

|  |  |
| --- | --- |
| a. Prognosis | c. Specimen |
| b. Sign | d. Symptom |

*(Continued)*

1. Lisa visits her obstetrician, who uses a stethoscope to listen to the heart rate of her 38-week developing fetus. The obstetrician’s action describes which of the following techniques?

|  |  |
| --- | --- |
| a. Auscultation | c. Palpation |
| b. Inspection | d. Percussion |

­ 7.­An­instrument­consisting­of­two­earpieces­connected­by­flexible­tubing­that’s­usedto hear sounds within the body is a

|  |  |  |
| --- | --- | --- |
| ­ | a.­fluoroscope.­ | c.­stethoscope. |
|  | b. sonograph. | d. tomogram. |

1. A commonly used term that means an x-ray image is
   1. radiolucent. c. radiography.
   2. radiograph. d. radiopaque.
2. Substances that readily permit the passage of x-rays are described as
   1. radiolucent. c. radiography.
   2. radiograph. d. radiopaque.

­10.­An­instrument­that­projects­an­x-ray­image­on­a­screen­during­fluoroscopy­iscalled a

|  |  |  |
| --- | --- | --- |
| ­ | a.­fluoroscope.­ | c.­radiograph. |
|  | b. microscope. | d. stethoscope. |

1. A term that means pertaining to a procedure that uses an illuminated instrument for the visualization of the interiorof a body cavity or organ is

|  |  |  |
| --- | --- | --- |
| ­ | a.­endoscopic.­ | c.­fluoroscopic. |
| ­ | b.­endoscope.­ | d.­fluoroscope. |

*(Continued)*

1. While reviewing a chart, you note that the patient has had an ultrasound. Which of the following terms best describes this type of testing?

­ a.­echography.­ c.­fluoroscopy.

b. endoscopy. d. radiography.

­13.­A­patient­with­hypertension­has­his­blood­pressure­checked­at­the­doctor’s­office.­

The reading was 210/90. The number 210 is referred to as the

* 1. diastolic pressure. c. respiratory rate.
  2. pulse. d. systolic pressure.

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–13 with those at the end of this study guide.**

#### SECTION 2.2: THE BODY AS A WHOLE

**Read the following section, then read Chapter 5 in your textbook.**

***Objectives***

When you complete this section, you’ll be able to build and identify medical terms related to body structures.

#### ORGANIZATION OF THE BODY

The human body is made up of structures that come together to make up a whole. These structures start from the smallest unit, which is an atom, to the largest, most complex unit, the human organism. The body is made up of many levels of structural organization: cells make up tissues, tissues form organs, organs form body systems, and the body systems make up an organism. *Organism* refers to an individual being with life.

The basic unit of life is the *cell*. Cells divide until they mature. Some cells can divide without limit. These are referred to as *stem cells*. These specialized cells are ample in a fetus and in newborn cord blood. *Cytology* refers to the study of the formation, structure, and function of cells.

A­group­of­similar­cells­that­work­together­and­perform­a­specific­function­forms­thenext level of organization, *tissues. Histology* is the study of the microscopic structure of tissues. There are four types of tissues according to function: *connective, epithelial, muscular,* and *nervous.*

*Organs* are formed when two or more tissue types work together to accomplish a particular function. The heart, lungs, and skin are examples of organs.

A set of organs that have a collective function make up a *body system.* Body systems will be discussed in detail in the later sections. The major body systems are listed as follows:

QQ Muscular system

QQ Skeletal system

QQ Cardiovascular system

QQ Lymphatic system

QQ Respiratory system

QQ Digestive system

QQ Urinary system

QQ Reproductive system

QQ Integumentary system

QQ Nervous system

QQ Endocrine system

The organismor the *human body* is the largest and the most complex level in the organizational structure. It’s composed of different body systems.

There­are­instances­when­tissues­or­organs­are­abnormally­formed.­The­prefix­*ana-* and suffix­*-plasia* are commonly used to describe these abnormalities. *Ana-* means upward, excessive, or again, while *-plasia* refers to development or formation of tissue. The following word parts are frequently used to describe abnormal tissue development.

|  |  |  |
| --- | --- | --- |
| **Word Part** | **Meaning** | **Example** |
| a- | without | *Aplasia* denotes underdeveloped organ or tissue. |
| -plasia | formation | *Dysplasia* refers to abnormal development of tissues. |
| dys- | bad |
| hypo- | below normal | The underdevelopment of organ or tissue is known as *hypoplasia* (a less severe form of aplasia). |
| hyper- | above normal | An increase in the number of cells is known as *hyperplasia*. |
| -trophy | nutrition | An increase in the sizeof cells is referred to as *hypertrophy*. |

#### REFERENCE PLANES

Directional terms and planes are used to depict the position and direction of different body structures relative to the *anatomic position.* The­anatomical­position­is­defined­asthe body standing erect, eyes directed forward, hands at the side, palms turned outward, and lower limbs parallel with the toes pointing forward.

##### Directional Terms

*Directional terms* denote the position of a structure in relation to another structure. In Chapter­5­of­your­textbook,­you’ll­find­a­list­of­directional­terms.­Here­are­additional­termsrelating to direction:

QQ *Abduction:* movement of body parts away from the midline

QQ *Adduction:* movement of body parts toward the midline

QQ *Inversion:* turning inward

QQ *Eversion:* turning outward

QQ *Palmar:* pertains to the palm of the hand

QQ *Plantar:* pertains to the sole of the foot

QQ *Supination:* turning upward

QQ *Pronation:* turning downward

##### Planes

The orientation of the body can be described using terms such as *plane* and *aspect*. Reference­planes­are­imaginary­flat­surfaces­that­divide­the­body­into­portions­or­sides.The three reference planes are:

QQ *Frontal/coronal plane:* splits the body into front and back portions

QQ *Transverse plane:* splits the body into upper and lower portions

QQ *Sagittal plane:* splits the body into right and left sides

These planes form aspects used to identify locations:

QQ *Anterior* (front)

QQ *Posterior* (behind)

QQ *Lateral* (side)

QQ *Medial* (middle)

QQ *Superior* (uppermost)

QQ *Inferior* (lowermost)

#### BODY CAVITIES

The hollow place or space within the body that houses internal organs is known as a *cavity.* The two major body cavities are the *dorsal* (located near the posterior part of the body) and *ventral* (located near the anterior part of the body)cavities. The dorsal cavity is subdivided into the *cranial* and *spinal* cavities, while the ventral cavity is subdivided into the *thoracic* and *abdominopelvic* cavities.

See­the­following­figure:

**BODY CAVITY**

**• Spinal cord**

**• Some spinal**

**nerves**

**DORSAL**

**VENTRAL**

**CRANIAL**

**SPINAL**

**• Brain**

**THORACIC**

**ABDOMINOPELVIC**

**• Lungs**

**• Heart**

**• Trachea**

**• Stomach**

**• Liver**

**• Pancreas**

**• Gallbladder**

**• Spleen**

**• Kidneys**

**• Male/Female**

**reproductive**

**organs**

***FIGURE 1—Body Cavities***

#### BODY REGIONS

The body is divided into four major regions: head, neck, torso, and extremities. The list below­identifies­the­regions­and­the­organs­contained­in­each­part.

QQ Head:­brain­and­the­special­sense­organs

QQ Neck

QQ Torso: chest, abdomen, pelvis

QQ Extremities

QQ upper:­arms,­wrists,­hands,­fingers

QQ lower: thighs, knees, legs, ankles, feet, toes

#### BODY FLUIDS

Approximately­60%­of­an­average­adult’s­weight­is­fluids.­Fluids­are­needed­by­the­bodyfor­transport­of­nutrients­and­removal­of­wastes.­The­two­primary­body­fluids­are­bloodand­lymph.­Most­body­fluid­is­*intracellular* (found within the cell), but some is *extracellular* (outside­the­cell).­The­two­types­of­extracellular­fluid­are­*interstitial* fluid­(fluid­foundbetween the cells of the body) and *plasma*­(fluid­part­of­the­blood).­The­following­tableprovides­a­list­of­frequently­used­word­parts­pertaining­to­body­fluids.­

|  |  |  |
| --- | --- | --- |
| **Combining Form/**  **Word Part** | **Meaning** | **Word Association** |
| -crine | secrete | endocrine |
| lacrim/o | tear, tearing, crying | lacrimation |
| -emia | condition of the blood | anemia |
| hem/o | blood | hemoglobin |
| lymph/o | lymph | lymphatic |
| muc/o | mucus | mucolytic |
| -poiesis | production | erythropoiesis |
| -poietin | substance that causes production | erythropoietin |
| py/o | pus | pyorrhea |
| sial/o | saliva | sialography |
| ur/o | urine | urinary |

#### BLOOD

Blood carries oxygen, nutrients, vitamins, antibodies, and other substances to different parts of the body. It also helps carry carbon dioxide and other wastes away. Select word parts pertaining to blood are found in the following table:

|  |  |  |
| --- | --- | --- |
| **Combining Form** | **Meaning** | **Word Association** |
| coagul/o | coagulation | coagulopathy |
| cyt/o | cell | cytology |
| erythr/o | red | erythrocyte |
| hem/a, hemat/o | blood | hematology |
| immun/o | immune | immunization |
| leuk/o | white | leukocyte |
| thromb/o | clot (thrombus) | thrombocyte |
| ***Suffix*** | |  |
| -cyte | cell | cytology |
| -osis | increased or abnormal | leukocytosis |
| -penia | deficiency | leukopenia |
| -poiesis | production | hematopoiesis |

#### BODY DEFENSES AND IMMUNITY

*Susceptibility* and *resistance* are two essential terms related to body defenses. Vulnerability to a disease or disorder is known as susceptibility,while resistancerefers to­the­body’s­natural­ability­to­fight­microorganisms­or­toxins.­The­body­has­two­defensemechanisms, *nonspecific resistance* and *specific* (selective) *resistance*, otherwise known as *immunity.*

Nonspecific­resistance­is­the­body’s­first­line­of­defense­and­is­directed­against­all­pathogens. Several body systems are involved in protecting the body. Immunity*,* on the other hand,­works­against­infectious­microorganisms­and­can­be­classified­into­four­categories.See the following diagram:

|  |  |  |
| --- | --- | --- |
|  | **BODY DEFENSES** | |
| **Nonspecific Defenses** | **Specific Defenses (Immunity)** | |
| QQ Intact skin  QQ Tearing of the eyes  QQ Urinary system  QQ Mucous membranes  QQ Digestive system  QQ Respiratory system  QQ Lymphatic system | **Natural**  QQ Active *(contracting a disease)*  QQ Passive *(maternal antibodies)* | **Artificial**  QQ Active (*antigens*)  QQ Passive (*antibodies*) |

#### PATHOGENS

Any microorganism capable of producing a disease is known as a *pathogen.* Generally, there are four types of *pathogenic* (the ability to produce disease) microorganisms:

QQ Virus

QQ Bacteria

QQ Fungi

QQ Protozoa

Acts of terrorism have been a growing concern worldwide. Terrorists make use of various forms of weapons of mass destruction (WMD). The following categories have been identified­by­several­government­agencies:

B Biological

N Nuclear

I Incendiary

C Chemical

E Explosive

Using pathogenic biological agents to cause panic, fear, and terror in a population is *bioterrorism.* Microorganisms are used as weapons of mass destruction because they can easily be transmitted, have high chances of causing death, may lead to panic, and lastly, would require extraordinary attention.

Self-Check 2.2

**Complete Practice Exercises 1–25 and A–H found in Chapter 5 of your textbook, then answer questions 1–11.**

**Choose the correct answer.**

­ 1.­Which­term­means­inflammation­of­the­tear­sac?

|  |  |
| --- | --- |
| a. Dacryolithiasis | c. Dacryocystitis |
| b. Dacryocyst | d. Lacrimitis |

*(Continued)*

Self-Check 2.2

1. Which of the following statements is true of endocrine glands?
   1. They carry their secretions to an external surface.

­ b.­They’re­classified­by­the­presence­of­ducts. c. They’re ductless.

d. They secrete hormones onto an epithelial surface.

1. What’s the name of the membrane that lines the abdominal cavity and invests the internal organs?
   1. Adhesion c. Peritoneum
   2. Diaphragm d. Viscera

­ 4.­Surgical­puncture­of­the­chest­wall­for­aspiration­of­fluids­is­called

* 1. open thoracic surgery. c. thoracodynia.
  2. thoracentesis. d. thoracoplasty.

5. Immunoglobulins that are formed to act against foreign cells or substances are called

|  |  |
| --- | --- |
| a. antibodies. | c. phagocytes. |
| b. neoplasms.  6. A term for excessive sweating is | d. thrombocytes. |
| a. hematopoiesis. | c. hyperemia. |
| b. hyperhidrosis.  7. A term that means tumor of a sweat gland is | d. polyuria. |
| a. hematoma. | c. hydrophobia. |
| b. hidradenoma.  8. Organs that are located inside the body are termed | d. omphaloma. |
| a. dorsal. | c. internal. |
| b. external. | d. plantar. |

*(Continued)*

Self-Check 2.2

9. You’re treating a patient who has a swollen eyelid caused by an infected eyelash. What’s the proper term for the eyelid condition?

1. Blepheral c. Blepharoplegia
2. Blepharitis d. Blepharospasm

­10.­A­patient­has­a­disease­of­the­fingernails­of­unknown­cause.­What’s­the­term­thatbest describes this condition?

|  |  |
| --- | --- |
| a. Onychectomy | c. Onychomycosis |
| b. Onychomalacia | d. Onychopathy |

­11.­A­patient­complains­of­frequently­having­“writer’s­cramp”­while­taking­notes­inclass. This is referred to as

|  |  |
| --- | --- |
| a. chiroplasty. | c. chiropody. |
| b. chiropodist. | d. chirospasm. |

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–11 with those at the end of this study guide.**

# *LESSON 3: MUSCULOSKELETAL,*

***CIRCULATORY, AND***

## *RESPIRATORY SYSTEM TERMS*

#### INTRODUCTION

In lesson 2, you were introduced to the different body systems. Now, you’ll begin to learn more about body systems in detail. This section will discuss medical terminologies related to the musculoskeletal, circulatory, and respiratory systems. Chapters 6, 7, and 8 of your textbook will provide comprehensive discussion on these systems.

#### SECTION 3.1: THE MUSCULOSKELETAL SYSTEM

**Read the following section, then read Chapter 6 in your textbook.**

***Objectives***

When you complete this section, you’ll be able to build and identify medical terms related to the musculoskeletal system.

*Musculoskeletal* refers to the muscles and the skeleton. The musculoskeletal system protects, supports, and aids in the movement of body parts. Apart from these functions, the musculoskeletal system, particularly the bones, are essential in *hematopoiesis* or blood production (*hemat/o* = blood, *-poiesis* = production). The bones also function to store fat in the bone marrow and to store and release minerals.

#### STRUCTURES OF THE MUSCULOSKELETAL SYSTEM

The musculoskeletal system involves all the muscles, bones, joints, and other related structures. The branch of medicine that aims to prevent and correct problems concerning the bones and the muscles is known as *orthopedics* (*orth/o* = straight, *ped/o* = child, *-ic* = pertaining to).

#### MAJOR BONES OF THE BODY

The human body is made up of 206 bones. There are two main divisions of the human skeleton: axialand appendicular.

QQ *Axial skeleton*

QQ consists of 80 bones, including the bones of the skull, hyoid bone, auditory ossicles (bones of the ears), vertebral column, sternum, and ribs

QQ functions include central weight-bearing, and protection and maintenance of posture

QQ *Appendicular skeleton*

QQ consists of 126 bones, including the shoulder girdle (scapula and clavicle), upper and lower extremities, and the pelvic bones

QQ functions include balance, stability, movement, and manipulation

The following table lists the major bones of the body, the meanings of their names, and word associations.

|  |  |  |  |
| --- | --- | --- | --- |
| **Bone** | **Combining Form** | **Common Name** | **Word Association** |
|  | ***Bones of the Axial Skeleton*** | |  |
| cranium | crani/o | skull | craniotomy |
| costa | cost/o | rib | intercostal |
| sternum | stern/o | breastbone | sternotomy |
| spine (vertebrae) | rachi/o, spin/o spondyl/o, vertebr/o | backbone | spondylosis |
| QQ cervical  QQ thoracic  QQ lumbar  QQ sacrum  QQ coccyx | cervic/o | spinal bones | cervicalgia |
| thorac/o | spinal bones | thoracolumbar |
| lumb/o | spinal bones | lumbosacral |
| sacr/o | spinal bones | sacroiliac |
| coccyg/o | tailbone | coccygeal |
|  | ***Bones of the Appendicular Skeleton*** | |  |
| clavicle | claviculo/o | collarbone | clavicular |
| scapula | scapul/o | shoulder blade | subscapular |
|  | ***Bones of the Upper Extremities*** | |  |
| humerus | humer/o | upper arm bone | humeral |
| radius | radi/o |  | radial |
| ulna | uln/o |  | ulnar |
| carpals | carp/o | wrist bones | carpophalangeal |
| metacarpals | metacarp/o | bones of the hand |  |
| phalanges | phalang/o | bones­of­the­fingers | phalangitis |

(*Continued*)

|  |  |  |  |
| --- | --- | --- | --- |
| **Bone** | **Combining Form** | **Common Name** | **Word Association** |
|  | ***Bones of the Pelvis*** | |  |
| ilium | ili/o | pelvic bones | iliac |
| ischium | ischi/o | pelvic bones | ischial |
| pubis | pub/o | pelvic bones | pubic |
|  | ***Bones of the Lower Extremities*** | |  |
| femur | femor/o | thigh bone | femoral |
| patella | patella/o | kneecap | patellar |
| fibula | fibul/o | bones of the lower leg | fibulator |
| tibia | tibi/o | bones of the lower leg | tibialis |
| tarsals | tars/o | ankle bones | tarsus |
| calcaneus | calcane/o | heel bone | calcaneal |
| metatarsals | metatars/o | bones of the feet | metatarsalgia |
| phalanges | phalang/o | bones of the toes | interphalanges |

#### CARTILAGE

*Cartilage* is a dense, elastic connective tissue that covers and protects the ends of long bones. The skeleton of the embryo is made up largely of cartilage. As one matures, the cartilage is replaced with bones, except for some structures such as the external ear and the nasal septum. The medical term *chondral* refers to cartilage.

#### MUSCLES, ARTICULATIONS, AND ASSOCIATED STRUCTURES

*Muscles*­consist­of­cells­and­fibers­that­contract­and­produce­body­movement.­The­threetypes of muscles are:

QQ *Cardiac muscle*

QQ heart muscle

QQ *Smooth muscle*

QQ otherwise known as visceral or involuntary muscle

QQ found in the internal organs such as the stomach QQ *Skeletal muscle*

QQ the only muscle that can be controlled voluntarily

QQ attached to the bones

*Fascia* is­a­fibrous­tissue­that’s­responsible­for­covering,­supporting,­separating,­andallowing muscles to slide easily. *Tendons,* on­the­other­hand,­are­tissue­fibers­that­connect the muscles to the bone.

*Articulation,* commonly known as *joint,* is the connection made between bones.

Articulations that have cavities between adjoining bones are known as *synovial joints. Ligaments* are bands of connective tissues responsible for connecting bones and cartilages and, at the same time, are essential in supporting and strengthening joints.

#### DISEASES, DISORDERS, AND DIAGNOSTIC TERMS

Although the most common cause of musculoskeletal problems is injury, other pathologies—such as infections, malignancies, and connective tissue disorders, to name a few—can also affect the muscles and the bones.

*Fractures* and *dislocations* are the most common traumatic injuries sustained by the bones. For the muscles, *sprain* and *strain* are usual occurrences. An injury to the spinal cord is life-threatening. Cord injury may cause *paralysis* or *paresis* below the injured part. *para* = beside *quadri-, tetra-* = four *plegia* =paralysis *paresis* =weakness

QQ *Paraplegia:* paralysis of both legs

QQ *Quadriplegia/tetraplegia:* paralysis of upper and lower extremities

QQ *Paraparesis:* weakness of the both legs

QQ *Quadriparesis/tetrapresis:* weakness of all four extremities

In­the­previous­sections,­you­learned­that­the­suffix­*-itis* means­inflammation.­Study­thefollowing list of infections affecting the musculoskeletal system:

|  |  |
| --- | --- |
| QQ *cellul/o* (little cell) | + *itis* = *cellulitis* |
| QQ *my/o* (muscle) | + *itis* = *myocellulitis* |
| QQ *oste/o* (bone) | + *itis* = *osteitis* |

QQ *chondro/o* (cartilage) + *itis* = *osteochondritis*

Several types of malignancies or tumors affect the muscles and the bones. They may be classified­as­*primary* (starts from the bones)or *secondary* (starts from another tissue, but metastasizes to the bone).

*Sarcomas* =tumors that originate from the connective tissues, such as muscles and bones

QQ *Chondrosarcoma* = *chondro* + *sarcoma* (masses of cartilage)

QQ *Fibrosarcoma* = *fibro* + *sarcoma*­ (tumor­with­fibrous­tissue)

Alterations with metabolism can lead to bone destruction and problems with bone formation. The following combining words are associated with bone disorders arising from metabolic problems:

QQ *deformans* (deformity/­disfiguring)­ :­ *osteitis deformans*

QQ *malacia* (softening) : *osteomalacia*

QQ *-porosis* (thinning) : *osteoporosis*

In some instances, clients are born with developmental defects that cause skeletal malformation.­Here­are­some­examples:

QQ *Spina bifida bifida:* divided into two parts

QQ *Scoliosis* *scoliosis:* curvature

QQ *Kyphosis* *kyphos:* hunchback

QQ *Muscular dystrophy* *dys* (bad) + *trophy* (nutrition)

QQ *Craniocele* *crani/o* (skull) + *-cele* (herniation)

QQ *Tarsoptosis* *tars/o* (ankle) + *-ptosis* (prolapsed)

Any disease of the joint is known as *arthropathy*. Describe the following medical terms based on the meanings you learned in the previous chapters. Remember that *arthr/o* refers to the joint.

QQ Arthroscopy

QQ Arthroscope

QQ Arthrotomy

QQ Arthritis

*Arthritis*­denotes­any­joint­inflammation.­There­are­several­types­of­arthritis:

QQ Osteoarthritis

QQ Rheumatoid arthritis

QQ Spondylarthritis

QQ Polyarthritis

Other connective tissue disorders include the following:

QQ *Bursitis:* inflammation­of­the­bursa

QQ *Lupus erythematosus:* autoimmune disease involving the connective tissues

QQ *Gout:* acute form of arthritis caused by a metabolic disease

QQ *Ankylosis:* stiffening of the joints

#### SURGICAL AND THERAPEUTIC INTERVENTIONS

*Orthopedic* surgeons perform surgical procedures to restore bones to their normal function.­Recall­the­following­suffixes­introduced­in­the­previous­sections:

|  |  |
| --- | --- |
| *-plasty:* | repair |
| *-ectomy:* | removal or excision |
| *-otomy:* | creation of opening |
| *-centesis*:­ | extraction­of­fluid­from­a­body­cavity |

The following are common surgical procedures associated with the musculoskeletal system:

|  |  |  |
| --- | --- | --- |
| vertebroplasty | vertebro + plasty | repair of the vertebrae |
| arthroplasty | arthro + plasty | repair or reconstruction of a joint |
| tendoplasty | tendo + plasty | repair of tendons |
| myoplasty | myo + plasty | repair of muscle |
| tendomyoplasty | tendo + myo + plasty | repair of the tendons and the muscles |
| cranioplasty | cranio + plasty | repair of the skull |
| bunionectomy | bunion + ectomy | excision of a bunion |
| ostectomy | osteo + ectomy | excision of a bone |
| costectomy | cost + ectomy | excision of a rib |
| craniectomy | crani + ectomy | excision of a skull segment |
| laminectomy | lamina + ectomy | removal of a lamina (portion of the vertebra) |
| diskectomy | disk + ectomy | total excision of an intervertebral disk |
| chondrectomy | chondro + ectomy | excision of a cartilage |
| arthrocentesis | arthro + centesis | extraction­of­accumulated­fluid­in­thesynovial joint |

*Anti-inflammatories* and *anti-arthritics* are various forms of medications that treat arthritis and other connective tissue disorders. Note that *anti-* is­a­prefix­meaning­against,­thus:

QQ *Anti-inflammatories:*­drugs­that­reduce­inflammation­and­pain

QQ *Anti-arthritis:* drugs that provide relief from arthritic symptoms

Self-Check 3.1

**Complete Practice Exercises 1–15 and A–J found in Chapter 6 of your textbook, then answer questions 1–15. Choose the correct answer.**

1. Displacement of a bone from a joint is called

|  |  |
| --- | --- |
| a. dislocation. | c. sprain. |
| b. fracture.  2. Surgical repair of the skull is called | d. strain. |
| a. cephaloplasty. | c. cranioplasty. |
| b. cephalotomy.  3. Visualization of the interior of a joint is called | d. craniotomy. |
| a. arthroscope. | c. chondroscopy. |
| b. arthroscopy.  ­ 4.­Inflammation­of­a­joint­is | d. endoscope. |
| a. arthritis. | c. osteoarthritis. |
| b. chondritis.  5. *Osteoid* means \_\_\_\_\_\_\_ bone. | d. osteochondritis. |
| a. growth of | c. resembling |
| b. inflammation­of­ | d. softening of |

­ 6.­Replacement­of­bone­marrow­by­fibrous­tissue­is­called

­ a.­fibrosclerosis.­ c. osteoarthritis. b. myelofibrosis.­ d. osteofibrosis.

­ 7.­Inflammation­of­more­than­one­joint­is­called

1. arthrocentesis. c. polyarthritis.
2. arthrodynia. d. quadriplegia.
3. The term that means pertaining to a rib and a vertebra is

|  |  |
| --- | --- |
| a. costal. | c. spondylocostal. |
| b. costovertebral. | d. sternocostal. |

*(Continued)*

Self-Check 3.1

1. A condition in which the whole spine is stiffened is called
   1. ankylosed spine. c. scoliosis.
   2. kyphosis. d. spina­bifida.

­10.­A­term­that­means­pertaining­to­the­wrist­and­the­fingers­is

* 1. carpophalangeal. c. metatarsal.
  2. metacarpal. d. tarsophalangeal.

1. Which adjective does *not* pertain to a bone of the arm?
   1. Costal c. Radial
   2. Humeral­ d. Ulnar
2. A skeletal disorder in adults characterized by a disturbance in bone metabolism and­commonly­caused­by­a­deficiency­of­vitamin­D­is
   1. kyphosis. c. osteomyelitis.
   2. osteomalacia. d. rickets.
3. Bones that are located between the toes and the bones of the ankle are
   1. carpals. c. metatarsals.
   2. metacarpals. d. tarsals.
4. Which of the following muscle types are under the voluntary control of a person?
   1. Cardiac c. Smooth
   2. Skeletal d. Visceral
5. A 74-year-old post-menopausal woman who has reduced bone mass likely has which of the following?

|  |  |
| --- | --- |
| a. Osteitis deformans | c. Osteoporosis |
| b. Osteomalacia | d. Spondylomalacia |

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–15 with those at the end of this study guide.**

#### SECTION 3.2: THE CIRCULATORY SYSTEM

**Read the following section, then read Chapter 7 in your textbook.**

***Objective***

When you complete this section, you’ll be able to build, identify, and analyze medical terms referring to the circulatory system.

The *circulatory system* is made up of the *cardiovascular system* and the *lymphatic system.* This body system functions to maintain *homeostasis* by:

QQ Transporting oxygen, nutrients, vitamins, antibodies, and other substances

QQ Taking away waste and carbon dioxide

#### CARDIOVASCULAR SYSTEM

##### Structures of the Cardiovascular System

The *cardiovascular* (*cardio* + *vascul* + *ar*) system consists of the heart and the blood vessels.

###### Heart

The heart is an organ in the chest that pumps blood through the veins and arteries. It has four chambers:

QQ Right and left *atria* (plural for *atrium)*

QQ Right and left *ventricles*

Atrial and ventricularrefer to the atrium and ventricle, respectively. *Atrio* + *ventricular* (AV) valves are found between the atria and the ventricles. These valves are made up of *cuspids* (small­flaps­that­make­up­the­AV­valves).­

|  |  |  |
| --- | --- | --- |
| *tricuspid* | tri (three) + cuspid | valve on the right side of the heart |
| *bicuspid* | bi (two) + cuspid | valve on the left side of the heart, otherwise known as *mitral* valve |

*Semilunar* valves­regulate­the­flow­of­blood­to­and­from­the­lungs:

QQ *Pulmonic* valve*:*­controls­the­flow­of­blood­to­the­lungs

QQ *Aortic* valve*:*­controls­the­flow­of­blood­into­the­*aorta*

The *pericardium* (*peri* + *card* + *ium*) is a double membrane that surrounds the heart and the great vessels. The heart wall is made up of several layers:

QQ *Epicardium:* outer layer

QQ *Myocardium:* muscular middle layer

QQ *Endocardium:* inner layer

###### Blood Vessels

The­circulatory­system­is­made­up­of­five­types­of­blood­vessels­that­transport­bloodthroughout the entire body:

QQ *Arteries:* carry oxygenated blood from the heart to the different body parts

QQ *Arterioles:* small blood vessels that connect the arteries to the capillaries

QQ *Capillaries*: smallest blood vessels where oxygenation and nutrients occur

QQ *Venules:* small blood vessels that connect the capillaries to the veins

QQ *Veins:* carry deoxygenated blood from the different parts of the body to the heart

Note that the *pulmonary artery* is the only artery that carries deoxygenated blood and the *pulmonary vein* is the only vein that carries oxygenated blood.

The *coronary arteries* carryoxygenated­and­nutrient-filled­blood­to­the­*myocardium* (heart muscle).

The following table lists the combining forms associated with the blood vessels.

|  |  |  |
| --- | --- | --- |
| **Combining Form** | **Meaning** | **Word Association** |
| angi/o, vas/o, vascul/o | vessel | An *angiogram* is a radiologic test that views blood­flow­within­the­veins­or­arteries. |
| aort/o | aorta | An *aortogram* is an invasive procedure in which a catheter is placed in the aorta and a contrast material is injected. |
| arter/o, arteri/o | artery | *Arteriosclerosis* refers to the thickening, hardening, and loss of elasticity of the arterial walls. |
| arteriol/o | arteriole | *Arteriolopathy* refers to any disease of the arterioles. |
| ather/o | yellow, fatty plaque | The build-up of plaque in the arterial walls is known as *atherosclerosis*. |
| phleb/o, ven/o | vein | *Phlebitis* or *venitis*­is­the­inflammation­of­theveins. |
| venul/o | venule | *Venulitis* is­inflammation­of­the­venules.­ |

##### Diseases, Disorders, and Diagnostic Terms

*Cardiomyopathy* is the general diagnostic term used to identify a disease of the heart muscle. The following are examples of cardiomyopathy. Note the meaning of the suffix­*-itis*.

QQ *Myocarditis:*­inflammation­of­the­myocardium­(heart­muscle)

QQ *Endocarditis:*­inflammation­of­the­endocardium

QQ *Pericarditis:*­inflammation­of­the­pericardium

There are several tests used to diagnose cardiac problems. Some of the most common tests include:

QQ *Electrocardiogram* *electr/o* + *cardi/o* + *-gram*

QQ measures the electrical activity of the heart

QQ electrocardiography: a noninvasive procedure used to record electrical activity of the heart

QQ electrocardiograph: record of the heart’s electrical activity

QQ *Echocardiogram* *echo* + *cardi/o* + *-gram*

QQ record of the heart’s sonogram

QQ echocardiography: the use of sound waves to produce live images of the heart

QQ *Positron emission tomography*

QQ is­useful­in­examining­the­flow­of­blood­in­the­heart­and­blood­vessels

QQ a radioactive element is used

QQ *Cardiac catheterization*

QQ a procedure in which a *catheter* is moved through a blood vessel to the heart to diagnose heart disorders

Study the following list of diseases and disorders affecting the heart: QQ Angina pectoris

QQ Arrhythmia

QQ Cardiomegaly

QQ Congenital heart defects

QQ Congestive heart failure

QQ Coronary artery disease

QQ Coronary heart disease

QQ Fibrillation

QQ Heart­murmur

QQ Hyperlipidemia

QQ Hypertension

QQ Infarction

QQ Myocardial ischemia

QQ Septal defect

QQ Shock

The­distribution­of­blood­to­the­various­parts­of­the­body­is­influenced­by­the­diameter­ofthe blood vessels:

QQ *Vasoconstriction:* decrease in the diameter of a blood vessel

QQ *vaso* + *constriction*

QQ *Vasodilation:* increase in the diameter of a blood vessel

QQ *vaso* + *dilation*

*Angiomas* are benign tumors made up of blood vessels (*hemangioma)* or lymph vessels *(lymphangioma).*

There are several radiologic studies involving the blood vessels. These include:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| aortography | aorto + graphy | x-ray of the aorta with the use of a contrast dye | aortogram | record produced |
| arteriography | arterio + graphy | x-ray of the arteries using a radiopaque material | arteriogram | image produced |
| angiocardiography | angio + cardio + graphy | x-ray of the heart and great vessels using a dye |  |  |

##### Surgical and Therapeutic Interventions

Healthcare­technology­has­greatly­improved­in­the­past­few­decades,­leading­to­majoradvances in the treatment of cardiovascular diseases. *Cardiopulmonary* pertains to the heart and lungs.

QQ *Cardiopulmonary bypass:* a technique that temporarily takes over the function of the heart and the lungs during surgery

QQ *Cardioversion:* a procedure in which an electric current is used to reset the heart’s rhythm back to its normal pattern

QQ *Cardiopulmonary resuscitation:* a series of lifesaving actions that improve a client’s chances of survival after a cardiac arrest Heart­problems­are­corrected­using­several­medications,­including­the­following:

QQ *Digoxin:* a cardiac glycoside used in the treatment of clients with congestive heart failure and/or dysrhythmia

QQ *Nitroglycerin:* a vasodilator often given to clients with *angina pectoris*

For blood vessel problems, these medications are frequently used:

QQ *Thrombolytics* (*thromb*/o + *lytic*)*:* medications that dissolve clots

QQ *Vasodilators:* medications that dilatethe blood vessels

QQ *Antihypertensives:* medications that decrease blood pressure

QQ *Diuretics:* medications that facilitate excretion of water by the kidneys

QQ *Antilipidemics:* medications that decrease cholesterol levels

Vascular problems that cannot be corrected with medications may need to be treated using some of these procedures:

|  |  |  |
| --- | --- | --- |
| *angioplasty* | angio + plasty | repair of the blood vessels |
| *atherectomy* | ather/o + ectomy | insertion of a specialized catheter to remove plaque from the arterial lining |
| *aortoplasty* | aort/o + plasty | repair of the aorta |
| *phlebectomy* | phleb + ectomy | excision of a vein or a vein segment |
| *hemorrhoidectomy* | hemorrhoid + ectomy | excision of a hemorrhoid |

#### LYMPHATIC SYSTEM

Otherwise­known­as­“the­lymphatics,”­the­lymphatic­system­performs­the­followingfunctions:

QQ Return­the­fluid­that­escaped­from­the­blood­vessels­back­to­circulation

QQ Defend the body against disease

#### STRUCTURES OF THE LYMPHATIC SYSTEM

QQ *Lymph:*­fluid­that­circulates­in­the­lymphatic­system

QQ *Lymph vessels:* thin tubes that carry lymph and white blood cells

QQ *Lymph nodes:*­small­round­glands­that­filter­lymph­throughout­the­body

QQ *Tonsils*: collections of *lymphoid* tissue found in the pharynx

QQ palatine tonsils*:* located at the back of the throat

QQ pharyngeal tonsils*:* commonly referred to as *“adenoids”*

QQ *Thymus:* gland in the upper chest cavity that processes *lymphocytes*

QQ *Spleen:* produces *antibodies* and *lymphocytes*

The following table lists some word parts related to the lymphatic system:

|  |  |  |
| --- | --- | --- |
| **Word Part** | **Meaning** | **Word Association** |
| adenoid/o | adenoids | *Adenoidectomy* is the surgical removal of the adenoids. |
| cervic/o | neck or the uterus | *Cervicalgia* means neck pain.  Inflammation­of­the­cervix­is­known­as*cervicitis.* |
| home/o | sameness | *Homeostasis* refers to the ability of the physiological system to maintain internal stability. |
| lymphat/o | lymphatics | A disease or enlargement of the lymph nodes is *lymphadenopathy*. |
| splen/o | spleen | *Splenomegaly* is the enlargement of the spleen. |
| thromb/o | thrombus, blood clot | *Thrombolysis* is the breakdown of blood clots. |

##### Diseases, Disorders, and Diagnostic Terms

Any disease involving the lymph nodes is referred to as *lymphadenopathy*. Study the following table for additional terms referring to pathological terms and diagnoses related to the lymphatics.

|  |  |  |
| --- | --- | --- |
| *lymphoma* | lymph + oma | cancer that originates from the lymphatic system |
| *lymphadenoma* | lymph + aden + oma | tumor of the lymph node |
| *lymphangitis* | lymph + ang + itis | acute­or­chronic­inflammation­of­thelymphatic vessels |
| *lymphadenitis* | lymph + aden + itis | inflammation­of­the­lymph­nodes |
| *lymphedema* | lymph + edema | Accumulation of lymph in the tissue that results in swelling.  *Elephantiasis* is a form of edema caused by parasites. |
| *lymphangiography* | lymph + angio + graphy | radiologic study of the lymphatic vessels and nodes using a contrast dye |
| *lymphangiogram* | lymph + angio + gram | x-ray of the lymphatic vessels and nodes |

##### Surgical and Therapeutic Interventions

*Antibiotics* or *anti-infective medications* are the usual lines of treatment for infections of the lymph nodes and lymph vessels.

In more severe problems of the lymphatic system such as cancer, excision of the affected lymphatic structure may be necessary. Recall the meaning of the following terms:

QQ Lymphadenectomy

QQ Splenectomy

QQ Tonsillectomy

QQ Adenoidectomy

Self-Check 3.2

**Complete Practice Exercises 1–13 and A–H found in Chapter 7 of your textbook, then answer questions 1–11.**

**Choose the correct answer.**

­ 1.­The­fluid­transported­by­lymphatic­vessels­is

|  |  |
| --- | --- |
| a. lymph. | c. plasma. |
| b. lymphoma. | d. serum. |

1. *Polyarteritis* is
   1. arthritis in many joints.
   2. inflammation­of­many­arteries.
   3. many heart abnormalities.
   4. plastic surgery of the arteries.

*(Continued)*

Self-Check 3.2

1. The name of the record produced by recording the electrical currents of the heart muscle is

|  |  |
| --- | --- |
| a. echocardiogram. | c. electrocardiogram. |
| b. echocardiography. | d. electrocardiography. |

1. Arterioles are small
   1. arteries that carry blood to arteries.
   2. arteries that receive blood from arteries.
   3. blood vessels that carry blood to the inferior vena cava.
   4. blood vessels that receive blood from veins.

­ 5.­Inflammation­of­the­lining­of­the­heart­is

|  |  |
| --- | --- |
| a. endocarditis. | c. pericarditis. |
| b. myocarditis.  6. An excessive quantity of fat in the blood is called | d. polyarteritis. |
| a. hyperkalemia. | c. hypernatremia. |
| b. hyperlipidemia. | d. hypertension. |

1. *Vasodilation* is a/an
   1. decrease in the diameter of a blood vessel.
   2. drug that dilates the blood vessels.
   3. synonym for vasoconstriction.
   4. increase in the diameter of a blood vessel.
2. A 55-year-old man had which device implanted in his chest to detect sustained ventricular­tachycardia­or­fibrillation­and­deliver­a­low-energy­shock­to­the­heart,restoring the normal rhythm?

|  |  |  |
| --- | --- | --- |
| ­ | a.­Automated­external­defibrillator­ | c. Electrocardiogram |
|  | b. Cardioverter-defibrillator­ | d. Pacemaker |

*(Continued)*

Self-Check 3.2

1. A 74-year-old man underwent which operation when the blockages in his coronary arteries were too severe for a percutaneous procedure to be effective?
   1. Aortography
   2. Atherectomy
   3. Cardiopulmonary resuscitation
   4. Coronary artery bypass graft

­10.­A­3-month-old­boy­has­a­“hole”­in­his­heart.­This­is­better­described­as

* 1. a septal defect. c. myocardial infarction.
  2. congestive heart failure. d. myocardial ischemia.

11. The mitral valve is also referred to as the \_\_\_\_\_\_\_ valve.

1. bicuspid c. semilunar
2. sinoatrial d. tricuspid

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–11 with those at the end of this study guide.**

#### SECTION 3.3: THE RESPIRATORY SYSTEM

**Read the following section, then read Chapter 8 in your textbook.**

***Objective***

When you complete this section, you’ll be able to write, recognize, and analyze medical terms pertaining to the respiratory system.

Otherwise known as the *pulmonary system,* the *respiratory system* (*spir/o =* to breathe)functions primarily to deliver *oxygen* to the body tissues and get rid of *carbon dioxide*. This function is achieved through *breathing* or *ventilation.* There are two processes involved in *ventilation*:

QQ *Inspiration*/*inhalation:* movement of air into the lungs

QQ *Expiration*/*exhalation:* movement of air out of the lungs

A *pulmonologist* (*pulmon/o* + *-logist*) is a specialist in the anatomy, physiology, and pathology of the lungs, while a *respiratory therapist* evaluates and treats respiratory disorders at the direction of a physician.

#### STRUCTURES OF THE RESPIRATORY SYSTEM

The respiratory system consists of the upper and lower respiratory tracts. The following diagram illustrates the movement of air into the respiratory tract with the associated structures.

**UPPER**

**RESPIRATORY**

**TRACT**

**LOWER**

**RESPIRATORY**

**TRACT**

**NOSE**

**NASAL CAVITY**

**NASOPHARYNX**

**OROPHARYNX**

**LUNG CAPILLARIES**

**ALVEOLI**

**BRONCHIOLES**

**BRONCHI**

**TRACHEA**

**LARYNGOPHARYNX**

**LARYNX**

***FIGURE 2—Upper and Lower Respiratory Systems***

The following respiratory structures are important to note:

QQ *Diaphragm*

QQ serves as the main muscle of respiration

QQ separates the abdominal cavity from the *thoracic* (*thora/o =* chest) cavity

QQ *Pleura*: membrane that surrounds the lungs

QQ *Lungs*

QQ a pair of large, spongy organs used for gas exchange

QQ the right lung has three lobes while the left lung has two lobes

QQ *Sinuses*

QQ lighten the weight of the skull

QQ Four sinuses: frontal, ethmoid, maxillary, sphenoid

Q *para* + *nasal* *sinuses*

Q (*para* = beside, *nas/o* = nose, *-al* = pertaining to)

Q­ the­frontal­and­maxillary­sinuses­are­air-filled­paired­cavities­locatedaround the nose

QQ *Pharynx:* throat

QQ *Larynx:* voice box

Study the combining forms of the following respiratory structures along with the word associations and their meanings.

|  |  |  |
| --- | --- | --- |
| **Combining Form** | **Meaning** | **Word Association** |
| *alveol/o* | alveolus/alveoli | *Alveolar* ventilation refers to the volume of gas expired from the alveoli. |
| *bronch/o, bronchi/o* | bronchus/bronchi | A *bronchodilator* is a medication that opens up the bronchioles.  *Bronchitis*­is­the­inflammation­of­the­bronchialtubes. |
| *bronchiol/o* | bronchiole | Inflammation­of­the­bronchioles­is­known­as*bronchioloitis*. |
| *epiglott/o* | epiglottis | *Epiglottitis* is a life-threatening condition in which the epiglottis swells. |
| *laryng/o* | larynx (voice box) | *Laryngospasm* is the uncontrolled and involuntary muscular contraction of the vocal folds. |
| *lob/o* | lobe | The surgical removal of a lobe of an organ is referred to as *lobectomy*. |
| *nas/o, rhin/o* | nose | The *nasopharynx* refers to the upper part of the throat behind the nose. |

(*Continued*)

|  |  |  |
| --- | --- | --- |
| **Combining Form** | **Meaning** | **Word Association** |
| *phren/o* | diaphragm | The *phrenic* nerve supports the movement of the diaphragm. |
| *pleur/o* | pleura | *Pleuritis* or *pleurisy* is­the­inflammation­of­thepleura or the lining of the lungs. |
| *pharyng/o* | pharynx (throat) | *Pharyngitis* is­the­inflammation­of­the­pharynx,­otherwise­known­as­“*sore throat*.” |
| *pneu/o, pneumon/o, pulm/o, pulmono/o* | lung | *Pneumonia* is the infection of one or both lungs.  The medical specialty that deals with diseases involving the respiratory tract is known as *pulmonology*. |
| *trache/o* | trachea | *Tracheostomy* is a surgical procedure that creates an opening in the trachea. |

#### DISEASES, DISORDERS, AND DIAGNOSTIC TERMS

Two of the most common noninvasive measurements used to collect data about a client’s respiratory status are oximetryandspirometry*.*

QQ *Oximetry*

QQ measurement of the blood oxygen saturation in the arteries

QQ *oximeter*: a device used to measure oxygen saturation of the blood

QQ *Spirometry* (*spiro* + *metry*)

QQ measurement­of­airflow­taken­in­and­exhaled­from­the­lungs

QQ *spirometer*: instrument used for measuring air inhaled to and exhaled out of the lungs

The­suffix­*–pnea* denotes breathing. Study the following list for medical terms pertaining to respirations.

|  |  |  |  |
| --- | --- | --- | --- |
| *eupnea* | *eu- (*normal) | eu + pnea | normal respirations |
| *dyspnea* | *dys*- (bad) | dys + pnea | labored­and­difficult­breathing |
| *apnea* | *a-* (absence) | a + pnea | temporary absence of breathing |
| *orthopnea* | *orth/o-* (straight) | ortho + pnea | difficulty­breathing­in­any­position other than upright or sitting position |
| *bradypnea* | *brady-* (slow) | brady + pnea | abnormal breathing, less than 12 breaths per minute |

(*Continued*)

|  |  |  |  |
| --- | --- | --- | --- |
| *tachypnea* | *tachy-* (fast) | tachy + pnea | respirations more than 20 breaths per minute |
| *hyperpnea* | *hyper-* (more than normal) | hyper + pnea | abnormally deep or rapid respiration |

Aside from the previous list, the following terms are frequently used in relation to the respiratory system:

QQ *hyperventilation* (*hyper* + *ventilation*): excessive ventilation of the lungs

QQ *hypoventilation* (*hypo* + *ventilation*):­insufficient­exchange­of­oxygen­and­carbondioxide in the lungs

QQ *hypoxia* (*hyp* + *ox* + *ia*): diminished oxygenation to the tissues

QQ *anoxia* (*an* + *ox* + *ia*): extreme form of hypoxia, severe lack of oxygen in the tissues

Similar­to­the­circulatory­system,­the­respiratory­system­can­be­afflicted­with­a­number­ofdisorders.­Review­the­definitions­of­the­following­respiratory­disorders:

QQ Adult respiratory distress syndrome

QQ Asthma

QQ Atelectasis

QQ Bronchiectasis

QQ Bronchography

QQ Lung carcinoma

QQ Chronic obstructive pulmonary disease

QQ Emphysema

QQ Influenza

QQ Nasal polyp

QQ Pleuritis

QQ Pneumoconiosis

QQ Pulmonary embolism

QQ Severe acute respiratory syndrome

QQ Silicosis

QQ Sudden infant death syndrome

QQ Tuberculosis

#### SURGICAL AND THERAPEUTIC INTERVENTIONS

*Asphyxia* denotes a severe decrease in the supply of oxygen in the body secondary to abnormal breathing. Methods used to address this problem may include the use of the *Heimlich maneuver* or, in severe cases, *endotracheal* *intubation*.

QQ *Heimlich maneuver*

QQ otherwise known as *abdominal thrust*

QQ first-aid­procedure­used­to­remove­airway­foreign­body­obstruction,­such­as­inthe case of *choking*

QQ *Endotracheal intubation* (*endo* = *inside* + *trache/o* + *al*):­insertion­of­artificial­airwayinto the trachea

QQ *nasotracheal* intubation (*nas/o* = nose)

Q Q insertion of an airway tube through the nose

QQ *orotracheal* intubation (*or/o* = mouth)

Q Q insertion of an airway tube through the mouth

QQ *Ventilator*

QQ an­apparatus­used­to­administer­artificial­respiration­in­cases­of­respiratoryfailure

In severe cases, respiratory disorders may need to be treated surgically. The following table lists some of the most common surgical procedures related to the respiratory system.

|  |  |  |
| --- | --- | --- |
| **Surgical Procedure** | **Word Parts** | **Definition** |
| *tracheotomy* | trach/o + tomy | creation of an opening in the trachea |
| *tracheostomy* | trach/o + ostomy | creation­of­artificial­airway­in­thetrachea |
| *biopsy percutaneous* | bi + o + o/psy per + cutane/o | removal of small tissue for examination  puncturing the skin to obtain a sample of the tissue |
| *pneumonectomy* | pneumon/o + ectomy | removal of all or part of the lungs |
| *lobectomy* | lob/o + ectomy | removal of a lobe of the lung |
| *rhinoplasty* | rhin/o + plasty | surgical repair of the nose |
| *pneumocentesis* | pneum/o + centesis | puncture­of­the­lungs­to­remove­fluid |
| *thoracentesis* | thorac/o + centesis | puncture of the chest cavity to drain fluid |

Respiratory disorders may also be treated with medications. Review the purpose of the following­drug­classifications:

QQ *Decongestants de* + *congest* + *ant*

QQ *Antitussives anti* + *tussive*

QQ *Antihistamines anti* + *histamine*

QQ *Bronchodilators broncho* + *dilat/o* + *or*

QQ *Mucolytics muco* + *lys/o* + *tics*

Self-Check 3.3

**Complete Practice Exercises 1–10 and A–G found in Chapter 8 of your textbook, then answer questions 1–14.**

**Choose the correct answer.**

1. A term that means pertaining to the windpipe and the bronchi is

|  |  |
| --- | --- |
| a. bronchiectasis. | c. pharyngobronchial. |
| b. laryngobronchial. | d. tracheobronchial. |

1. *Atelectasis* is
   1. a collapsed or airless condition of the lungs.
   2. an acute, contagious respiratory infection.
   3. chronic dilation of the lungs.
   4. paroxysmal dyspnea.
2. Removal of lung tissue is called
   1. pneumatic. c. pneumonectomy.
   2. pneumohemothorax. d. pneumothorax.

*(Continued)*

Self-Check 3.3

1. The term *pneumocardial* pertains to the

|  |  |
| --- | --- |
| a. chest and lungs. | c. heart and lungs. |
| b. heart and kidneys.  5. Absence of breathing is termed | d. kidneys and lungs. |
| a. apnea. | c. hypopnea. |
| b. dyspnea.  6. *Rhinitis*­is­inflammation­of­the | d. hyperpnea. |
| a. chest. | c. throat. |
| b. nose.  7. The term *pulmonary* refers to the | d. voice box. |
| a. chest. | c. heart. |
| b. diaphragm. | d. lungs. |

1. A respiratory condition in which there’s discomfort in breathing in any position except sitting erect or standing is

|  |  |
| --- | --- |
| a. apnea. | c. orthopnea. |
| b. bradypnea. | d. tachypnea. |

1. Tiny air sacs through which the exchange of oxygen and carbon dioxide takes place are called

|  |  |
| --- | --- |
| a. alveoli. | c. bronchioles. |
| b. bronchi. | d. emboli. |

1. The term for a whistling sound made during respiration is
   1. nares. c. thrombus.
   2. pleura. d. wheeze.
2. A 72-year-old man has orders to have his oxygen levels checked. This can be done using

|  |  |
| --- | --- |
| a. endotracheal intubation. | c. an oximeter. |
| b. a bronchogram. | d. a spirometer. |

*(Continued)*

Self-Check 3.3

1. A 75-year-old woman with a left cerebrovascular accident (stroke) is now unable to­speak.­You­document­which­term­to­indicate­this­deficit?
   1. Anoxia c. Dysphasia
   2. Aphasia d. Dysphonia
2. An instructor says that this disease has been nearly eradicated in developed countries. Which disease is probably being discussed?

­ a.­Influenza­ c. Thoracentesis b. Pharyngitis d. Tuberculosis

1. A 29-year-old woman is trying to break up sputum by using which type of over-thecounter medication?
   1. Antihistamine c. Bronchodilator
   2. Bronchoconstrictor d. Mucolytic

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–14 with those at the end of this study guide.**

# *LESSON 4: DIGESTIVE, URINARY, AND REPRODUCTIVE SYSTEM TERMS*

#### INTRODUCTION

In the previous section, you became familiar with medical terminologies related to the musculoskeletal, circulatory, and respiratory systems. This section will focus on medical vocabularies and jargons related to digestion, micturition or urination, and reproduction. Detailed discussion on these systems can be found in Chapters 9, 10, and 11 of your textbook.

#### SECTION 4.1: DIGESTIVE SYSTEM

**Read the following section, then read Chapter 9 in your textbook.**

***Objectives***

When you complete this section, you’ll be able to distinguish and analyze medical terms associated with the digestive system.

#### THE DIGESTIVE SYSTEM

The *digestive system* is responsible for the provision of water, nutrients, and minerals to the body. *Alimentation* (*alimentum* = to nourish)is the term used for the process of giving or receiving nutrition, while *metabolism* is used to describe all the body processes involved in maintaining life.

There are four processes involved in digestion:

QQ *Ingestion:* taking­foods­or­fluids­orally

QQ *Digestion:* physical and chemical breakdown of food into smaller components that can be absorbed in the bloodstream

QQ *Absorption:* passage of food molecules from the small intestine into the blood and lymph capillaries

QQ *Elimination:* removal of food particles that were not digested through *defecation* Nutrients­are­classified­into­three­major­categories.­They’re­further­broken­down­intosimpler substances known as *enzymes.* The­following­table­summarizes­nutrient­classifications­and­their­specific­enzymes­(*-ase* =enzyme).

|  |  |  |
| --- | --- | --- |
| **Nutrient Classification** | **Associated Enzyme/s** | **Word Parts** |
| *carbohydrates* | lactase (breaks down lactose) amylase (breaks down starch) | *lact* + *ase amyl* + *ase* |
| *proteins* | protease proteinase | *prote* + *ase protein* + *ase* |
| *fats* | lipase | *lip* + *ase* |

Study the following word parts related to digestion and nutrition:

|  |  |  |
| --- | --- | --- |
| **Word Part** | **Meaning** | **Word Association** |
| *-ation* | action or process | *Defecation* is the process of passing out stool or feces via the anus. |
| *bil/i, chol/e* | bile | The *biliary* system consists of the liver, gallbladder, and the bile duct. |
| *cirrh/o* | orange-yellow | *Liver cirrhosis* refers to the chronic scarring and damage to the liver. |
| *de-* | down, from, reversing, or removing | The removal of an amino group from a molecule is known as *deamination.* |
| *glycos/o* | sugar | *Glycolysis* is the breakdown of glucose for cellular metabolism. |
| *-orexia* | appetite | *Anorexia* is the loss of appetite. |
| *-pepsia* | digestion | *Dyspepsia* is the term used to describe indigestion or painful and upset stomach. |
| *vag/o* | vagus nerve | The *vasovagal* syncope is the sudden loss of consciousness caused by affectation of the vagus nerve. |
| *viscer/o* | viscera | *Visceral* pain is a pain that originates from body organs. |

##### Structures of the Digestive System

The structures of the digestive system can be divided into two categories: alimentary tractand the accessory organs of digestion*.*

###### Alimentary Tract

The *alimentary tract,* otherwise known as the *digestive tract,* starts from the mouth and continues down to the anus.

QQ *Intestinal intestin/o* = intestines + *-al*

QQ *Gastrointestinal gastr/o* = stomach + *-al*

The alimentary canal consists of two parts, the *upper* and *lower gastrointestinal tract.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Upper**  **Gastrointestinal**  **Tract** | **Digestive Organs** | **Word Part** | **Word Association** |
| lips | cheil/o | cheilosis |
| teeth | dent/i, dent/o, odont/o | dentistry |
| gums | gingiv/o | gingivitis |
| tongue | gloss/o, lingu/o | glossitis |
| mouth | or/o, stomat/o | oropharynx |
| esophagus | esophag/o | esophagitis |
| stomach | gastr/o | gastroenterologist |
| **Lower**  **Gastrointestinal**  **Tract** | intestines | intestin/o, enter/o | intestinal, enteritis |
| duodenum | duoden/o | duodenal |
| jejunum | jejun/o | jejunostomy |
| ileum | ile/o | ileostomy |
| colon or large intestine | col/o, colon/o | colonoscopy |
| appendix | append/o, appendic/o | appendectomy |
| cecum | cec/o | ileocecal |
| sigmoid colon | sigmoid/o | sigmoidectomy |
| anus or rectum | proct/o | proctologist |
| rectum | rect/o | rectal |
| anus | an/o | anal |

###### Accessory Organs of Digestion

Proper digestion and absorption of nutrients is aided by the secretion of substances by the accessory organs of digestion. These organs include the liver, gallbladder, pancreas,and salivary glands*.* The following table lists the word parts related to the accessory organs of digestion.

|  |  |  |
| --- | --- | --- |
| **Word Part** | **Meaning** | **Word Association** |
| *cholecyst/o* | gallbladder | *Cholecystectomy* is the surgical removal of the gallbladder. |
| *choledocho/o* | common bile duct | The presence of gallstones in the common bile duct is referred to as *choledocholithiasis*. |
| *hepat/o* | liver | *Hepatitis* refers­to­the­inflammatory­conditionof the liver. |
| *pancreat/o* | pancreas | *Pancreatography* is the radiographic examination of the pancreas. |
| *sial/o* | salivary gland | *Sialorrhea* refers to excessive salivation. |

###### Diseases, Disorders, and Diagnostic Terms

Diseases and disorders of the digestive system are usually diagnosed through *radiology* or *endoscopy.*

*Radiologic* studies of the digestive system *(-graphy* = process of recording):

QQ *Esophagography: esophagi/o* + *graphy*

QQ *Sialography: sial/o* + *graphy*

*Endoscopic* examinations *(-scopy* = visual examination):

|  |  |
| --- | --- |
| QQ *Esophagoscopy:* | *esophag/o* + *scopy* |
| QQ *Gastroscopy:* | *gastr/o* + *scopy* |
| QQ *Colonoscopy:* | *colon/o* + *scopy* |
| QQ *Sigmoidoscopy:* | *sigmoid/o* + *scopy* |
| QQ *Proctoscopy:* | *proct/o* + *scopy* |

The presence of stones in the digestive organs is a common occurrence (*lith/o* = stone). The following are examples:

|  |  |
| --- | --- |
| QQ *Cholelithiasis:* | *chole* + *lith* + *iasis* |
| QQ *Choledocholithiasis:* | *choledocho* + *lith* + *iasis* |
| QQ *Pancreatolithiasis:* | *pancreato* + *lith* + *iasis* |

*Diabetes mellitus* is a group of diseases that pertain to the body’s utilization of glucose.

Lack of insulin or insulin resistance results in *hyper* + *glycemia* (*hyper* = increased, *glyc/o* = sugar, *emia* = blood). *Hyperglycemia* may lead to the following signs and symptoms (*poly* =excessive):

QQ *Poly* + *phagia* (eating)

QQ *Poly* + *uria* (urination)

QQ *Poly* + *dipsia* (thirst)

The­prefix­*hyper* is also used in the following disorders (*hyper* = excessive or increased):

QQ *Hyperlipidemia*: *hyper* + *lipid* + *emia*

QQ increased level of lipids in the blood, including cholesterol and triglycerides

QQ *Hyperemesis*:  *hyper* + *emesis*

QQ excessive vomiting

Other health concerns related to the digestive system include:

QQ Obesity

QQ Emaciation

QQ Anorexia nervosa

QQ Bulimia

QQ Malabsorption

QQ Malnutrition

QQ Dehydration

##### Surgical and Therapeutic Interventions

Some clients may need to be fed via an *enteral* (*enter/o* = intestine) feeding tube. The three most common types of feeding tubes are:

QQ *Nasogastric:* *naso* + *gastr/o* + *ic*

QQ *Nasoduodenal: naso* + *duoden/o* + *al*

QQ *Nasojejunal: naso* + *jejun/o* + *al* Selected surgical procedures include:

|  |  |  |
| --- | --- | --- |
| *esophagostomy* | esophag/o + stomy | *stomy* = formation of an opening |
| *gastrostomy* | gastr/o + stomy |
| *jejunostomy* | jejuno/o + stomy |
| *colostomy* | col/o + stomy |
| *ileostomy* | ile/o + stomy |
| *vagotomy* | vag/o + tomy | *tomy* =creation of incision |
| *gastroplasty* | gastr/o + plasty | *plasty* = repair |
| *lithotripsy* | lith/o + tripsy | *tripsy* = surgical crushing |
| *appendectomy* | append/o + ectomy | *ectomy* = excision |
| *cholecystectomy* | cholecyst/o + ectomy |
| *gastrectomy* | gastr/o + ectomy |
| *hemorrhoidectomy* | hemorrhoid/o + ectomy |
| *pancreatolithectomy* | pancreat/o + lith + ectomy |
| *laparoscopy* | lapar/o + scopy | *scopy* = visual examination |

Some gastrointestinal problems may be treated with medications. These medications include:

QQ *Antidiarrheal* (*anti* + *diarrheal*)

QQ relieves diarrhea

QQ *Antiemetic* (*anti* + *emetic*)

QQ relieves or prevents vomiting

QQ *Emetic*

QQ induces vomiting

QQ *Laxative*

QQ promotes bowel movement

QQ *Purgative/cathartic*

QQ promotes complete bowel emptying

Self-Check 4.1

**Complete Practice Exercises 1–11 and A–I found in Chapter 9 of your textbook, then answer questions 1–15.**

**Choose the correct answer.**

1. The term *ileostomy* means

1. creation of a surgical passage through the abdominal wall into the ileum.
2. endoscopic examination of the ileum.
3. herniation of the ileum.
4. prolapse of the ileum.

­ 2.­A­condition­that­results­when­output­of­body­fluid­exceeds­fluid­intake­is­termed

1. achlorhydria. c. enterostasis.
2. dehydration. d. peristalsis.
3. Which of the following is *not* part of the small intestine?
   1. Cecum c. Jejunum
   2. Duodenum d. Ileum
4. A disorder that’s characterized by episodes of binge eating and often terminates in self-induced vomiting is called

|  |  |
| --- | --- |
| a. anorexia nervosa. | c. emaciation. |
| b. bulimia. | d. flatulence. |

*(Continued)*

Self-Check 4.1

1. Which of the following is a branch of dentistry that specializes in tooth alignment and associated facial problems?

|  |  |
| --- | --- |
| a. Endodontics | c. Pedodontics |
| b. Orthodontics  6. Washing out of the stomach is called | d. Periodontics |
| a. gastralgia. | c. gastrodynia. |
| b. gastric lavage. | d. stomal irrigation. |

7. In which type of liver biopsy is liver tissue removed by puncturing the skin overlying the liver with a needle?

|  |  |  |
| --- | --- | --- |
|  | a. Open | c. Percutaneous |
|  | b. Resection  8. *Gastrocele* means herniation of the | d. Wedge |
|  | a. gallbladder. | c. liver. |
|  | b. large intestine.  9. *Eupepsia* means | d. stomach. |
| ­ | a.­deficient­appetite.­ | c. normal digestion. |
|  | b. excessive appetite. | d. sluggish intestinal action. |

1. A condition noted by yellowness of the skin, whites of the eyes, mucous membranes,­and­body­fluids­caused­by­deposition­of­bile­pigment­is­known­as
   1. cholelithiasis. c. diarrhea.
   2. dehydration. d. jaundice.
2. The branch of dentistry that specializes in the tissue that invests and supports the teeth is called

|  |  |
| --- | --- |
| a. orthodontics. | c. periodontics. |
| b. pedodontics. | d. periodontium. |

*(Continued)*

Self-Check 4.1

1. The branch of medicine that specializes in the stomach, intestines, and associated structures is called

|  |  |
| --- | --- |
| a. gastroenterology. | c. intestinology. |
| b. internal medicine. | d. proctology. |

1. Bile is produced by the liver and allows what to occur in the small intestine?
   1. Breakdown and absorption of fats
   2. Defecation of excess nutrients
   3. Emesis of excess calories
   4. Flatulence of excess gas
2. The American Cancer Society recommends which test at least once every 10 years beginning at age 50 for early detection of cancer in the intestines?
   1. Appendectomy
   2. Colonoscopy
   3. Cholangiography
   4. Gastroscopy

­15.­A­patient­visits­a­dentist’s­office­for­a­routine­examination.­She­is­told­she­hasinflammation­of­her­gums.­The­term­for­this­condition­is

* 1. cheilitis.
  2. gingivitis.
  3. glossitis.
  4. stomatitis.

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–15 with those at the end of this study guide.**

#### SECTION 4.2: URINARY SYSTEM

**Read the following section, then read Chapter 10 in your textbook.**

***Objective***

When you complete this section, you’ll be able to build, identify, and analyze medical terms pertaining to the urinary system.

The *urinary system*, otherwise known as the *renal system,* serves many purposes. One of these purposes is the elimination of waste products through *urin* + *ation.* Other functions include:

QQ Regulation­of­blood­pressure,­blood­volume,­and­blood­pH

QQ Production of red blood cells (*erythropoiesis =* erythro + poiesis)

QQ Synthesis of vitamin D

*Urea:* end product of waste excretion by the kidneys

*Urology:* branch of medicine that deals with the diagnosis and treatment of diseases of the urinary tract and the urogenital system

*Urologist:* a physician who specializes in diseases of the urinary tract and the male reproductive system

Study the following word parts pertaining to the urinary system.

|  |  |  |
| --- | --- | --- |
| **Word Part** | **Meaning** | **Word Association** |
| *albumin/o* | albumin | *Albuminuria* is a pathologic condition wherein an abnormal amount of albumin is present in the urine. |
| *-ation* | process | *Urination* is the act of voiding. |
| *-esis* | action, process, or result of | Increased excretion of urine is known as *diuresis*. |
| *glycos/o* | sugar | The presence of glucose in the urine is *glycosuria*. |
| *olig/o* | few, scanty | *Oliguria* is the reduction of urine volume. |
| *ur/o* | urine or urinary tract | The formation of urinary stones is known as *urolithiasis*. |
| *urin/o* | urine | *Urinal* is­a­fixture­used­for­urination,­especially by males. |
| *-uria* | urine or urination | The presence of blood in the urine is referred to as *hematuria*. |

#### STRUCTURES OF THE URINARY TRACT

The major structures of the urinary system include:

QQ *Right and left kidneys:* produce­hormones,­absorb­minerals,­filter­blood,­and­produce urine

QQ *Right and left ureters:* passageways of urine

QQ *Bladder:* urine storage

QQ *Urethra:* the tubular passage through which urine is expelled from the body

The *nephron* is the functional unit of the kidney. It has three functions, namely:

­ 1.­ Glomerular­filtration

1. Tubular reabsorption
2. Tubular secretion

The following table lists the word parts associated with the urinary system.

|  |  |  |
| --- | --- | --- |
| **Combining Form** | **Name of Structure** | **Word Association** |
| *cyst/o* | bladder | *Cystogram* is an x-ray examination of the urinary bladder. |
| *glomerul/o* | glomerulus | Inflammation­of­the­glomeruli­is­known­as*glomerulonephritis*. |
| *nephr/o, ren/o* | kidney | A *nephrologist* is a physician who specializes in treating diseases of the kidneys.  Kidney failure is otherwise known as *renal* failure. |
| *pyel/o* | renal pelvis | *Pyelitis* is­the­inflammation­of­the­renalpelvis. |
| *ureter/o* | ureter | *Ureterectomy* is the excision of the ureter. |
| *urethr/o* | urethra | Irritation­and­inflammation­of­the­urethra­isknown as *urethritis*. |

#### DISEASES, DISORDERS, AND DIAGNOSTIC TERMS

There are several tests used to diagnose diseases of the urinary system. One of the most common tests is *urinalysis* (*urin/o* + *analysis*). This test needs a urine specimen, which can either be a *voided specimen* or *catheterized specimen.*

The­presence­of­abnormal­substances­in­the­urine­provides­significant­information­aboutthe client’s health status. Several examples are listed as follows:

|  |  |  |
| --- | --- | --- |
| *Glycosuria* | glyc/o + uria | sugar in the urine |
| *Proteinuria* | protein/o + uria | protein in the urine |
| *Hematuria* | hem/o + uria | blood in the urine |
| *Albuminuria* | albumin/o + uria | albumin in the urine |
| *Pyuria* | py/o + uria | pus in the urine |
| *Ketonuria* | keton/o + uria | ketones in the urine |

Radiography and ultrasonography are also used to aid in the diagnosis of disorders of the urinary system. Some of these tests include:

QQ Renal angiography

QQ Nephrotomography

QQ Intravenous urography

QQ Nephrosonography

Visualization procedures may also be used, namely:

QQ Cystoscopy

QQ Urethroscopy

Since­the­urinary­system­is­responsible­for­filtration­of­the­blood­and­excretion­of­wasteproducts, stone (*lith*) formation isn’t uncommon.

QQ *Urolithiasis:* presence of urinary stones

QQ *Cystolithiasis:* presence of stones in the urinary bladder

QQ *Nephrolithiasis:* presence of stones in the kidneys

Other pathological conditions related to the urinary system include the following:

|  |  |  |
| --- | --- | --- |
| *Nephromalacia* | nephro + malacia | softening of the kidneys |
| *Nephromegaly* | nephron + megaly | enlargement of the kidneys |
| *Nephritis* | nephron/o + itis | inflammation­of­the­kidney |
| *Dysuria* | dys + uria | painful urination |
| *Polyuria* | poly + uria | excessive urination |
| *Anuria* | an + uria | absence of urination |
| *Oliguria* | oligi + uria | diminished urine formation |
| *Uremia* | ur/o + emia | uric acid in the blood |

#### SURGICAL AND THERAPEUTIC INTERVENTIONS

Surgical procedures and medications have been used to treat disorders of the urinary system.

Insertion of tubes or urinary diversion is a common procedure. Some examples include:

QQ Urethral catheterization

QQ Ureteral catheterization

QQ Suprapubic catheterization

QQ Percutaneous nephrostomy

In extreme cases, when the kidneys are unable to excrete waste products from the blood, dialysis may be necessary. *dia* = through *lysis* = freeing or destroying

|  |  |  |
| --- | --- | --- |
| *Hemodialysis* | hemo + dia + lysis | the­use­of­a­machine­to­filter­blood |
| *Peritoneal dialysis* | periton/o + eal | the­use­of­the­peritoneum­as­a­filter |

A number of surgeries have been utilized to treat problems involving the urinary system. Some of these include:

|  |  |  |  |
| --- | --- | --- | --- |
| **Word Parts** |  | **Word Association** | |
| *cyst/o* = bladder *nephr/o* = renal pelvis *pyel/o* = renal pelvis *lith/o* = stone | *-stomy* new opening |  | *Cystostomy* is the surgical creation of an opening into the bladder. |
| The creation of a new opening into the renal pelvis of the kidney is referred to as *nephrostomy or pyelostomy*. |
| *-tripsy* surgical crushing |  | *Lithotripsy* is the surgical crushing of a stone. |
| *-tomy* incision |  | *Nephrotomy* is an incision of the kidney. |
| *-pexy* surgical­fixation |  | *Nephropexy* is the term used to describe surgical attachment of a prolapsed kidney. |
| *-plasty* surgical repair |  | Surgical reconstruction of the ureters is known as *ureteroplasty*. |

Some substances affect the formation and excretion of urine. *Diuretics* promote urination, while *antidiuretics* inhibit urination. Examples of diuretics include coffee, tea, alcohol, and water.

**Complete Practice Exercises 1–10 and A–H found in Chapter 10 of your textbook, then answer questions 1–15 below.**

**Choose the correct answer.**

1. The term for painful, burning urination is

* 1. diuresis. c. nephrolithiasis.
  2. dysuria. d. voiding.

­ 2.­A­condition­in­which­there­are­degenerative­but­not­inflammatory­changes­in­thekidneys is called

* 1. catheterization.
  2. nephritis.
  3. nephrosis.
  4. percutaneous nephrostomy.

3. An increased concentration of a particular type of protein in the urine is

|  |  |
| --- | --- |
| a. albuminuria. | c. hematuria. |
| b. glycosuria.   1. Urinary retention is    1. complete failure of the kidney.    2. inability to empty the bladder.    3. inability to hold urine in the bladder.    4. partial functioning of the kidney. 2. Pus in the urine is called | d. pyuria. |
| a. albuminuria. | c. pyuria. |
| b. hematuria. | d. uremia. |

*(Continued)*

­ 6.­A­type­of­nephritis­in­which­the­glomeruli­of­the­kidney­are­inflamed­is­called

|  |  |
| --- | --- |
| a. glomerulonephritis. | c. nephrosis. |
| b. nephrolithiasis.  ­ 7.­The­part­of­the­nephron­that­filters­the­blood­is­the | d. polycystic kidney disease. |
| a. collecting duct. | c. loop­of­Henle. |
| b. glomerulus.  8. The instrument used in cystoscopy is a | d. tubule. |
| a. cystogram. | c. cystoscope. |
| b. cystography. | d. cystotome. |

9. Incision of the kidney to remove a calculus is called a

* 1. nephrectomy. c. nephrotomy.
  2. nephrolithotomy. d. nephrotripsy.

­10.­An­x-ray­film­of­the­kidneys­and­ureters­produced­after­injection­of­radiopaquematerial into a vein is called an intravenous

|  |  |
| --- | --- |
| a. urogram. | c. urethrogram. |
| b. venogram. | d. urethrograph. |

1. A 24-year-old man has urinary stones in the renal pelvis. The term that refers to these stones is

|  |  |
| --- | --- |
| a. cholelithiasis. | c. ureterolithiasis. |
| b. cystolithiasis. | d. urolithiasis. |

1. A patient who is undergoing renal lithotripsy using shock waves may be undergoing which procedure?
   1. Extracorporeal shock wave lithotripsy (ESWL)
   2. Glomerulonephral shock wave lithotripsy (GSWL)
   3. Nephral shock wave lithotripsy (NSWL)
   4. Transurethral shock wave lithotripsy (TSWL)

*(Continued)*

1. An x-ray series using contrast medium injected into a vein provides information about the structure and function of the kidney, ureters, and bladder. This test is referred to as
   1. intravenous urography.
   2. nephrotomography.
   3. retrograde urography.
   4. voiding cystourethrography.
2. A surgical incision of the kidney is called

|  |  |
| --- | --- |
| a. cystotomy. | c. pyelotomy. |
| b. nephrotomy. | d. renotomy. |

1. Removal of impurities from the blood is referred to as
   1. diuresis.
   2. hemodialysis.
   3. peritoneal dialysis.
   4. renal­insufficiency.

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–15 with those at the end of this study guide.**

#### SECTION 4.3: REPRODUCTIVE SYSTEM

**Read the following section, then read Chapter 11 in your textbook.**

***Objectives***

When you complete this section, you’ll be able to build, recognize, and analyze medical terminologies involving the male and female reproductive system.

The­reproductive­system’s­main­function­is­production­of­offspring.­Specific­organs,known as *gonads* and *genitalia*,­serve­to­fulfill­this­function.

QQ *Gonads*: internal reproductive organs

QQ *testes* produce *spermatozoa* (sperm cells)

QQ *ovaries* produce *ova* (egg cells)

QQ *Genitalia*: external reproductive organs

#### FEMALE REPRODUCTIVE SYSTEM

The female reproductive system functions to enable procreation and to support the development and nourishment of the fetus during pregnancy and following childbirth.

#### STRUCTURES

*Gynecology* (*gynec/o* = female; *-logy* = study of)is the branch of medicine that deals with the diseases and routine physical care of women’s reproductive systems, and the specialist responsible is referred to as a *gynecologist.*

Study the following word parts pertaining to the structures of the female reproductive system.

|  |  |  |
| --- | --- | --- |
| **WORD PARTS SPECIFIC TO THE FEMALE GENITALIA** | | |
| **Female Genitalia** | **Meaning** | **Word Association** |
| *cervic/o* | cervix | *Cervicitis* is­the­inflammation­and­irritationof the cervix. |
| *colp/o vagin/o* | vagina | Repair of the vaginal wall is *colporrhaphy.*  *Vaginitis* is­the­inflammation­of­the­vagina. |
| *gynec/o* | female | The medical practice concerned with the female reproductive system is *gynecology*. |
| *hyster/o, uter/o* | uterus | *Hysterectomy* is the removal of the uterus. |
| *metro/o* | uterine tissue | Irregular uterine bleeding in between regular menstrual periods is known as *metrorhaggia*. |
| *oophor/o, ovar/o* | ovary | *Oophoritis* or *ovaritis*­is­the­inflammationof the ovaries. |
| *salping/o* | uterine/fallopian tube | *Salpingectomy* is the surgical removal of the Fallopian tubes. |
| *vulv/o* | vulva/external genitalia | Removal of the female external genitalia is known as *vulvectomy*. |

**(***Continued***)**

|  |  |  |
| --- | --- | --- |
| **WORD PARTS SPECIFIC TO THE FEMALE GENITALIA (continued)** | | |
| **Female Genitalia** | **Meaning** | **Word Association** |
| **Other Word Parts** | | |
| *-cidal* | killing | *Bactericidal* agents kill bacteria. |
| *cyst/o, vesic/o* | bladder, cyst, or sac | A *vesicovaginal* fistula­is­an­abnormalopening between the vagina and the bladder. |
| *genit/o* | genitals | The term *genitourinary* refers to the genital and urinary organs. |
| *gonad/o* | genitals or reproduction | *Gonadotropins* are hormones that stimulate the gonads to perform their reproductive and endocrine functions. |
| *men/o* | month | *Menstruation* refers to the monthly shedding of the uterine lining. |
| *-plasia* | development or formation | *Endometrial hyperplasia* is the thickening of the inner lining of the uterus. |
| *rect/o* | rectum | *Rectovaginal* fistulas­are­abnormal­tractsthat connect the lower gastrointestinal tract with the vagina. |
| *urethr/o* | urethra | *Urethrocele* refers to the prolapse of the female urethra into the vagina. |
| *urin/o* | urine | The *urogenital* system refers to the organ system consisting of the reproductive and the urinary organs. |

The female reproductive system consists of external and internal structures. The *external genitalia*,otherwise known as the *vulva,* structures include:

QQ Mons pubis

QQ Labia (*labium* = lip) QQ majora

QQ minora

QQ Clitoris

QQ Gland openings (Bartholin’s, Skene’s gland)

*Internal structures* include:

QQ Right and left ovaries

QQ Functions

Q ovulation

Q production of hormones Q Q Q estrogen Q Q Q progesterone

QQ Right and left fallopian tubes

QQ Uterus

QQ Three layers

|  |  |  |  |
| --- | --- | --- | --- |
| Q Q | endometrium | *endo* + *metr* + *ium* | (*endo* = inside) |
| Q Q | myometrium | myo + metr + ium | (my/o = muscle) |
| Q Q | perimetrium | *peri* + *metr* + *ium* | (*per* = around) |

QQ Vagina

QQ Special glands

The capability to reproduce begins at *puberty*. For females, this stage is characterized by the start of *menstruation* or *menses* (*men/o* = month). The term *menopause,* on the other hand, is the time that marks the end of the menstrual cycle.

##### Diseases, Disorders, and Diagnostic Terms

Examination of the female reproductive system may include physical assessment and pelvic examination that can be done unaided or with the use of instruments.

Examination of the cervix and the walls of the vagina may be done with a *vaginal speculum.* Collection of uterine and/or vaginal wall tissue for *cytologic* examination is known as a *Papanicolaou smear/test* (abbreviated form = Pap smear).

Visual (*-scopy*) and *radiologic* examinations of the structures of the female reproductive tract include:

|  |  |  |
| --- | --- | --- |
| **Procedure** | **Meaning** | **Instrument Used** |
| *colposcopy* | Examination of the cervix using a special magnifying device (microscope) | colposcope |
| *laparoscopy* | Surgical diagnostic procedure used to examine the abdominal structures | laparoscope |
| *hysteroscopy* | Direct visualization of the cervical canal and the uterine cavity | hysteroscope |
| *hysterosalpingography* | X-ray examination of the uterus and  fallopian tubes with the use of a radiopaque dye |  |

Pain, bleeding, and abnormal vaginal discharge are usual gynecologic concerns that warrant a visit to a *gynecologist.* Aside from the *gynecologic* problems previously mentioned, *menstrual* irregularities are also common. Examples of these irregularities include:

|  |  |  |
| --- | --- | --- |
| *men/o* = month | amenorrhea | Absence of menstruation |
| *-rrhea* = discharge | dysmenorrhea | Difficult­or­painful­menstruation |
| -*rrhagia* = hemorrhage | menorrhagia | Abnormally heavy menstruation |
| *metr/o* = uterine tissue | metrorrhagia | Abnormal uterine bleeding |

Study the following list of diseases and disorders affecting the female reproductive system.

QQ Cervical polyp

QQ Cervicocolpitis

QQ Colpitis

QQ Cystocele

QQ Endometriosis

QQ Endometritis

QQ Fistula

QQ vesicovaginal

QQ rectovaginal

QQ urethrovaginal

QQ Hysteroptosis

QQ Myoma

QQ Oophoritis

QQ Oophorosalpingitis

QQ Ovarian carcinoma

QQ Ovarian cyst

QQ Pelvic­inflammatory­disease

QQ Premenstrual syndrome

QQ Salpingitis

QQ Salpingocele

QQ Uterine cancer

QQ Uterine­fibroid

QQ Vulva

##### Surgical and Therapeutic Interventions

Gynecological concerns may be treated using several methods.

|  |  |
| --- | --- |
| **Common Gynecological Concerns** | **Interventions** |
| *infertility* | in vitro fertilization |
| *amenorrhea and menopause* | hormone replacement therapy |
| *prevention of pregnancy and sexually transmitted illness* | Contraception  Q QQ natural  Q QQ artificial |

Some gynecological problems may need to be treated with surgery. The following list outlines several surgeries related to the female reproductive system.

|  |  |  |
| --- | --- | --- |
| **Word Part** | **Surgical Procedure** | **Meaning** |
| *-plasty* = surgical repair | colpoplasty | surgical repair of the vagina |
| *-rrhaphy* = suture | colporrhaphy | suture of the vagina |
| salpingorrhaphy | suture of the uterine tube |
| *-ectomy* = excision | hysterectomy | excision of the uterus |
| oophorectomy | excision of one or both ovaries |
| salpingectomy | excision of the fallopian tube |
| salpingo-oophorectomy | excision of the ovary and its fallopian tube |
| vulvectomy | excision of the vulva |

##### Pregnancy and Childbirth

The branch of medicine that deals with the care of women during pregnancy and childbirth is *obstetrics*,and the specialist is an *obstetrician.*

*Pregnancy,* otherwise referred to as *gestation,* begins at conception and ends at childbirth. Prior to conception, *fertilization* occurs in the fallopian tube and is followed by *implantation* of the *zygote* in the endometrium. The implanted embryo is called a *fetus* after eight weeks. The presence of *human chorionic gonadotropin* (HCG)in the urine or blood may be a presumptive sign of pregnancy. The average duration of gestation from the fertilization date is 266 days, or about *three trimesters*. *Ultrasonography* is a useful diagnostic tool in monitoring the fetus’ development throughout the pregnancy.

The­suffix­*-natal* refers to birth. Examples of relevant terms include:

|  |  |  |
| --- | --- | --- |
| *Prenatal* | (pre + natal) | period occurring before birth |
| Postnatal | (post + natal) | period occurring after birth |
| Perinatal | (peri + natal) | period occurring immediately before and after birth |
| Neonatal | (neo + natal) | period occurring from the birth of the child to one month |

*Parturition* pertains to childbirth:

|  |  |  |
| --- | --- | --- |
| Antepartum | (ante + partum) | before childbirth |
| Postpartum | (post + partum) | after childbirth |

*Gravidity* pertains to the number of times a woman has been pregnant. *Gravida* may be used to refer to a pregnant woman.

|  |  |  |
| --- | --- | --- |
| *Primigravida* | (primi + gravida) | a­woman­who­is­pregnant­for­the­first­time |
| *Multigravida* | (multi + gravida) | a woman who has been pregnant more than once |

*Parity* denotes the number of births a woman has had after 20 weeks of gestation. The combining form *-para* is used to describe a woman who has given birth:

|  |  |  |
| --- | --- | --- |
| Unipara | (uni + para) | a woman who has given birth to one child |
| Multipara | (multi + para) | a woman who has had multiple births |
| Nullipara | (null/o + para) | a woman who has never given birth |

Prior to giving birth, the pregnant woman goes through the labor process. The stages of labor include:

1. Cervical dilation
2. Expulsion of the fetus
3. Expulsion of the placenta

*Fetal presentation* refers to the part of the fetus’ body that’s closest to the birth canal:

QQ Cephalic presentation

QQ Breech presentation

QQ Shoulder presentation

The two types of delivery are:

QQ Vaginal

QQ Cesarean section (C-section)

The list below presents the most common obstetric terms:

QQ Abruptio placentae

QQ Amnion

QQ Amniocentesis

QQ Amniotomy

QQ Cesarean section

QQ Chorionic villus sampling

QQ Down syndrome

QQ Episiotomy

QQ Erythroblastosis fetalis

QQ Fetal monitoring

QQ Placenta previa

##### Female Breasts

The female breasts are paired *mammary* (*mamm/o* =breast) *glands* that are essential in *lactation* (*lact/o* =milk+ *ation*).

Common medical terminologies pertaining to the breasts are as follows:

|  |  |  |
| --- | --- | --- |
| **Medical Term** | **Word Parts** | **Meaning** |
| mammography | mamm/o + graphy | radiographic examination of the breast |
| lumpectomy | lump + ectomy | removal of a breast lump or tumor |
| mastectomy | mast/o + ectomy | removal of the breast |
| mastalgia mastodynia mammalgia | mast/o + algia mast/o + dynia mamm/o + algia | pain in the breast  painful breast |
| mastitis | mast/o + itis | inflammation­of­the­breast |
| mastoptosis | mast/o + ptosis | sagging breasts |
| mastopexy | mast/o + pexy | surgical procedure to lift the breasts |
| mammoplasty | mamm/o + plasty | surgical repair of the breasts |

#### MALE REPRODUCTIVE SYSTEM

The male reproductive system is essential in the production of male sex hormones and the production, sustenance, and delivery of sperm for reproduction.

##### Structures

The male reproductive system also consists of internal and external organs.

*External organs* include:

QQ Penis

QQ Scrotum

*Internal organs* include:

QQ Testis

QQ Epididymis

QQ Vas deferens or ductus deferens

QQ Accessory glands

QQ seminal vesicles

QQ prostate gland

QQ bulbourethral glands

The following table pertains to the word parts and word associations related to the male reproductive organs.

|  |  |  |
| --- | --- | --- |
| **Word Part** | **Meaning** | **Word Association** |
| *gon/o* | genitals or reproduction | *Gonads* refer to the reproductive organs, namely the testes or ovaries. |
| *orchi/o, orchid/o, test/o, testicu/o* | testes | *Orchitis* is­the­inflammation­of­thetestes.  *Orchidopexy* is­the­surgical­fixationof an undescended testis.  *Testosterone* is the primary male hormone.  *Testicular* pertains to the testicles. |
| *pen/o* | penis | *Penile* pertains to the penis. |
| *prostat/o* | prostate | *Prostatectomy* is the surgical removal of the prostate gland. |
| *scrot/o* | scrotum, bag | *Scrotal* pertains to the scrotum. |
| *semin/o* | semen | The semen is otherwise referred to as *seminal fluid*. |
| *ser/o* | serum | *Serology* pertains­to­the­scientificstudy or diagnostic examination of blood serum. |
| *spermat/o* | spermatozoa (sperm) | *Spermatogenesis* is­defined­asthe formation of mature functional sperm. |
| *urethr/o* | urethra | *Urethral* pertains to the urethra. |
| *vas/o* | vessel or duct | The *vas deferens* carries sperm from the testicle to the urethra. |

##### Diseases, Disorders, and Diagnostic Terms

The following list enumerates the most common disorders of the male reproductive system.­Refer­to­Chapter­11­of­your­textbook­for­the­definition.­

|  |  |
| --- | --- |
| QQ Anorchidism | QQ an + orchid/o + ism |
| QQ Aspermia | QQ a + sperm + ia |
| QQ Benign prostatic hyperplasia | QQ prostat/o + ic hyper + plasia |
| QQ Cryptorchidism | QQ crypt/o + orchid/o + ism |

(*Continued*)

|  |  |
| --- | --- |
| QQ Hydrocele | QQ hydr/o + cele |
| QQ Intersexuality | QQ inter + sex/o + al + ity |
| QQ Orchitis | QQ orchi/o + itis |
| QQ Prostatic carcinoma | QQ prostat/o + ic carcin/o + oma |
| QQ Prostatitis | QQ prostat/o + itis |
| QQ Testicular cancer | QQ testicul/o |
| QQ Testicular torsion | QQ testicul/o |

##### Surgical and Therapeutic Interventions

Disorders of the male reproductive system may be treated with surgery. Several surgical interventions are as follows:

|  |  |  |
| --- | --- | --- |
| **Word Part** | **Surgical Procedure** | **Meaning** |
| *-ectomy* = excision | orchidectomy/ orchiectomy | surgical removal of the testicle |
| prostatectomy | removal of all or part of the prostate |
| vasectomy | removal of all or part of the vas deferens |
| *-plasty* =surgical repair | orchidoplasty | plastic surgery of the testis |
| *-pexy* =surgical­fixation | orchiopexy | surgical­fixation­of­an­undescended testis |
| *-ostomy* = new opening | vasovasostomy | surgical means of reconnecting the ends of severed ductus deferens |
| *circum* = around | circumcision | removal of the foreskin that covers the head of the penis |

#### SEXUALLY TRANSMITTED DISEASES OR INFECTIONS

*Sexually transmitted diseases* (STDs) or *infections* (STIs)are named as such because these are disorders acquired through sexual contact. These disorders directly affect the *genitourinary* system. Common symptoms of STDs or STIs include *urethr* + *itis* in males and *vagin* + *itis* in females. Causative microorganisms include bacteria, viruses, protozoa, fungi, or parasites.

Common STIs and their causative agents:

QQ *Bacteria*

QQ Gonorrhea

QQ Syphilis

**Lesson 1**

QQ Chlamydial infection

QQ Chancroid

QQ *Virus*

QQ Acquired­Immunodeficiency­Syndrome

QQ Genital herpes

QQ Genital warts

QQ Hepatitis­B,­C,­D

QQ *Protozoa*

QQ Trichomoniasis (*trich/o =* hair)

QQ *Fungi*

QQ Candidiasis

QQ *Parasites*

QQ Pubic lice

Self-Check 4.3

**Complete Practice Exercises 1–22 and A–H found in Chapter 11 of your textbook, then answer questions 1–14.**

**Choose the correct answer.**

1. A congenital condition of the newborn marked by mental retardation is called
   1. Down syndrome. c. ectopic pregnancy.
   2. cesarean section. d. jaundice.
2. Surgical suture of the ductus deferens is called
   1. ductoplasty. c. vasectomy.
   2. ductus venosus. d. vasorrhaphy.

*(Continued)*

**Lesson 1**

Self-Check 4.3

1. Surgical removal of the end of the foreskin of the penis is called

|  |  |
| --- | --- |
| a. castration. | c. episiotomy. |
| b. circumcision.  4. Menopause is also called | d. orchiectomy. |
| a. amenorrhea. | c. dysmenorrheal. |
| b. climacteric.   1. The term *vaginal* is a/an    1. noun that means the birth canal.    2. adjective that refers to the birth canal.    3. noun that means the womb.    4. adjective that refers to the womb. 2. *Gestation* means | d. fistula. |
| a. after birth. | c. childbirth. |
| b. before birth. | d. pregnancy. |

1. Bleeding from the uterus at any time other than during the menstrual period is called
   1. amenorrhea. c. menorrhagia.
   2. dysmenorrheal. d. metrorrhagia.
2. A hormone that’s necessary for the development and maintenance of female sexual characteristics is

|  |  |
| --- | --- |
| a. amnion. | c. testosterone. |
| b. estrogen. | d. uterine. |

1. Abnormal implantation of a fertilized ovum outside the uterus is called

­ a.­a­pelvic­inflammatory­disorder. b. an ectopic pregnancy.

* 1. colpocervicitis.
  2. cryptorchidism.

*(Continued)*

**Lesson 4**

Self-Check 4.3

1. A woman who is pregnant may consider taking which types of vitamins?
   1. Antenatal c. Postnatal
   2. Perinatal d. Prenatal
2. A woman who has had two live births is referred to as
   1. nullipara. c. tripara.
   2. secundipara. d. unipara.
3. A three-day-old boy is noted to have undescended testicles upon physical examination. This is referred to as

|  |  |
| --- | --- |
| a. cryptorchidism. | c. orchiopexy. |
| b. orchidopexy. | d. seminal vesicles. |

1. A healthcare professional specializes in breastfeeding. Which term refers to the secretion of milk or breastfeeding?

|  |  |
| --- | --- |
| a. Lactation | c. Menses |
| b. Mammary | d. Perimetrium |

1. Women with gonorrhea are often asymptomatic. The causative agent for this disease is
   1. Chlamydia trachomatis.
   2. Haemophilus­ducreyi.
   3. Neisseria gonorrhoeae (gonococcus).
   4. Treponema pallidum.

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–14 with those at the end of this study guide.**

**Lesson 4**

# *LESSON 5: INTEGUMENTARY, NERVOUS, AND ENDOCRINE SYSTEM TERMS*

#### INTRODUCTION

The preceding chapters have acquainted you with medical terms pertaining to the digestive, urinary, and reproductive systems. This section will help you recognize medical terminologies related to the integument, brain, spinal cord, special senses, and the glands. Comprehensive discussion on these structures is presented in Chapters 12–15 of your textbook.

#### SECTION 5.1: THE INTEGUMENTARY SYSTEM

**Read the following section, then read Chapter 12 in your textbook.**

***Objective***

When you complete this section, you’ll be able to identify and be familiar with medical terminologies pertaining to the integumentary system.

The skin, otherwise referred to as the *integument,* is the biggest organ of the body. The other structures included under this system include the appendages of the skin, hair, nails, and the sweat and sebaceous glands.

The skin has several functions including the following, which are presented as a mnemonic:

QQ **D** vitamin synthesis

QQ **E**limination of wastes

QQ **R**egulation of body temperature

QQ **M**akes information readily available

QQ **A**cts as a barrier

#### STRUCTURES OF THE INTEGUMENTARY SYSTEM

The skin has two layers:

QQ Epidermis *epi* + *dermis* (*epi* = above, *derma* = skin)

QQ thin, outer layer of the skin

QQ primarily consists of *keratin,* a *sclero* + *protein*

QQ composed­of­five­layers­(from­the­deepest­to­the­most­superficial)

QQ stratum basale

|  |  |
| --- | --- |
| QQ stratum spinosum | Q *stratum* =layer |
| QQ stratum granulosum | Q *strata* = plural form |

QQ stratum lucidum

QQ stratum corneum

QQ Dermis

QQ thick layer under the epidermis

QQ consists of connective tissue containing lymphatics, nerves, blood vessels, hair follicles, sebaceous and sweat glands

QQ Beneath the dermis is the *subcutaneous adipose* tissue.

*sub* (below) + *cutane* (skin) + *ous* + (pertaining to)

Q *adip/o* (fat)

QQ *stratum*= layer QQ *strata*= plural form

The accessory skin structures are:

QQ *Hair:*­filament­made­up­of­protein­that­grows­from­follicles­in­the­skin

QQ *Nail:*­a­keratinized­structure­found­at­the­end­of­toes­and­fingers­

QQ *Sebaceous glands:* glands that produce oil or waxy substance, called sebum

QQ *Sweat glands/sudoriferous glands:* essential in temperature regulation and waste elimination through perspiration

QQ *eccrine glands:* open directly to the skin

QQ *apocrine* *glands:* open into the hair follicles

The following table lists the word parts and word associations pertaining to the structures of the integumentary system.

|  |  |  |
| --- | --- | --- |
| **Combining Forms/**  **Suffixes** | **Meaning** | **Word Association** |
| *adip/o, lip/o* | fat | *Adipocytes* are fat cells. |
| *axill/o* | axilla (armpit) | *Axillary* pertains to the armpit or axilla. |
| *cutane/o, derm/a, derm/o, dermat/o* | skin | *Cutaneous* horns are hard conical projections from the skin.  *Dermatitis* is a group of diseases that results­in­skin­inflammation.  *Dermatology* is the branch of medicine that deals with the skin, nails, hair, and their diseases. |
| *erythemat/o* | erythema or redness | Systemic *lupus* *erythematosus* or lupus is­a­chronic­inflammatory­disease­thatattacks the immune system. |
| *follicul/o* | follicle | Inflammation­of­the­follicles­is­known­as*folliculitis*. |
| *ichthy/o* | fish | *Ichthyosis* is a group of skin disorders typified­by­having­dry,­scaly,­or­thickenedskin. |
| *kerat/o* | tissue containing keratin | Seborrheic *keratosis* is a common noncancerous skin growth in older adults. |
| *onych/o, ungu/o* | nail | *Onychia* is­the­inflammation­of­the­nailfolds.  *Unguis incarnates* refers to an ingrown fingernail­or­toenail. |
| *pil/o, trich/o* | hair | The *pilomotor* muscles are responsible for the erection of skin hair.  *Trichology* is the science that deals with the structure, function, and diseases of the skin. |
| *seb/o* | sebum | *Seborrheic* dermatitis is a skin condition that frequently causes scaly patches and red skin, commonly in the scalp. |
| *sept/o* | infection/septum | *Septicemic* or hemorrhagic rash refers to a cluster of tiny blood spots similar to pinpricks in the skin caused by infection in the blood. |
| *xer/o* | dry | Simple dry skin is known as *xeroderma*. |
| *-derm* | skin or germ layer | Embryonic germ layers:  QQ *endoderm:* innermost layer  QQ *mesoderm:* middle layer  QQ *ectoderm:* outermost layer |
| *-static* | keeping stationary | *Fungistatic* medications, commonly prescribed in fungal skin infections, are antifungal drugs that stop the growth of fungus. |

#### DISEASES, DISORDERS, AND DIAGNOSTIC TERMS

The skin, being the body’s physiological defense against the external environment, can be exposed to numerous factors that can lead to disorders and diseases.

##### Skin Lesions

Visible abnormalities of the skin are collectively known as *skin lesions*.Lesions can be primaryor secondary.

QQ *Primary lesions* are initial reactions to a problem that changes one of the components of the skin.

Examples:

QQ *Macule:*­flat,­circumscribed,­and­discolored­area­of­the­skin­that­is­less­than1 cm in diameter

QQ *Papule:* elevated, circumscribed, and discolored area of the skin with no visible­fluid

QQ *Plaque:* elevated and circumscribed patches greater than 1 cm in diameter

QQ *Wheal:* irregularly shaped and elevated lesions commonly seen in allergic reactions

QQ *Bulla:*­a­fluid-filled,­elevated­skin­lesion­greater­than­1­cm­in­diameter

QQ *Vesicle:*­a­fluid-filled,­elevated­skin­lesion­less­than­1­cm­in­diameter

QQ *Pustule:*­vesicles­that­are­filled­with­pus­or­cloudy­fluid

QQ *Secondary lesions*­result­from­modification­of­the­primary­lesion­caused­by­traumaor other external factors.

Q Examples:

QQ *Atrophy:* thinning of the epidermis

QQ *Ulcer:* skin erosions that are irregularly shaped and may extend up to the bones, as in the case of *pressure ulcers*

QQ *Fissures:* splits in the skin

QQ *Scales:* dry fragments of epidermis that have been sloughed off

##### Injuries to the Skin

Since the skin is exposed to several external factors, skin injuries such as wounds and burns are common.A *wound* is a break in the integrity of the skin. There are several types of wound, as indicated by the following terms:

QQ *Laceration:* tearing of body tissue

QQ *Incision:* a surgical cut or clean-cut wound

QQ *Puncture:* a small hole caused by a small object

QQ *Abrasion:* shallow wounds or scrapes that tear or rub off the epidermis

QQ *Contusion:* rupture or damage to the blood vessels caused by trauma, but the skin remains intact; otherwise known as a bruise

QQ *Burns:* tissue injuries caused by extreme exposure to heat, chemicals, radiation, electricity, and sunlight.

QQ Types of burns include:

QQ *Superficial partial- thickness* (*1st degree*):­confined­to­the­dermis­only

QQ *Deep partial-thickness* (2nd degree): involves the dermis

QQ *Full-thickness* (3rd degree): involves the epidermis, dermis, and at times, the subcutaneous tissue

QQ *Deep full-thickness* (*4th degree*): both the epidermis and dermis have been sloughed off and the damage extends to the muscles and bones

The extent of burns may be estimated using the Rule of Nines*.* See Figure 12-11 in your textbook.

*Note:* The *Rule of Nines* is used to estimate the total body surface area affected by a burn­in­an­adult­whose­height­and­weight­are­proportional.­Modifications­are­needed­inestimating the extent of burn injuries in children and infants.

##### Skin Disorders

The­following­are­typical­skin­disorders.­Review­the­definitions­in­Chapter­12­of­yourtextbook.

QQ Abscess

QQ Albinism

QQ Cellulitis

QQ Contact dermatitis

QQ Cyanosis

QQ Dermatitis

QQ Discus lupus erythematosus

QQ Frostbite

QQ Furuncle

QQ Hypopigmentation

QQ Ichthyosis

QQ Lipoma

QQ Lyme disease

QQ Malignant melanoma

QQ Mycodermatitis

QQ Necrosis

QQ Pediculosis

QQ Petechiae

QQ Psoriasis

##### Disorders of the Accessory Skin Structures

Additional disorders of the integumentary system, particularly the accessory structures, are discussed in Chapter 12 of your textbook. Study the following disorders.

QQ Acne vulgaris

QQ Folliculitis

QQ Hidradenitis

QQ Onychomycosis

QQ Onychopathy

QQ Seborrhea

QQ Seborrheic dermatitis

QQ Trichosis

#### SURGICAL AND THERAPEUTIC INTERVENTIONS

There are numerous types of interventions used to treat skin disorders and diseases. Several forms of surgeries may be employed to treat these problems, including:

QQ Suturing

QQ joining the lips or edges of a wound by stitching

QQ Stapling

QQ using surgical staples to close the edges of an open wound

QQ Liposuction (*lipo* + *suction*)

QQ otherwise known as *suction-assisted lipectomy*

QQ surgical removal of adipose tissue

QQ Biopsy

QQ removal of a small amount of tissue for examination

QQ Cryosurgery (*cry/o* + *surgery)*

QQ otherwise referred to as *cryotherapy*

QQ using extreme cold to destroy abnormal or deceased tissue

QQ Curettage

QQ surgical cleaning or scraping with the use of a curette

QQ Debridement

QQ removal of unhealthy tissue from a wound to enhance healing

QQ Dermabrasion

QQ a procedure used to resurface the skin with the use of a rotating device

QQ Electrosurgery (*electr/o* + *surgery*)

QQ refers to several modalities that use electricity to cause destruction of tissue

Aside from surgery, skin disorders may also be managed with medications. These medications may be given using different routes, which may include:

QQ *Oral:* medications administered via the mouth

QQ *Topical:* drugs administered directly on the skin

QQ *Transdermal:* medications that are administered on the intact skin to be absorbed and delivered via the circulatory system

The­most­common­classifications­of­medications­or­drugs­administered­are:

QQ *Antimicrobials:* prevent infection

QQ *Bacteriostatic:* drugs that inhibit the growth of bacteria

QQ *Bactericidal:* drugs that kill bacteria

QQ *Antiperspirants*: substance s that counteract perspiration

Additional treatment options may include:

QQ *Collagen injections:* used to smooth out wrinkles

QQ *Electrolysis* (electr/o + lysis)

Q means of destroying hair follicles through electric current

**Complete Practice Exercises 1–10 and A–I found in Chapter 12 of your textbook, then answer questions 1–15.**

**Choose the correct answer.**

1. Deep, irregular erosions are called

|  |  |  |
| --- | --- | --- |
| ­ | a.­fissures.­ | c. scales. |
|  | b. pustules. | d. ulcers. |

1. Damage to the skin, tissues, and blood vessels as a result of prolonged exposure to cold is

|  |  |
| --- | --- |
| a. cryogenesis. | c. sclerosis. |
| b. frostbite. | d. urticarial. |

1. What’s the term for a sharply elevated, irregularly shaped, progressively enlarging scar caused by excessive collagen during tissue repair?
   1. Keloid c. Pediculosis
   2. Nevus d. Verruca
2. The subcutaneous adipose tissue is located just under the \_\_\_\_\_\_\_\_.

|  |  |
| --- | --- |
| a. dermis | c. corium |
| b. epidermis | d. cutis vera |

1. An abscess is a/an
   1. localized collection of pus.
   2. round elevation of the skin seen in urticarial.
   3. skin elevation resulting from hypertrophy of the epidermis.
   4. excavation of the skin or mucous membrane.
2. Which term means any dry condition?

|  |  |  |
| --- | --- | --- |
| ­ | a.­Hidrosis­ | c. Necrosis |
|  | b. Ichthyosis | d. Xerosis |

*(Continued)*

1. What does *asepsis* mean?
   1. Substance that inhibits microorganisms
   2. A form of infection
   3. Sterile
   4. Presence of microorganisms or their toxins
2. Which of the following is the oily secretion of the sebaceous glands?
   1. Ecchymosis c. Lunula
   2. Furuncle d. Sebum

­ 9.­Which­of­the­following­is­an­inflammatory­disease­of­the­sebaceous­glands,­characterized by pimples and blackheads?

* 1. Acne vulgaris c. Decubitus ulcer
  2. Basal cell carcinoma d. Viral warts

1. The location of the epidermis is
   1. above the dermis.
   2. dispersed within the connective tissue.
   3. under the dermis.
   4. under the subcutaneous layer.
2. Which of the following methods can be used to destroy a hair follicle?
   1. Electrolysis
   2. Fissure
   3. Lipectomy
   4. Transcutaneous nerve stimulation
3. Excessive exposure to sun increases the risk for skin cancer, which is composed of which types of cells?

|  |  |
| --- | --- |
| a. Contusions | c. Melanocytes |
| b. Keloids | d. Onychocytes |

*(Continued)*

1. A 14-year-old girl bought a necklace at a stand at the mall. She is now showing an irritation along her neck where she wore it. The term for this condition is
   1. acne vulgaris. c. folliculitis.
   2. contact dermatitis. d. mycodermatitis.
2. Dermabrasion or laser treatments can be used for removal of
   1. cellulitis. c. scales.
   2. fissures.­ d. tattoos.
3. A 6-year-old girl skinned her knee, and her mother applied medicine to the broken skin­to­prevent­infection.­The­type­of­medicine­is­classified­as
   1. antimicrobial. c. aseptic.
   2. antiperspirant. d. bacteriostatic.

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–15 at the end of this study guide.**

#### SECTION 5.2: THE NERVOUS SYSTEM AND PSYCHOLOGIC DISORDERS

**Read the following section, then read Chapter 13 in your textbook.**

***Objective***

When you complete this section, you’ll be able to build, identify, and analyze medical terminologies and jargon related to the nervous system.

The nervous system is a complex system that primarily serves as the body’s control center,­both­physiologically­and­psychologically.­More­specific­functions­include:

QQ Storage and processing of information

QQ Stimulation of movement

QQ Maintenance of homeostasis

QQ Control of behavior, mood and thinking

Control of the nervous system can be categorized into:

QQ *Somatic nervous system*

QQ responsible for voluntary movements such as movement of the musculoskeletal system

QQ *Autonomic nervous system*

QQ controls involuntary movements such as breathing

Two­types­of­nerve­fibers­that­transmit­impulses­are:

QQ *Sensory* or *afferent*

QQ receptors that receive information from the sensory organs and transmit this information to the central nervous system

QQ *Motor* or *efferent*

QQ neurons that transmit information from the central nervous system to the muscles and glands

#### STRUCTURES OF THE NERVOUS SYSTEM

Two types of cells make up the nervous system, the *neurons* and *neuroglial* cells.

QQ *Neurons* (*neur/o* = nerve)

QQ transmit impulses to and from the brain

QQ *structures* of a typical neuron:

Q *dendrites:* responsible for transmitting impulses to the cell body

Q Q *soma* or *cell body:* contains the nucleus

Q Q *axon:* conducts electrical impulses away from the cell body

Q Q *myelin sheath:* aids in the conduction of nerve impulses

Q Q  *neurilemma:* also called the sheath of Schwann, it’s the outermost layer of the axon

QQ *Glial* or *neuroglial cells*

QQ primarily functions to support the neurons

The following table presents the word parts and word associations related to the nervous system and psychological disorders.

|  |  |  |
| --- | --- | --- |
| **Combining**  **Forms** | **Meaning** | **Word Associations** |
| aut/o | self | *Autoimmune* diseases refer to disorders in which the body’s immune system destroys healthy cells. |
| *cerebell/o* | cerebellum | *Cerebellar* stroke is a result of interruption of blood supply to the cerebellum. |
| *cerebr/o, encephal/o* | brain | *Cerebral* edema is the accumulation of excessive fluid­in­the­brain. |
| *cervic/o* | neck | Pain in the neck is generally referred to as *cervicalgia.* |
| *coccyg/o* | coccyx | Persistent pain in the coccyx or tailbone is *coccydynia*. |
| *crani/o* | cranium | *Craniotomy* is the surgical removal of a part of the skull. |
| *dendr/o* | tree | *Dendrites* are small projections of a nerve cell that are essential for nerve transmission. |
| *dur/o* | dura mater | The outermost layer of the meninges is the *dura mater*. |
| *gli/o* | neuroglia or sticky substance | *Glial* cells function to support and insulate neurons. |
| *lumb/o* | lower back | The *lumbosacral* region­of­the­spine­consists­of­fivelumbar vertebrae and the sacrum. |
| *mening/o* | meninges | Inflammation­of­the­protective­membranes­of­thebrain and spinal cord is known as *meningitis*. |
| *ment/o, psych/o* | mind | *Mentation* refers to mental activity or the process of thinking.  *Psychology* is the science that deals with the study of the mind and behavior. |
| *myel/o* | bone marrow or spinal cord | A­general­term­referring­to­inflammation­of­the­spinalcord is referred to as *myelitis.* |
| *nerv/o, neur/o* | nerve | *Neuritis* is­the­inflammation­of­the­peripheral­nerves. |
| *phren/o* | mind or diaphragm | The study of the skull’s structure relative to one’s character and mental faculties is *phrenology.* |
| *physi/o* | nature | *Physiology* is the branch of science that deals with the natural and normal functions of living organisms. |
| *sacr/o* | sacrum | The sacrum is otherwise referred to as the *sacral* area. |
| *spin/o* | spine | The term *spinal* pertains to the spine. |
| *thorac/o* | thorax | *Thoracotomy* is a surgical procedure used to open the chest cavity. |
| *ventricul/o* | ventricle | A neurosurgical procedure that involves the creation of an opening within the cerebral ventricle is known as *ventriculostomy*. |

The nervous system is divided into the *central* and *peripheral* nervous systems.

##### Central Nervous System

The central nervous system consists of the *brain* and the *spinal cord.* Both of these structures are protected by:

QQ Bones

QQ the *cranium* or *skull* encases the brain

QQ the *spinal vertebrae* protect the spinal cord

QQ *Cerebrospinal fluid:* clear,­colorless­body­fluid­produced­by­the­ventricles­of­thebrain

QQ *Meninges*: membranes that line the skull and spinal cord

QQ *dura mater:* outermost layer of the meninges

QQ *arachnoid:* middle layer

QQ *pia* *mater:* innermost layer

###### Brain

**Parts and Functions of the Brain**

QQ *Cerebrum:* largest and uppermost part of the brain

QQ *frontal lobe:* controls cognitive skills including problem solving, memory, language, and judgment

QQ *parietal lobe:* integrates sensory functions and processes language

QQ *occipital lobe:* center of the visual perception system

QQ *temporal lobe:* responsible for auditory perception

QQ *Diencephalon*:upper end of the brain stem

QQ *thalamus:* transmits sensory impulses from receptors in the different parts of the body to the cerebral cortex

QQ *hypothalamus:* produces hormones and regulates body temperature

QQ *Brainstem*: posterior part of the brain that adjoins with the spinal cord

QQ *midbrain:* associated with hearing, vision, alertness, wakefulness, and regulation of temperature

QQ *pons:* transmits information from the cortex and cerebellum

QQ *medulla oblongata:* regulates breathing and heart and blood vessel function

QQ *Cerebellum:* coordinates and regulates muscular activity

###### Spinal Cord

QQ Transmits information to the brain through the *spinal tracts*

QQ A cylindrical structure found in the vertebral column

##### Peripheral Nervous System

The *peripheral nervous system* consists of the *nerves* and *ganglia* outside the brain and the spinal cord.

There are 31 pairs of spinal nerves:

QQ 8 cervical

QQ 12 thoracic

QQ 5 lumbar

QQ 5 sacral

QQ 1 coccygeal

#### DISEASES, DISORDERS, AND DIAGNOSTIC TERMS

This section pertains to the diseases, disorders, and diagnostic terms pertaining to the nervous system, including psychological problems.

##### Nervous System

Common diagnostic procedures involving the nervous system include:

QQ Examination of the *cerebrospinal fluid*

QQ chemical analysis and microscopic examination may help indicate the *presence of infection*

QQ *lumbar puncture* or *spinal tap*

Q Q­ ­procedure­used­to­collect­cerebrospinal­fluid

QQ *Electroencephalography* (EEG): *electro* + *encephalo* + *graphy*

QQ monitoring method to record electrical activity of the brain

QQ Scans used to assess the structural changes of the spinal cord and the brain

QQ *computed tomography*

QQ *magnetic* resonance imaging

Several disorders pertaining to the nervous system include:

QQ *Hematoma:* collection of blood outside the blood vessels

QQ *epidural*: accumulation of blood between the dura mater and the *skull*

QQ *subdural:* buildup of blood below the dura mater

QQ *intracerebral:* bleeding within the brain

QQ *Cerebrovascular accident* (CVA): *cerebro* + *vascul* + *ar* QQ Q*commonly referred to as stroke*

QQ *disruption of the normal blood supply to the brain*

QQ *transient ischemic attack* (TIA)

QQ­ ­brief­interruption­in­cerebral­blood­flow

QQ *Hydrocephalus:* accumulation­of­cerebrospinal­fluid­in­the­skull

QQ *Aneurysm:* weakening and bulging of the cerebral artery

QQ *Spinal cord injuries*

Q potential causes include:

Q QQ­ ­excessive­hyperflexion

Q QQ hyperextension

Q QQ vertical compression

Study­these­disorders­related­to­the­nervous­system.­Definitions­are­outlined­in­Chapter13 of your textbook.

QQ Akinesia

QQ Anesthesia

QQ Aphagia

QQ Aphasia

QQ Bradykinesia

QQ Brain tumor

QQ Cephalalgia

QQ Cerebral concussion

QQ Cerebral contusion

QQ Cerebral hemorrhage

QQ Cerebral palsy

QQ Coma

QQ Diplegia

QQ Dyslexia

QQ Dysphagia

QQ Dysphasia

QQ Electromyography

QQ Encephalitis

QQ Encephalocele

QQ Encephalomalacia

QQ Encephalomeningitis

QQ Encephalopathy

QQ Epilepsy

QQ Hemiplegia

QQ Hyperkinesia

QQ Meningitis

QQ Meningocele

QQ Multiple sclerosis

QQ Myasthenia gravis

QQ Myelitis

QQ Myelography

QQ Narcolepsy

QQ Neuralgia

QQ Neuritis

QQ Neuropathy

QQ Parkinson’s disease

QQ Peripheral neuropathy

QQ Shingles

##### Psychological Disorders

QQ *psych/o* =mind

QQ otherwise referred to as mental illness, mental disorders, or psychiatric disorder

QQ patterns of thought or behavior that are outside the expected norms and impair the individual’s ability to function in ordinary life Psychological­disorders­can­be­classified­into:

QQ *Neurodevelopmental disorders:* disabilities associated with the growth and development of the brain or central nervous system

QQ dementia

QQ autism

QQ attention­deficit­disorder

QQ *Anxiety disorders:*­disabilities­characterized­by­significant­feelings­of­worry,­anxiety,or fear

QQ post-traumatic stress disorder

QQ dissociative disorder

QQ obsessive-compulsive disorder

QQ phobias

Q Q agoraphobia

Q Q zoophobia

Q Q phobophobia

Q Q arachnophobia

Q Q acrophobia

Q Q claustrophobia

Q Q pyrophobia

QQ *Eating disorders*:pertains to abnormal eating habits that negatively impact a person’s health

QQ anorexia nervosa

QQ bulimia

QQ *Mood disorders:* otherwise known as *affective* disorders, which collectively describes all types of depression and bipolar disorders

QQ clinical depression

QQ mania

Q Q pyromania

Q Q kleptomania

QQ bipolar disorder

QQ *Sexual disorders:* diseases characterized by diminished or disturbance in sexual desire that’s unrelated to a general medical condition

QQ paraphilia

QQ *Somatoform disorders* (*somat/o* = body, *form* = shape)*:* disorders that cause unexplained physical symptoms

QQ somatic symptom disorder

QQ illness anxiety disorder

QQ neurasthenia (*neur* + *asthenia*)

QQ pseudomania (*pseudo* + *mania*)

QQ *Personality disorders:* maladaptive patterns of behavior and cognition that affect a person’s ability to form normal and healthy relationships

QQ paranoia

QQ antisocial personality disorder

#### SURGICAL AND THERAPEUTIC INTERVENTIONS

Surgery may be indicated for some disorders of the nervous system. Some of these surgeries are presented in the following table:

|  |  |  |
| --- | --- | --- |
| craniotomy | crani/o + tomy | surgical opening into the skull |
| craniectomy | crani/o + ectomy | removal or excision of a part of the skull |
| cranioplasty | crani/o + plasty | surgical repair of the skull |
| neuroplasty | neur/o + plasty | plastic surgery to repair a nerve |
| neurorraphy | neur/o + rrhapy | suturing of a cut nerve |
| neurolysis | neuro + lysis | breaking down or destruction of nervous tissue |

Additional interventions include the following:

QQ *Shunts*:­a­small­passage­that­allows­movement­of­fluid­from­one­body­part­toanother

QQ *ventriculoperitoneal* shunt (*ventricul/o* = ventricle, *periton/o* = peritoneum, *-eal* = pertaining to)

Q Q used in the treatment of hydrocephalus

Q Q­ ­shunts­cerebrospinal­fluid­from­the­ventricles­of­the­brain­to­theperitoneum

QQ *transcutaneous electrical nerve stimulation* (*trans* = across + *cutane* = skin + *ous* = pertaining to)

QQ using electric current to stimulate the nerves for therapeutic purposes

QQ stereotactic radiosurgery

QQ the use of ionizing radiation to treat functional abnormalities and small tumors of the brain

Medications used to treat nervous system disorders include:

QQ *Analgesics:* pain relievers

QQ *Hypnotics:* produce a calming effect

QQ *Anticonvulsants:* relieve or prevent convulsions

QQ *Antipyretics:* relieve fever

Self-Check 5.2

**Complete Practice Exercises 1–12 and A–G found in Chapter 13 of your textbook, then answer questions 1–14.**

**Choose the correct answer.**

1. Surgical repair of a nerve or nerves is called
   1. neurolysis.
   2. neuropathy.
   3. neuroplasty.
   4. neurosclerosis.
2. The part of the nervous system that consists of various nerve processes and receptors is the \_\_\_\_\_ nervous system.
   1. central
   2. integrative
   3. peripheral
   4. subdural
3. Paralysis affecting like parts on both sides of the body is
   1. cerebral palsy.
   2. diplegia.
   3. hemiplegia.
   4. paraplegia.

*(Continued)*

1. A large category of psychiatric disorders in which the symptoms are distressing to the person, reality testing is within normal limits, and behavior doesn’t violate gross social norms refers to
   1. dysphagia.
   2. neurosis.
   3. psychosis.
   4. pyromania.

­ 5.­What’s­the­term­for­an­increased­accumulation­of­cerebrospinal­fluid­within­thebrain?

* 1. Cephalalgia
  2. Cerebral concussion
  3. Cerebral hemorrhage
  4. Hydrocephalus

1. Radiographic inspection of the spinal cord with injection of a radiopaque substance is called
   1. electromyography.
   2. electroencephalography.
   3. myelography.
   4. myogram.
2. The supportive network of the nervous system is the
   1. cerebellum.
   2. neuroglia.
   3. neurosclera.
   4. somatic nerve.
3. Which of the following terms means a nervous condition characterized by chronic weakness and fatigue?
   1. Narcolepsy
   2. Neurasthenia
   3. Neurolysis
   4. Neurosclerosis

*(Continued)*

1. A morbid fear of closed places is
   1. acrophobia.
   2. agoraphobia.
   3. claustrophobia.
   4. pyrophobia.
2. The term for localized dilation of the wall of a cerebral artery is
   1. cerebral aneurysm.
   2. cerebral contusion.
   3. epidural hematoma.
   4. intracerebral hematoma.
3. The term for a graphic record of the contracting of a muscle as a result of electrical stimulation is
   1. electroencephalogram.
   2. electroencephalography.
   3. electromyogram.
   4. electromyography.
4. Your client complains of severe headaches. What’s the proper term to document in the chart?
   1. Analgesic
   2. Cephalgia
   3. Cerebral contusion
   4. Neuralgia

­13.­You’re­completing­an­initial­examination­on­a­74-year-old­man.­His­daughterattends the appointment with him and reports that she has noticed progressive confusion, disorientation, and deterioration of intellectual capacity and function. The­patient­doesn’t­show­a­speech­disturbance­or­restlessness.­All­of­these­findings indicate

* 1. Alzheimer’s disease.
  2. bradykinesia.
  3. dementia.
  4. Parkinson’s disease.

*(Continued)*

14. A patient plays with a lighter during the subjective interview, occasionally trying to light­it.­He­reports­having­been­diagnosed­with­an­obsession­with­fire.­A­personwith his condition can be documented as a

1. kleptomaniac.
2. megalomaniac.
3. pyromaniac.
4. pseudomaniac.

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–14 above with those at the end of this study guide.**

#### SECTION 5.3: SPECIAL SENSE ORGANS OF THE PERIPHERAL NERVOUS SYSTEM

**Read the following section, then read Chapter 14 in your textbook.**

***Objective***

When you complete this section, you’ll be able to build, recognize, and analyze medical terminologies and jargon pertaining to the special senses.

Special senses refer to senses that have specialized organs dedicated to them. These senses include the senses of sight, taste, hearing, smell, and touch.

#### EYES

The organs of the visual system are the eyes. Aside from providing vision, they also enable photo-response functions.

##### Eye Structures

The eyes are made up of these external structures:

QQ *Pupil:* opening in the middle of the iris

QQ *Iris*:colored circle that surrounds the pupil

QQ *Sclera:* tough, white, outer covering of the eye

QQ *Conjunctiva:* thin, mucous membrane that lines the eyelid

QQ *Lacrimal glands:* produces *lacrimal* fluid­(tears)

QQ *Lacrimal duct:* a short tube in the inner corner of the eyelid that serves as a passageway of tears

QQ *Lacrimal sac:* receives tears from the lacrimal duct

QQ *Nasolacrimal duct:* transports tears from the lacrimal sac of the eye into the nasal cavity

The eyeball is made up of several layers, namely:

QQ *Sclera*

QQ *Cornea:* the transparent, anterior part of the eye that refracts light

QQ *Choroid:* vascular layer of the eye that supplies blood to the retina

Internal structures of the eye include:

QQ *Lens:* transparent structure posterior to the iris that bends light rays

QQ *Anterior chamber:*­the­compartment­between­the­cornea­and­the­iris­that’s­filled­with*aqueous humor*

QQ *Vitreous chamber:* the compartment behind the lens and anterior to the optic nerve that­is­filled­with­a­gel-like­substance­known­as­the­*vitreous humor*

QQ *Retina:* thin layer of tissue that lines the posterior portion of the eye where stimulation by light occurs, leading to the sensation of vision

QQ *Optic nerve:* known as the second cranial nerve, it carries visual information from the eye to the brain

QQ *Optic disc:* the part of the eye where the optic nerve crosses the retina

The following table lists the common word parts pertaining to the eyes.

|  |  |  |
| --- | --- | --- |
| **Combining Form** | **Meaning** | **Word Association** |
| *choroid/o* | choroid | *Choroidal* melanoma is a primary cancer of the eye. |
| *chrom/o* | color | *Chromotherapy* or color therapy is the use of colors to promote healing. |
| *conjunctiv/o* | conjunctiva | Inflammation­of­the­conjunctiva­is­*conjunctivitis* or pink eye. |
| *corne/o, kerat/o* | cornea | The presence of an open sore in the cornea is known as a *corneal* ulcer.  *Keratoconus* is a condition in which the cornea progressively thins. |
| *dacry/o, lacrim/o* | tear | The tear sac is also known as the *dacrocyst*.  *Lacrimation* is the secretion of tears. |
| *ir/o, irid/o* | iris | *Iritis* is­the­inflammation­of­the­iris. |
| *ocul/o, ophthalm/o* | eye | The *oculomotor* nerve is responsible for the movement of the eyeballs and the eyelids.  *Ophthalmology* is the science that deals with the anatomy, functions, and disorders of the eyeball and its orbit. |
| *opt/o, optic/o* | vision | *Optometry* is the practice responsible for examining visual defects of the eye and prescribing corrective lenses.  An *optician* is­responsible­for­designing,­fitting,and dispensing corrective lenses for correcting a person’s vision. |
| *presby/o* | old or old age | *Presbyopia* is the gradual loss of one’s ability to focus on objects that are nearby. |
| *pupill/o* | pupil | *Pupillometry* refers to the measurement of pupil size. |
| *retin/o* | retina | *Retinopathy* refers to a disorder of the retina that may result in visual loss. |
| *ton/o* | tone or tension | A *tonomete*r is an instrument used to measure the intraocular pressure in the eye. |

##### Diseases, Disorders, and Diagnostic Terms

Eye disorders are frequent occurrences. Common tests to check for the presence of vision problems include:

QQ Routine *physical examination*

QQ *Snellen chart:* an eye chart used to measure visual acuity

QQ *visual fields assessment*

QQ *ophthalmoscopy:* examination of the internal structures of the eyes using an ophthalmoscope

QQ Qtonometry*:* test used to measure intraocular pressure using a tonomete*r*

The most common *refractive* disorders of the eyes are:

QQ *Myopia:* nearsightedness

QQ *Hyperopia:* farsightedness

QQ *Astigmatism:* uneven focusing of the image resulting in blurred vision

Review the additional irregularities or abnormal conditions of the eye.

QQ Amblyopia

QQ Presbyopia

QQ Blepharitis

QQ Cataract

QQ Color­vision­deficiencies

QQ *achromatic vision*

QQ *achromatopsia*

QQ *Daltonism*

QQ Conjunctivitis

QQ Glaucoma

QQ Hordeolum

QQ Macular degeneration

QQ Nyctalopia

QQ Photophobia

QQ Ptosis

QQ Retinal detachment

QQ Retinopathy

##### Surgical and Therapeutic Interventions

QQ *Blepharoplasty:* surgical repair of droopy eyelids

QQ *Keratoplasty:* otherwise known as *corneal transplant,* a surgical procedure to replace part of the cornea with corneal tissue from a donor

QQ *Ophthalmic cryosurgery:* using extreme cold for the excision of cataract

QQ *Cryoextraction:* the surgical removal of a cataract with the use of a *cryoprobe*

QQ *Intraocular lens transplant:* a­surgical­procedure­that­involves­placing­an­artificiallens inside the eye

QQ *Laser retinal photocoagulation:* using a laser to seal or destroy abnormal leaking blood vessels in the retina

QQ *Laser-assisted in-situ keratomileusis (LASIK):* a pain-free procedure that reshapes the cornea to allow the light entering the eye to be focused on the retina

Eye medications frequently prescribed for therapy are:

QQ *Mydriatics:* drugs that cause dilation of the pupils

QQ *Miotics:* agents that cause constriction of the pupils

#### THE EARS

Aside from being the organs of hearing, the ears are also essential in maintaining a sense of equilibrium.

##### Ear Structures

The human ear is made up of three general parts: external, middle, and inner.

QQ *External ear:* outer, visible part of the ear

QQ *pinna/auricle*

QQ *tympanic membrane:* otherwise called the eardrum, receives sound waves from the outer air

QQ *Middle ear:* consists of three *ossicles*,whichtransmit sounds from the outer to the inner ear

QQ *malleus*

QQ *incus*

QQ *stapes*

QQ *Inner ear:* contains the organs for hearing and balance

QQ *semicircular canals:* organ of balance

QQ *cochlea:* receives sounds in the form of vibrations

The following table lists common word parts pertaining to the structures of the ears.

|  |  |  |
| --- | --- | --- |
| **Combining Form/ Suffix** | **Meaning** | **Word Association** |
| acoust/o, audi/o | hearing | The *acoustic* or vestibulocochlear nerve serves the organs of equilibrium and hearing.  An *audiometer* is an instrument used to measure hearing acuity. |
| adenoid/o | adenoids | *Adenoidectomy* is the surgical removal of the adenoids. |
| aur/o, auricul/o, ot/o | ear | *Aural* pain refers to earache.  *Auriculotherapy* is a healthcare procedure in which the auricle is stimulated to diagnose and treat other health problems.  An *otoscope* is a device used to look into the ears. |
| cerumin/o | ear wax | *Ceruminolytics* are substances used to soften the cerumen. |
| cochle/o | cochlea | *Cochlear* implants are electronic medical devices that are used to replace the function of the impaired inner ear. |
| myring/o, tympan/o | eardrum | *Myringitis* is­the­inflammation­of­the­tympanicmembrane.  *Tympanoplasty* is the surgical repair of the tympanic membrane. |

##### Diseases, Disorders, and Diagnostic Terms

Diagnosing ear disorders may be accomplished using several methods. Some of these methods include:

QQ *Otoscopic examination* or *otoscopy:* (*oto* + *scop* + *ic*), (*oto* + *scopy*)

QQ test that involves looking into the ear with an *otoscope* or *auriscope*

QQ *Audiometer:* (*audio* + *meter*)

QQ electronic device used to measure hearing

QQ *audiologist:* a medical professional trained to identify, diagnose, treat, and monitor disorders of the *auditory* system

QQ *Tuning fork tests:* assess hearing loss

QQ *Weber’s test:* detects unilateral hearing loss

QQ *Rinne’s test:* differentiates between conductive and sensorineural hearing loss

*Otitis* (*oto* + *itis*)­is­the­general­term­used­to­describe­inflammation­of­the­ear.

QQ *Otitis externa:* infection of the external ear

QQ *Otitis media:*­inflammation­of­the­middle­ear

QQ *myringitis* (*myring/o* + *itis*)*:*­inflammation­of­the­tympanic­membran*e*

QQ *mastoiditis (mastoid/o* + *itis):* inflammation­or­infection­of­the­mastoid­bone

QQ *Otitis interna:* inflammation­of­the­inner­ear

Other ear disorders include:

QQ *Otosclerosis* (*oto* + *sclerosis*)

QQ abnormal bone growth in the middle ear, causing disruption of the sound to travel from the middle to the inner ear

QQ *Tinnitus:* hearing an external sound when there is no external sound present; can be perceived as ringing, buzzing, or clicking sound

QQ *Vertigo:* sensation of feeling off balance

##### Surgical and Therapeutic Interventions

*Hearing aids* are electronic devices commonly used for clients with partial hearing loss. These devices amplify sounds, which help enhance hearing. For clients with complete hearing loss, *cochlear implants* may be indicated.

Surgical procedures involving the ears include:

QQ *Otoplasty:* (*oto* + *plasty*)

QQ otherwise known as ear pinning

QQ the ears are surgically moved closer to the head

QQ *Tympanostomy:* (*tympan/o* + *ostomy*)

QQ otherwise referred to as *myringotomy*

QQ creation of incision or opening in the tympanic membrane to relieve the pressure­caused­by­buildup­of­fluid­or­pus

To treat bacterial infections, *antibiotics* are prescribed. *Ceruminolytics* (*cerumin/o* + *lytics*), on the other hand, are substances that are instilled into the eardrum to soften or loosen the *cerumen* or ear wax.

##### The Skin

The­skin,­being­the­largest­organ­of­the­body,­contains­receptors­that­respond­to­specificstimuli:

|  |  |  |  |
| --- | --- | --- | --- |
| **Types of Receptors** | **Word Parts** | | **Meaning sensory cells or organs responsive to:** |
| *chemoreceptor* | chem/o |  | chemical stimuli |
| *mechanoreceptor* | mechan/o |  | mechanical distortions such as touch or pressure |
| *nociceptor* | noc/i | + receptor | damaging or painful stimuli |
| *thermoreceptor* | therm/o |  | temperature changes |
| *\*photoreceptor* | phot/o |  | light (only the eyes have these receptors) |

#### THE MOUTH AND NOSE

The *taste buds*, the organs of taste, have chemoreceptors that are found on the surface of the mouth and the nose. The four basic taste sensations are sweet, sour, bitter, and salty.

The organ for *olfaction,* the sense of smell, is the nose. Disorders pertaining to the sense of smell include:

QQ *Anosmia:* receptor loss of the sense of smell (*an* + (*-osmia* = sense of smell))

QQ *Hyperosmia:* receptor abnormally increased sensitivity to odors (*hyper* + *osmia*)

**Complete Practice Exercises 1–12 and A–H found in Chapter 14 of your textbook, then answer questions 1–15.**

**Choose the correct answer.**

1. Which of the following is impairment of vision due to advancing years or old age?

|  |  |
| --- | --- |
| a. Astigmatism | c. Myopia |
| b. Hyperopia­  2. Which term means capable of being heard? | d. Presbyopia |
| a. Accommodation | c. Aural |
| b. Audible  3. The term for farsightedness is | d. Auricular |
| a. astigmatism. | c. hyperopia. |
| b. exophthalmos. | d. myopia. |

4. Which structure is a spiral tunnel that contains the sense of hearing?

|  |  |
| --- | --- |
| a. Choroid | c. Conjunctiva |
| b. Cochlea  ­ 5.­Which­term­means­inflammation­of­the­eyelid? | d. Cornea |
| a. Blepharitis | c. Photophobia |
| b. Ophthalmitis  6. What does the combining form *ocul/o* refer to? | d. Ptosis |
| a. Ear | c. Nerve |
| b. Eye | d. Nervous sensation |

*(Continued)*

1. Which of the following are special receptors that initiate the sense of pain?
   1. Chemoreceptors c. Nociceptors
   2. Mechanoreceptors d. Thermoreceptors
2. Which term means a weakness in perceiving colors distinctly?
   1. Achromatic vision c. Daltonism
   2. Achromatopsia d. Ménière disease
3. Which of the following are widely distributed in the skin and are sensitive to touch or pressure?
   1. Chemoreceptors c. Nociceptors
   2. Mechanoreceptors d. Thermoreceptors
4. A young patient requires an eye patch because of reduced vision in one eye that can’t be corrected by glasses. This condition is referred to as
   1. achromatopsia. c. myopia.
   2. blepharitis. d. strabismus.
5. A 46-year-old woman has recently developed farsightedness that appears to be worsening with age. This is referred to as

|  |  |
| --- | --- |
| a. amblyopia. | c. myopia. |
| b. astigmatism. | d. presbyopia. |

1. A physician uses an otoscope to examine a patient’s ear. She notes that the patient­has­inflammation­of­the­tympanic­membrane,­also­referred­to­as

|  |  |
| --- | --- |
| a. blepharitis. | c. myringitis. |
| b. mastoiditis. | d. otitis. |

*(Continued)*

1. A 30-year-old man visits his physician and complains of hearing loss. The physician suspects there’s hardening of the ear, which results in hearing impairment. This disorder is

|  |  |
| --- | --- |
| a. otomycosis. | c. otorrhea. |
| b. otoplasty. | d. otosclerosis. |

1. A 17-year-old girl developed a sty following the use of false eyelashes. Resulting from an infected sebaceous gland of an eyelash, a sty is also called a
   1. blepharitis. c. conjunctivitis.
   2. cerumen. d. hordeolum.
2. A test for visual acuity uses letters and numbers or symbols arranged in decreasing size from top to bottom. Which of the following is used in the test just described?
   1. LASIK c. Otoscope
   2. Ophthalmoscope d. Snellen chart

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–15 with those at the end of this study guide.**

#### SECTION 5.4: THE ENDOCRINE SYSTEM

**Read the following section, then read Chapter 15 in your textbook.**

***Objectives***

When you complete this section, you’ll be able to identify, build, and analyze medical terms related to the endocrine system.

The endocrine (*endo* + *crine*)system, otherwise known as the *hormonal system,* is essential in the regulation of body activities through the production and release of chemical substances known as *hormones*. Unlike *exocrine glands,* endocrine glands are ductless and secrete their hormones directly to the bloodstream. A *dysfunction* (*dys* = bad) of the endocrine glands can lead to:

QQ *Hyposecretion:*­deficiency­in­hormone­production

QQ *Hypersecretion:* excess in hormone production

#### STRUCTURES OF THE ENDOCRINE SYSTEM

Hormones­secreted­by­the­endocrine­glands­primarily­affect­a­specific­organ­or­structure,referred to as the *target organ.*

The release of hormones by the endocrine glands can be achieved in two ways:

QQ The nervous systems initiates the release of hormones.

QQ The pituitary gland, or the master gland, stimulates the other glands to produce hormones.

|  |  |
| --- | --- |
| **Major Glands of the Endocrine System** | **Hormones Produced** |
| pituitary or hypophysis | antidiuretic hormone, growth hormone |
| pineal | melatonin |
| thyroid | thyroxine |
| parathyroid | parathyroid hormone |
| islets of Langerhans | insulin |
| adrenal glands | adrenaline/epinephrine, cortisone |
| ovaries | estrogen |
| testes | androgen |

The following table lists the word parts pertaining to the endocrine system.

|  |  |  |
| --- | --- | --- |
| **Combining Forms** | **Meaning** | **Word Association** |
| aden/o | gland | *Adenocarcinoma* is a type of cancer that starts in the glands. |
| *adren/o, adrenal/o* | adrenal glands | *Adrenalectomy* is the surgical removal of one or both adrenal glands. |
| *andr/o* | male or masculine | Aging-related hormonal changes in men is referred to as *andropause*. |
| *gigant/o* | giant | *Gigantism* refers to abnormally large growth secondary to excessive production of growth hormone. |

(*Continued*)

|  |  |  |
| --- | --- | --- |
| **Combining Forms** | **Meaning** | **Word Association** |
| *gonad/o* | gonad | *Gonadotropins* are hormones that act on the gonads. |
| *insulin/o* | insulin | An increase in the amount of circulating insulin in the blood is known as *hyperinsulinism*. |
| *iod/o* | iodine | *Iodized* salt is a form of table salt in which iodine was added. |
| *myx/o* | mucus | *Myxedema* is a condition where mucopolysaccharides are deposited in the dermis, causing swelling of the affected area. |
| *pancreat/o* | pancreas | *Pancreatitis* is­inflammation­of­the­pancreas. |
| *parathyroid/o* | parathyroid | *Parathyroidectomy* is the surgical removal of one or more parathyroid glands. |
| *pituitar/o,*  *hypophys/o* | pituitary gland | Excessive production of growth hormone is known as *hyperpituitarism*. |
| *ren/o, nephr/o* | kidney | *Renal* failure is otherwise known as kidney failure.  *Nephrology* is the branch of medicine that is concerned with the diagnosis and treatment of diseases of the kidneys. |
| *thyr/o, thyroid/o* | thyroid gland | *Thyroiditis* is­the­inflammation­of­the­thyroidgland. |
| *toxic/o* | poison | *Toxicology* is the science concerned with the study of the adverse effects of chemical substances to living organisms. |

#### DISEASES, DISORDERS, AND DIAGNOSTIC TERMS

Examination of the endocrine glands usually involves the use of invasive procedures, such­as­extraction­of­blood­to­measure­hormone­levels.­However,­unlike­most­glands,the *testicles* and the *thyroid glands* are accessible through routine physical examination. A thyroid gland that has a normal function is referred to as *euthyroid.* Abnormal­findingsinclude enlargement and the presence of masses. The following terms pertain to the thyroid gland:

QQ *Hyperthyroidism:* (*hyper* + *thyroid/o* + *ism*)

QQ a condition which involves over activity of the thyroid gland

QQ *exophthalmos* (*ex* + *ophthalmos*)

Q Q protrusion of the eyeballs

Q Q­ classic­finding­with­hyperthyroidism

QQ *goiter:* enlarged thyroid gland

QQ *Hypothyroidism:* (*hypo* + *thyroid/o* + *ism*)

QQ insufficient­hormone­production­by­the­thyroid­gland

Aside from health conditions affecting the thyroid gland, *diabetes* is also a common disorder affecting the endocrine system. Note the difference between diabetes insipidusand diabetes mellitus.

QQ *Diabetes insipidus:*­deficiency­of­antidiuretic­hormone­leading­to­frequent­urination

QQ *Diabetes mellitus:*­deficiency­or­improper­use­of­insulin­resulting­in­*hyperglycemia*

|  |  |  |  |
| --- | --- | --- | --- |
| **Classic Signs and Symptoms of Diabetes Mellitus** | | | |
| **Signs and**  **Symptoms** | **Word Parts** | | **Meaning** |
| *polyuria* | poly +  (many) | *-uria* (urination) | frequent urination |
| *polydipsia* | -*dipsia* (thirst) | excessive drinking or thirst |
| *polyphagia* | *-phagia* (eating) | excessive hunger or increased appetite |
| *hyperglycemia* | hyper (increased) | *glyc/o* (sugar)  *-emia* (blood) | abnormally high blood glucose level |
| *glycosuria* | glyc/o (sugar) | *-uria* (urination) | excretion of sugar in the urine |

Other disorders of the endocrine system are outlined as follows.

QQ Acromegaly

QQ Adenoma

QQ Cretinism

QQ Dwarfism

QQ Gigantism

QQ Hyperinsulinism

QQ Hyperparathyroidism

QQ Hypoglycemia

QQ Hypoparathyroidism

QQ Hypopituitarism

QQ Myxedema

QQ Thyrotoxicosis

#### SURGICAL AND THERAPEUTIC INTERVENTIONS

The­usual­first­line­of­treatment­for­endocrine­disorders­is­medication­therapy:

QQ *Antithyroid drugs:* indicated for hyperthyroidism

QQ *Insulin:* may be administered via injection or pump for clients with type 1 diabetes

QQ *Hypoglycemic medications* or *glucose-lowering agents:* given for clients with type 2 diabetes

For other endocrine system disorders, surgery may be necessary.

|  |  |  |  |
| --- | --- | --- | --- |
| **Surgery/**  **Procedure** | **Word Parts** |  | **Meaning** |
| hypophysectomy | *hypophys/o*(pituitary) | +*ectomy* (excision/ removal) | surgical removal of the pituitary gland |
| thyroidectomy | *thyroid/o* (thyroid) | excision of the thyroid gland |
| adrenalectomy | *adren/o* (adrenal glands) | excision of an adrenal gland |
| adenectomy | *aden/o* (gland) | surgical removal of a gland |

Self-Check 5.4

**Complete Practice Exercises 1–10 and A–H found in Chapter 15 of your textbook, then answer questions 1–14.**

**Choose the correct answer.**

1. Excessive secretion of insulin is called

|  |  |
| --- | --- |
| a. cretinism. | c. hypoinsulinism. |
| b. hyperinsulinism. | d. myxedema. |

*(Continued)*

Self-Check 5.4

1. The four glands that lie beside the thyroid gland and are responsible for regulating calcium and phosphorus levels in the body are called the
   1. adrenals. c. pineals.
   2. parathyroids. d. pituitaries.
2. Which of the following is the gland that lies above the kidney?
   1. Adrenal c. Pineal body
   2. Pancreas d. Thyroid
3. A general term for chemical substances that are discharged into the bloodstream and used in some other part of the body is

|  |  |
| --- | --- |
| a. ducts. | c. exocrines. |
| b. endocrines. | d. hormones. |

1. An endocrine gland that can be palpated and examined in a physical examination is the
   1. adrenal. c. sweat gland.
   2. salivary gland. d. thyroid.
2. The clusters of cells within the pancreas that perform an endocrine function are the

|  |  |
| --- | --- |
| a. hypophyseal bodies. | c. pineal bodies. |
| b. islets of Langerhans. | d. thyroxine cells. |

1. In the term *hypophysis,*­the­suffix­*-physis* means
   1. above. c. growth.
   2. below. d. secretion.
2. In the term *myxedema*,­the­prefix­*myx-* or *myxo-* means

|  |  |
| --- | --- |
| a. increased. | c. mucus. |
| b. male or masculine. | d. secrete. |

*(Continued)*

Self-Check 5.4

1. The pineal gland is
   1. a cluster of cells in the pancreas.
   2. a cluster of cells in the thyroid.
   3. attached by a stalk to the pituitary gland.
   4. attached to the posterior part of the brain.
2. In the term *gonadotropic*,­the­suffix­*-tropic* means
   1. Origin. c. secrete.
   2. ovaries or testes. d. stimulate.

­11.­A­24-year-old­man­has­a­disorder­associated­with­a­deficiency­of­antidiuretic­hormone­(ADH)­or­inability­of­the­kidneys­to­respond­to­ADH.­This­disorder­is

* 1. diabetes insipidus. c. hypopituitarism.
  2. diabetes mellitus. d. hyposecretion.

1. A 31-year-old woman with type 1 diabetes mellitus has a portable battery-operated instrument that delivers a measured amount of insulin through the abdominal wall and delivers doses of insulin according to the body’s needs. This instrument is called
   1. a hypoglycemia pump. c. an insulin pump.
   2. a hyperglycemia pump. d. islets of Langerhans.
2. A patient with type 1 diabetes inadvertently administered too much insulin. Which of the following is the biggest concern for this patient?
   1. Glycosuria c. Hypoglycemia
   2. Hyperglycemia­ d. Hypoinsulinism
3. Excessive secretion of growth hormone in children can lead to gigantism, whereas it can lead to \_\_\_\_\_ in adults if secreted after maturity.
   1. acromegaly c. dwarfism
   2. cretinism d. myxedema

**Check your answers to the Practice Exercises with those in Appendix III of your textbook. Check your answers to questions 1–14 with those at the end of this study guide.**

# *SELF-CHECK ANSWERS*

#### *Self-Check 1.2*

1. b
2. c
3. c
4. d
5. c
6. b
7. b
8. a
9. c
10. c
11. a
12. d

#### *Self-Check 1.3*

1. d
2. b
3. c
4. b
5. d
6. c
7. b
8. b
9. b
10. b
11. b
12. b

#### *Self-Check 2.1*

b b d d

1. a
2. a
3. c
4. b
5. a
6. a
7. a
8. a
9. d

#### *Self-Check 2.2*

1. c
2. c
3. c
4. b
5. b
6. b
7. b
8. c
9. b
10. d
11. d

#### *Self-Check 3.1*

a c b a

1. c
2. b
3. c
4. b
5. a
6. a
7. a
8. b
9. c
10. b
11. c

#### *Self-Check 3.2*

1. a
2. b
3. c
4. b
5. a
6. b
7. d
8. b
9. d
10. a

11 a

#### *Self-Check 3.3*

d a c c

1. a
2. b
3. d
4. c
5. a
6. d
7. c
8. b
9. d
10. d

#### *Self-Check 4.1*

1. a
2. b
3. a
4. b
5. b
6. b
7. c
8. d
9. c
10. d
11. c
12. a
13. a
14. b
15. b

#### *Self-Check 4.2*

b c a b

1. c
2. a
3. b
4. c
5. b
6. a
7. d
8. a
9. a
10. b
11. b

#### *Self-Check 4.3*

1. a
2. d
3. b
4. b
5. b
6. d
7. d
8. b
9. b
10. d
11. b a a

c

#### *Self-Check 5.1*

d b a c

1. a
2. d
3. c
4. d
5. a
6. a
7. a
8. c
9. b
10. d
11. a

#### *Self-Check 5.2*

1. c
2. c
3. b
4. b
5. d
6. c
7. b
8. b
9. c
10. a
11. c b c c

#### *Self-Check 5.3*

d b c b

1. a
2. b
3. c
4. c
5. b
6. d
7. d
8. c
9. d
10. d
11. d

#### *Self-Check 5.4*

1. b
2. b
3. a
4. d
5. d
6. b
7. c
8. c
9. d
10. d
11. a c c a