

# ONLINE MEDICAL KNOWLEDGE AND TERMINOLOGY

## Training Course Syllabus

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**UNIT 1: INTRODUCTION TO MEDICAL TERMINOLOGY****CONTENT**

*Introduction to Medical Terminology*  
*Word Parts Definitions*  
*Overview of Combining Vowels and Combining Forms*  
*Constructed Versus Unconstructed Medical Terms*  
*Eponyms, Acronyms, and Abbreviations*  
*The Importance of Correct Spelling*  
*Word Parts in Depth*  
*Identifying the Four Word Parts using Hyphens and Slashes*  
*Word Roots*  
*Combining Vowels*  
*Where to Add Combining Vowels in a Term*  
*Combining Forms*  
*Learning the Combining Forms*  
*Combining Forms for Body Structures*  
*Combining Forms for Colour*  
*Miscellaneous Combining Forms*  
*Introduction to Prefixes*  
*Prefixes for Specific Numbers*  
*Prefixes for Quantity or Degree*  
*Negative Prefixes*  
*Prefixes for Direction*  
*Prefixes for Position*  
*Prefixes for Time/Position*  
*Prefixes for Comparisons*  
*Miscellaneous Descriptor Prefixes*  
*Introduction to Suffixes*  
*Common Suffixes*  
*Singular and Plural Endings*  
*Common Plural Endings*  
*Words Ending in X*  
*Some Exceptions to the Rules*  
*Suffixes Beginning with rh*  
*Silent Letters and Unusual Pronunciations*  
*Deciphering Medical Terms*  
*Constructing Medical Terms*

## UNIT 1: INTRODUCTION TO MEDICAL TERMINOLOGY

Three thousand years ago, Greek philosopher Aristotle described human illnesses and body parts. Many of the Greek words he used are present in the medical vocabulary that is still used today. After Aristotle, the Romans expanded the world's knowledge of human anatomy, physiology, and pathology by adding Latin terms to those already created by Aristotle. More recently, medical language has grown to include French, Italian, and English words. By the end of the 1800s, medical science underwent significant growth and medical scholars decided to continue using Greek and Latin terms when naming new medical discoveries as a way of maintaining consistency. As a result of this decision, medical terminology is uniform throughout the world.

To learn medical terminology, it is not necessary to learn Latin and Greek. Rather, one must learn the meanings of a few hundred terms—word parts—that describe various body systems and medical conditions. The system used to create medical terms is efficient, simple, easy to learn and simply requires that the student understand four word parts: prefixes, word roots, combining vowels/combining forms, and suffixes.

### OBJECTIVES

*After completing this Unit, you will be able to:*

1. Discuss the origins and purpose of medical terminology
2. Identify the four basic word parts that form many medical terms
3. Explain the differences between constructed medical terms and unconstructed medical terms
4. Define eponym and acronym
5. Explain the terms: word root, combining vowel, combining form, suffix, and prefix
6. Explain what combining vowels are and why they are used
7. Use combining forms for colors, body structures, and other items to write medical terms
8. Define prefix and explain how prefixes are used
9. Use prefixes for numbers, quantities, position, and direction to write medical terms
10. Define suffix and explain how suffixes are used
11. Recognize and apply plural suffixes used in medical terminology
12. Understand the rules for combining word parts to write medical terms correctly
13. Use the rules learned to write the singular or plural forms of medical terms
14. Decipher medical terms by analyzing word parts
15. Construct medical terms by assembling word parts
16. Write the meanings of, or match word parts with their meanings
17. Write the correct term when presented with its definition, or match terms with their definitions
18. Spell medical terms correctly

### KEY CONCEPTS COVERED IN THIS UNIT

Greek and Latin Origins of Medical Terms  
 Prefixes  
 Word Roots  
 Combining Vowels/Combining Forms  
 Suffixes  
 Constructed and Unconstructed Medical Terms  
 Compound Words  
 Acronyms  
 Abbreviations  
 Eponyms

## SYLLABUS

### Introduction to Medical Language

Word Parts Definitions  
 The Four Word Elements  
 Combining Vowels and Combining Forms  
 Constructed Versus Unconstructed Medical Terms  
 Eponyms, Acronyms, and Abbreviations  
 The Importance of Correct Spelling

### Medical Terminology in Depth

Identifying the Four Word Parts using Hyphens and Slashes  
 Word Roots  
 Combining Vowels  
 Where to Add Combining Vowels in a Term  
 Combining Forms  
 Learning Combining Forms  
 Combining Forms for Body Structures (includes tables)  
 Combining Forms for Colours (includes tables)  
 Additional Combining Forms (includes tables)

### Introduction to Prefixes

Sample Prefixes with their Word Roots and Meanings  
 Prefixes for Specific Numbers (includes tables)  
 Prefixes for Quantity or Degree (includes tables)  
 Negative Prefixes (includes tables)  
 Prefixes for Direction (includes tables)  
 Prefixes for Position (includes tables)  
 Prefixes for Time/Position (includes tables)  
 Prefixes for Comparisons (includes tables)  
 Miscellaneous Descriptor Prefixes (includes tables)

### Introduction to Suffixes

Common Suffixes (includes tables)

### Singular and Plural Endings and Irregular Spellings and Pronunciations

Common Plural Endings  
 Singular and Plural Endings (includes tables)  
 Words Ending in X  
 Some Exceptions to the Rules  
 Silent Letters and Unusual Pronunciations  
 Suffixes Beginning with rh

### Deciphering Medical Terms

Tip for Deciphering Medical Terms

### Constructing Medical Terms

Rules for Word Building

**Interactive:** 37 quizzes  
 Eight review tests  
 Three sets of computer generated flash cards\*:  
     169 components for combining forms  
     98 components for prefixes  
     147 components for suffixes  
 100 audio pronunciation prompts

\* students can override random selection in order to see all components sequentially

## UNIT 2: INTRODUCTION TO BODY SYSTEMS

### CONTENT

*Introduction to Body Systems*  
*The Importance of Homeostasis*  
*Body Organization*  
*Building Blocks of the Body*  
*Kinds of Tissue*  
*Abnormal Tissue*  
*Organs and Organ Systems*  
*The Major Body Systems and their Functions*  
*The Four Body Regions*  
*Reference Planes*  
*Abdominal Regions*  
*Body Cavities*  
*Word Parts*  
*Supplemental Terms*

### INTRODUCTION TO BODY SYSTEMS

#### Anatomy and Physiology

The study of body structure is known as *anatomy*. The term is constructed of three word parts:

- a) The prefix *ana-* means “up, toward, apart”
- b) The word root *tom* means “to cut”
- c) The suffix *-y* refers to “the process of”

If we put the meanings together we see that the term anatomy means the “process of cutting apart.” The ancient Greeks first used the term anatomy to describe the dissection of a cadaver. Today, however, the term is used more generally to describe the study of body structure and the relationships and locations of various body components to each other.

The study of body function is known as *physiology*. The term is constructed of two word parts:

- a) The suffix *-logy* means “the study of”
- b) The combining form *physi/o* means “nature”

Combined, the term physiology means “study of nature.” Thus, physiology refers to the study of body functions. So, while anatomy refers to the parts of the body, physiology refers to the functions of those parts.

### OBJECTIVES

*After completing this Unit, you will be able to:*

1. Describe how cells and tissues form the building blocks of the human body
2. List the simplest to the most complex level of a living organism
3. Name and give the functions of the four basic types of tissues in the body
4. Define basic terms pertaining to the function of body tissues
5. Recognize terms for abnormal tissue development
6. Recognize roots and suffixes pertaining to tissues, organs and organ systems
7. Recognize and use word parts pertaining to body regions and abdominal regions

**KEY CONCEPTS COVERED IN THIS UNIT**

Any study of medical terminology must include learning about the human body in both healthy and diseased states. In this Unit, you will learn the necessary basics for understanding many medical terms. You will learn about the building blocks of the body and about body structure and function.

**SYLLABUS****Anatomy and Physiology**

The Importance of Homeostasis  
 Body Organization  
 The Six Building Blocks of the Body  
 The Four Primary Kinds of Tissue  
 Abnormal Tissue  
 Terms to Describe Abnormal Tissue

**Organs and Organ Systems**

Circulation  
 Nutrition and Fluid Balance  
 Production of Offspring  
 Body Structure and Movement  
 Body Covering  
 Central Control

**The Eleven Major Body Systems and Their Functions**

Muscular System  
 Skeletal System  
 Cardiovascular System  
 Lymphatic System  
 Respiratory System  
 Gastrointestinal System  
 Urinary System  
 Reproductive System  
 Integumentary System  
 Nervous System  
 Endocrine System

**The Four Principal Body Regions****Reference Planes**

Frontal Plane or Coronal Plane  
 Transverse Plane  
 Sagittal Plane  
 Anterior Plane  
 Lateral Plane  
 Posterior Plane  
 Positional Terms and their Meanings

**Abdominal Regions****Body Cavities**

Dorsal Cavity  
 Ventral Cavity

**Word Parts**

Combining Forms for Body Systems (includes tables)  
Prefixes for Body Systems (includes tables)  
Suffixes for Body Systems (includes tables)

**Supplemental Terms**

Body Planes and Cavities (includes tables)  
Miscellaneous Body Structures (includes tables)  
Cells, Tissues, and Organs (includes tables)  
Body Positions and Positional Terms (includes tables)  
Abbreviations (includes tables)

**Interactive:**     Seven quizzes  
                      Ten graphics  
                      11 audio pronunciation prompts

## UNIT 3: INTRODUCTION TO MAJOR MEDICAL SPECIALTIES

### CONTENT

*Introduction to Major Medical Specialties*  
*Introduction to Types of Diseases*  
*Pathogens and Infective Agents*  
*Medical Examination Procedures*  
*Signs, Symptoms, and Diagnostic Procedures*  
*Common Medical Tests*  
*Common Surgeries*  
*Word Parts*  
*Supplemental Terms*

### INTRODUCTION TO MAJOR MEDICAL SPECIALTIES

The term medicine has several meanings, including “a drug” or “a remedy for illness.” A second meaning of medicine is “the art and science of diagnosis, treatment, and prevention of disease.” In order to qualify as a doctor, physicians must undergo a number of years of general training that provides expertise across all body systems. Some physicians take further education in order to specialize in particular body systems. This involves several additional years of study.

There are additional specialty areas which are not included in this curriculum. For instance, some physicians specialize in sports medicine, which involves the prevention, diagnosis, and treatment of sports-related injuries. Sports medicine specialists are often assisted by a physical therapist. Physicians who specialize in the care of patients in intensive care are called intensivists. The intensive care unit (ICU) is a place in the hospital that contains sophisticated monitoring devices and equipment for patients requiring close monitoring and care by specially trained personnel.

Preventive medicine is the branch of medicine involving the prevention of disease and methods for increasing the abilities of the patient and community to resist disease and prolong life. A physician or scientist who studies the incidence, prevalence, spread, prevention, and control of disease in a community or a specific group of individuals is an epidemiologist. An epidemic is a disease that attacks several people in a region at the same time. In a hospital, physicians who specialize in epidemiology may have the responsibility of directing infection control programs. A specialist in forensic medicine deals with the legal aspects of health care; while aerospace medicine is concerned with the effects of living and working in an artificial environment beyond the earth’s atmosphere and the forces of gravity.

### OBJECTIVES

*After completing this Unit, you will be able to:*

1. List medical specialties
2. List the major categories of diseases
3. List and define the major manifestations of disease
4. Compare the common types of infectious organisms
5. Describe the common responses to disease
6. Explain the difference between signs and symptoms
7. List the vital signs and the four basic examination procedures
8. List the main components of patient histories
9. Name and describe nine imaging techniques
10. Name and describe possible forms of treatment
11. Define basic terms pertaining to medical examination, diagnosis, and treatment
12. Identify and use word parts pertaining to diseases
13. Identify and use the roots and suffixes pertaining to symptoms, diagnosis, and surgery
14. Interpret abbreviations used in diagnosis and treatment

## KEY CONCEPTS COVERED IN THIS UNIT

This Unit will introduce you to the most common medical specialties. Some medical specialties have further sub-specialties; for instance, a gastroenterologist is an expert in the entire digestive system, however, some gastroenterologists might specialize in particular sections—for instance, proctology.

Unit three also introduces you to classifications of illness and disease; medical examination procedures; common medical tests; and, common surgeries.

## SYLLABUS

### The Primary Medical Specialties

Anaesthesiology  
 Cardiology  
 Dermatology  
 Emergency Medicine  
 Endocrinology  
 Family Practice  
 Gastroenterology  
 Gerontology  
 Obstetrics (OB)  
 Gynecology (GYN)  
 Hematology  
 Immunology  
 Infectious Diseases  
 Internal Medicine  
 Neonatology  
 Neurology  
 Oncology  
 Ophthalmology  
 Orthopedics  
 Otolaryngology (ear, nose and throat – ENT)  
 Pathology  
 Pediatrics  
 Plastic Surgery  
 Psychiatry  
 Pulmonology  
 Radiology  
 Rheumatology (Immunology)  
 Rhinology  
 Surgery  
 Urology

### Introduction to the Seven Principal Types of Diseases

Infectious Diseases  
 Degenerative Diseases  
 Neoplastic Diseases  
 Immune Disorders  
 Metabolic Disorders  
 Hormonal Disorders  
 Mental and Emotional Disorders

### Pathogens and Infective Agents

**Signs and Symptoms in Diagnostic Procedures**

Acute Versus Chronic Illness

Signs Versus Symptoms

**Pain Evaluation**

Location of the Pain

Quality of the Pain

Intensity of the Pain

Degree of Impairment

Pattern, Duration, and Frequency of the Pain

Moderating Factors

Associated Symptoms

**Common Pain Descriptors used by Patients**

**The Body's Response to Disease**

**Diagnosis through Physical Examination**

**Four Techniques to Evaluate Health Status**

**Understanding the Three Vital Signs**

**The 80 Most Commonly Used Diagnostic Tests and Procedures**

**Common Medical Treatments**

**Surgery**

The Four Primary Reasons for Surgical Interventions

The Six Most Common Surgical Procedures

**Word Parts**

Combining Forms for Medical Specialties and Practice (includes tables)

Suffixes for Medical Specialties and Practice (includes tables)

Combining Forms for Signs of Disease (includes tables)

Prefixes for Signs of Disease (includes tables)

Suffixes for Signs of Disease (includes tables)

Suffixes for Symptoms of Disease (includes tables)

Combining Forms for Medical Tests and Instruments (includes tables)

Prefixes for Medical Tests and Instruments (includes tables)

Suffixes for Medical Tests and Instruments (includes tables)

Combining Forms for Disease-Causing Agents (includes tables)

Combining Forms for Cancer (includes tables)

Suffixes for Cancer (includes tables)

Suffixes for Surgical and Other Treatments (includes tables)

Combining Forms for Drugs (includes tables)

Suffixes for Drugs (includes tables)

Prefixes for Disease Descriptors (includes tables)

Suffixes for Disease Descriptors (includes tables)

**Supplemental Terms**

Symptoms and Signs of Disease (includes tables)

Diseases and Disorders (includes tables)

Diagnosis, Treatments, Procedures, and Devices (includes tables)

Additional Terms (includes tables)

Abbreviations (includes tables)

**Interactive:**

29 quizzes

Four graphics

19 audio pronunciation prompts

**UNIT 4: INTRODUCTION TO BODY FLUIDS, LYMPHATIC SYSTEM, AND IMMUNITY****CONTENT**

*Introduction to Body Fluids*  
*Introduction to Blood*  
*Blood Components*  
*Introduction to Blood Cells*  
*Blood Types*  
*The Lymphatic System*  
*Organ and Tissue Components of the Lymphatic System*  
*Principal Lymphocytes and Other Lymphatic Agents*  
*Diseases and Disorders of the Blood, Lymphatic, and Immune Systems*  
*Immunodeficiency Disorders*  
*Autoimmune Disorders*  
*Autoinflammatory Disorders*  
*Tests and Treatments*  
*Word Parts*  
*Supplemental Terms*

**INTRODUCTION TO BODY FLUIDS, LYMPHATIC SYSTEM, AND IMMUNITY**

In the human body, fluids constitute more than 60% of an adult's weight under normal conditions. These fluids are vital in the transport of nutrients to all cells and the removal of wastes from the body. Fluid balance is maintained through intake and output of water.

Water (*hydr/o*) leaves the body by way of urine (*ur/o*), feces, sweat (*hidr/o*), tears (*lacrim/o*), and other fluid discharges; some examples of these are pus (*py/o*), sputum, mucus (*muc/o*), and saliva (*sial/o*).

Blood (*hem/o*, *hemat/o*) and lymph (*lymph/o*), two of the body's main fluids, are circulated through two separate but interconnected networks: the lymphatic system (lymph), and the circulatory system (blood).

Fluids are not distributed evenly throughout the body. They move back and forth between compartments that are separated by cell (*cyt/o*) membranes. Body fluids are found either within the cells (*intracellular*) or outside the cells (*extracellular*). Approximately one fourth of extracellular fluid is plasma (*plasm/o*), the fluid part of the blood. Another type of fluid, called interstitial fluid, fills the spaces between most cells of the body. Abnormal accumulation of fluid in the extracellular compartments results in a condition called edema. Intra-, extra-, and interstitial fluids are important from a pharmacological point of view. For instance, the drug, acetaminophen, is transported through the body via extracellular fluids, whereas warfarin is carried in the intracellular fluid within a cell.

The human body has two circulatory systems. These are the cardiovascular system, which circulates blood through the body, and the lymphatic system, which passively circulates lymph through a complex network of vessels and lymph nodes. For the purposes of this section, we will deal with blood and lymph under separate headings.

**OBJECTIVES**

*After completing this Unit, you will be able to:*

1. Name the various fluids in the body and explain their importance
2. Describe the functions of the three types of blood cells
3. Describe the composition of blood plasma
4. Explain the basis of blood types
5. List and describe the major disorders of the blood

6. Describe the tests used to study blood
7. Define terms related to body fluids and blood disorders
8. Define common medical terms used for blood
9. Define common medical terms used for symptoms, signs, diseases, disorders, procedures, treatments, and devices for fluid systems
10. Identify and use word roots pertaining to the blood
11. Identify the organs of the lymphatic system and describe their structure and function
12. Define common medical terms used for the lymphatic system
13. Describe the main disorders that affect the lymphatic system
14. Explain surgical and therapeutic interventions for the lymphatic system
15. Identify and use the word roots pertaining to the lymphatic system
16. Define immunity and list the possible sources of immunity
17. Describe the most common autoimmune disorders and their signs and symptoms

### **KEY CONCEPTS COVERED IN THIS UNIT**

In this Unit, we will assemble the word parts covered earlier in the curriculum to form medical terms. We will also present some additional key terms that are not built from word parts. The terms are listed alphabetically within categorical groupings at the end of the Unit.

### **SYLLABUS**

#### **Introduction to Body Fluids**

##### **Introduction to Blood**

The Three Principal Cell Types in Blood

Erythrocytes

Leukocytes

Thrombocytes (Platelets)

##### **Blood Components**

Blood Plasma

Blood Cells

Erythrocytes

Leukocytes

The Two Principal Kinds of Lymphocytes

The Three Granular Leukocytes

Neutrophils

Eosinophils

Basophils

The Two Agranular Leukocytes

Monocytes

Lymphocytes (T and B Cells)

The Action of White Blood Cells

Phagocytes and Phagocytosis

Platelets (Thrombocytes)

The Formed Elements of Blood

##### **Blood Types**

Blood Typing For Transfusions

Universal Donor

Universal Recipient

## **The Lymphatic System**

### **Organ and Tissue Components of the Lymphatic System**

Components of Lymph and their Actions

- Lymphatic Capillaries
- Lymphatic Vessels
- Lymph Nodes
- Peyer's Patches
- Thymus Gland
- Tonsils
- Spleen
- Vermiform Appendix

### **Principal Lymphocytes and Other Lymphatic Agents**

#### **Immunity**

- The Body's Lines of Defense
- Innate Immunity
- Acquired Immunity
- Active and Passive Immunity
- Immunization

#### **Immune Tolerance**

### **Diseases and Disorders of the Blood, Lymphatic, and Immune Systems**

#### **Anemias**

- The Nine Principal Kinds of Anemia

#### **Coagulation Disorders**

#### **Neoplastic Disorders**

- The Leukemias
- The Two Main Categories of Leukemia
- The Acute Leukemias
- The Chronic Leukemias
- Additional Neoplastic Diseases

#### **Hypersensitivity**

#### **Immunodeficiency Disorders**

#### **Autoimmune and Autoimmune-Related Disorders**

#### **Autoinflammatory Disorders**

#### **Tests and Treatments**

#### **Word Parts**

- Combining Forms for Body Fluids (includes tables)
- Combining Forms for Blood and Lymph System (includes tables)
- Combining Forms for the Lymphatic System (includes tables)
- Prefixes (includes tables)
- Suffixes (includes tables)

## Supplemental Terms

Anatomy and Physiology of Fluid, Blood, and Lymph Systems (includes tables)

Symptoms and Signs of the Blood and Lymph Systems (includes tables)

Diseases and Disorders of the Blood and Lymph Systems (includes tables)

Tests, Treatments, Procedures, and Devices for Disorders of the Blood and Lymph Systems (includes tables)

Immunity Terminology (includes tables)

Pharmacology (includes tables)

Abbreviations (includes tables)

**Interactive:** 23 quizzes  
One review test  
12 graphics  
45 audio pronunciation prompts

## UNIT 5: INTRODUCTION TO THE CARDIOVASCULAR SYSTEM

### CONTENT

*Introduction to the Cardiovascular System*  
*Structure of the Cardiovascular System: Anatomy, Physiology, and Function*  
*The Heart*  
*The Vascular System*  
*Disorders of the Cardiovascular System*  
*Signs and Symptoms of Cardiovascular System Disorders*  
*Diagnostic Tests*  
*Surgical and Therapeutic Interventions*  
*Surgery and Common Surgical Procedures*  
*Word Parts*  
*Supplemental Terms*

### INTRODUCTION TO THE CARDIOVASCULAR SYSTEM

Body cells must have a constant supply of food, oxygen (ox/o), and other substances to function properly. Blood circulates through the heart and blood vessels, carrying oxygen, nutrients, vitamins, antibodies, and other substances. The cardiovascular system supplies body cells with these needed substances, transports waste products for disposal, maintains the acid-base balance of the body, prevents hemorrhage through blood clotting, protects against disease, and helps regulate body temperature.

The circulatory system consists of the cardiovascular system (heart and blood vessels) and the lymphatic system (structures involved in the conveyance of the lymph). In Unit 4, we looked at the lymphatic system.

The circulatory system cooperates with other body systems to maintain homeostasis, or equilibrium of the internal environment of the body.

The cardiovascular system actively circulates blood throughout the body. Blood is pushed along by contractions of the heart and is transported through blood vessels. The continuous flow of oxygenated blood is vital to a body's functioning. If the supply of oxygen and nutrients or the removal of waste materials is reduced or cut off, even for a few minutes, the affected cells may die. Thus, a disease or disorder of the cardiovascular system can pose life-threatening risks, many of which you will learn about in this Unit.

### OBJECTIVES

*After completing this Unit, you will be able to:*

1. Identify the organs of the cardiovascular system and describe their structure and function
2. Trace the path of blood flow through the heart
3. Trace the path of electrical conduction through the heart
4. Differentiate among arteries, arterioles, capillaries, venules, and veins
5. Describe the main disorders that affect the cardiovascular system
6. Match surgical and therapeutic interventions for the cardiovascular system
7. Identify the components of an electrocardiogram
8. Explain blood pressure and describe how blood pressure is measured
9. Define common medical terms used for the cardiovascular system
10. Explain the meanings of terms for selected structures of the cardiovascular system
11. Write the names of the diagnostic terms and pathologies related to the cardiovascular system
12. Identify and use the roots pertaining to the cardiovascular system
13. Define medical terms pertaining to the cardiovascular system
14. Define the word parts used to create medical terms for the cardiovascular system
15. Break down and define common medical terms used for symptoms, diseases, disorders, diagnostic procedures, treatments, and devices for the cardiovascular system

**KEY CONCEPTS COVERED IN THIS UNIT**

This Unit will introduce you to the cardiovascular system by first looking at the heart's anatomy, function and its most common disorders. It will then examine the vascular system that supports circulation and heart function, as well as examining its most common disorders. Both cardiac and vascular system vocabulary will be studied.

**SYLLABUS****The Structure of the Cardiovascular System****The Heart**

- The Four Membranes of the Heart
- The Heart's Chambers
- The Movement of Blood through the Heart's Chambers
- The Heart's Four Valves and Their Functions
- Heart Sounds
- The Heartbeat/Cardiac Cycle
- The Heart's Electrical Conduction System
  - Sinoatrial (SA) Node
  - Atrioventricular (AV) Node
  - AV Bundle
  - Left and Right Bundle Branches
  - Purkinje Fibres

**The Vascular System****Components of the Vascular System**

- Arteries
- Arterioles
- Capillaries
- Venules
- Veins

**The Pulmonary Trunk****Blood Pressure (BP)****The Ten Most Common Disorders of the Cardiovascular System****The Three Types of Stroke****Congenital Heart Disease****Heart Disease**

- Congestive Heart Failure (CHF)
- Coronary Artery Disease (CAD)
- Coronary Heart Disease (CHD)
- Coronary Occlusion/Thrombosis
- Endocarditis
- Fibrillation
- Heart Block
- Heart Failure
- Heart Murmur
- Hypertension
- Hypotension
- Myocardial Infarction (MI)

### **Disorders of the Veins**

Hyperlipidemia

### **Diagnostic Tests**

The 13 Most Common Diagnostic Tests

### **Surgical and Therapeutic Interventions**

#### **Word Parts**

Combining Forms for the Cardiovascular System (includes tables)

Prefixes Common to the Cardiovascular System (includes tables)

Suffixes Common to the Cardiovascular System (includes tables)

#### **Supplemental Terms**

Cardiovascular System Anatomy and Physiology (includes tables)

Circulatory System Tests and Treatments (includes tables)

Cardiac Symptoms and Signs (includes tables)

Circulatory System Diseases and Disorders (includes tables)

Pharmacology (includes tables)

Abbreviations (includes tables)

**Interactive:** 17 quizzes  
50 graphics  
23 audio pronunciation prompts

## UNIT 6: INTRODUCTION TO THE RESPIRATORY SYSTEM

### CONTENT

*Introduction to the Respiratory System*  
*Internal and External Respiration*  
*Anatomy and Physiology of the Respiratory System*  
*The Upper and Lower Respiratory Systems*  
*The Conducting Portion of the Upper Respiratory System*  
*The Conducting Portion of the Lower Respiratory System*  
*Diseases and Disorders of the Respiratory System*  
*Diagnostic Tests*  
*Surgical and Therapeutic Interventions*  
*Word Parts*  
*Supplemental Terms*

### INTRODUCTION TO THE RESPIRATORY SYSTEM

Respiration is the combined activity of various processes that supply oxygen to all body cells and remove carbon dioxide. Breathing is external respiration, the absorption of oxygen (*oxy/o*) from the air and the removal of carbon dioxide by the lungs. Breathing is often called pulmonary ventilation or simply ventilation. The respiratory system consists of a series of passages that bring outside air into contact with special structures that lie close to blood capillaries. Oxygen and carbon dioxide are exchanged at the interface between these special structures and the capillaries. This exchange of gases is part of homeostasis, a state of equilibrium of the internal environment of the body. Breathing consists of the inspiration of air into and the expiration of air out of the lungs. Inspiration is also called inhalation, and expiration is called exhalation.

Because oxygen and carbon dioxide must be carried to and from the cells in the blood, the respiratory system works closely with the cardiovascular system to accomplish gas exchange. This activity has two phases:

1. *External gas exchange occurs between the outside atmosphere and the blood, at the capillary/alveolar junction*
2. *Internal gas exchange occurs between the oxygenated blood and the tissues*

External exchange takes place in the lungs, located in the thoracic cavity. The remainder of the respiratory tract consists of a series of passageways that conduct air to and from the lungs. No gas exchange occurs in these regions. The respiratory system brings oxygen into the bloodstream, which then carries it to all body cells. The organs of the respiratory system include the lungs and the numerous organs between the nose and lungs that carry inhaled oxygen and exhaled carbon dioxide.

### OBJECTIVES

*After completing this Unit, you will be able to:*

1. Identify the organs of the respiratory system and describe their structure and function
2. Explain the roles of oxygen and carbon dioxide in the body and describe how each is carried in the blood
3. Describe the mechanism of breathing, including the roles of the diaphragm and phrenic nerve
4. Discuss the major disorders of the respiratory system
5. Define common medical terms used for the respiratory system
6. Define word parts used to create medical terms for the respiratory system
7. Define medical terms related to breathing and diseases of the respiratory system
8. Write the names of the diagnostic terms and pathologies related to the respiratory system
9. Define common medical terms used for symptoms, diseases, disorders, procedures, treatments, and devices for the respiratory system
10. Describe surgical and therapeutic interventions for the respiratory system

## KEY CONCEPTS COVERED IN THIS UNIT

The primary function of the respiratory system is to supply the blood with oxygen in order for the blood to deliver oxygen to all parts of the body. The respiratory system does this through breathing. When we breathe, we inhale oxygen and exhale carbon dioxide. This exchange of gases is the respiratory system's means of getting oxygen to the blood.

## SYLLABUS

### External, Internal and Cellular Respiration

#### Anatomy and Physiology of the Respiratory System

The Three Stages of Ventilation

The Upper and Lower Respiratory Systems

The Conducting Portion of the Upper Respiratory System

The Nose

The Sinuses or Nasal Cavity

The Pharynx

The Larynx

The Trachea

The Conducting Portion of the Lower Respiratory System

The Bronchial System

The Alveoli

The Lungs

#### Diseases and Disorders of the Respiratory System

Acidosis

Dyspnea

Bradypnea

Infections

Pleural Disorders

Neoplasms

Other Disorders

#### The Eight Most Common Methods for Diagnosing Respiratory Disorders

#### Surgical and Therapeutic Interventions

#### Word Parts

Combining Forms for the Respiratory System (includes tables)

Prefixes That Apply to the Respiratory System (includes tables)

Suffixes That Apply to the Respiratory System (includes tables)

#### Supplemental Terms

Anatomy and Physiology of the Respiratory System (includes tables)

Symptoms and Signs Related to the Respiratory System (includes tables)

Diseases and Disorders of the Respiratory System (includes tables)

Treatments, Procedures, and Devices Related to the Respiratory System (includes tables)

Pharmacology (includes tables)

Abbreviations (includes tables)

**Interactive:** 26 quizzes  
31 graphics  
25 audio pronunciation prompts

## UNIT 7: INTRODUCTION TO THE GASTROINTESTINAL SYSTEM

### CONTENT

*Introduction to the Gastrointestinal System*  
*The Six Primary Metabolic Processes*  
*The Principal Structures of the Gastrointestinal Tract*  
*The Mouth, Pharynx and Esophagus*  
*The Stomach*  
*The Small Intestine*  
*The Large Intestine (Colon)*  
*The Accessory Organs of Digestion*  
*The Salivary Glands, Liver, Gallbladder and Pancreas*  
*Nutrient Breakdown through Enzymes*  
*Digestive Organ Disease*  
*Diagnostic Procedures*  
*Surgical and Therapeutic Interventions*  
*Word Parts*  
*Supplemental Terms*

### INTRODUCTION TO THE GASTROINTESTINAL SYSTEM

The main purpose of the gastrointestinal system is to prepare food nutrients for intake by body cells. Nutrients must be broken down by mechanical and chemical means into molecules that are small enough to be absorbed into the circulation. Within cells, the nutrients are used for growth, energy, and rebuilding vital cell components. When the body digests food, it divides and dissolves it into simpler parts which provide the fuel that empowers other body functions.

In addition to the main function of digestion, the gastrointestinal tract (also called the alimentary tract) performs additional functions. Each of these functions is important in the processing of food; and each function is performed by a specialized organ that is part of the gastrointestinal system. All of these processes result in what we generally refer to as metabolism.

The chemical breakdown of food begins in the mouth and is completed in the stomach (*gastr/o*). Absorption takes place when the digested food molecules pass through the lining of the small intestine (*enter/o*) into the blood or lymph capillaries. The final activity, elimination, is the removal of undigested food particles. The elimination of wastes through the anus in the form of feces is called defecation.

### OBJECTIVES

After completing this Unit, you will be able to:

1. Identify the organs of the gastrointestinal system and describe their structure and function
2. Define common medical terms used for the gastrointestinal system
3. Label a diagram of the gastrointestinal tract, and describe the function of each part
4. Label a diagram of the accessory organs, and explain the role of each part
5. Describe the major disorders of the gastrointestinal system
6. Write terms for selected structures of the gastrointestinal system
7. Write the names of the diagnostic terms and pathologies related to the gastrointestinal system
8. Explain the surgical and therapeutic interventions for the gastrointestinal system
9. Define word parts used to create medical terms for the gastrointestinal system
10. Define common medical terms used for symptoms, diseases, disorders, procedures, treatments, and devices for the gastrointestinal system
11. Interpret abbreviations used in referring to the gastrointestinal system

## KEY CONCEPTS COVERED IN THIS UNIT

This Unit will look at the anatomy and physiology of the primary and accessory organs of digestion along with their most common disorders and treatments.

## SYLLABUS

### Introduction to the Gastrointestinal (GI) System

#### The Six Primary Metabolic Processes of the Gastrointestinal system

#### The Principal Structures of the Gastrointestinal Tract

The Structures of the Upper Gastrointestinal Tract

- Mouth
- Pharynx
- Esophagus
- Stomach

#### The Functions of the Mouth, Pharynx and Esophagus and Stomach in Digestion

#### The Structures of the Lower Gastrointestinal Tract

- Small Intestines
- Large Intestines (Colon and Rectum)

#### The Small Intestine

#### The Four Segments of the Colon

- Ascending Colon
- Transverse Colon
- Descending Colon
- Sigmoid Colon

#### The Accessory Organs of Digestion

#### Nutrient Breakdown through Enzymes

The Enzymes that Break Down Carbohydrates, Proteins, and Lipids

#### The 13 Most Common Digestive Organ Diseases

#### Accessory Organ Diseases

The 18 Most Common Accessory Organ Disorders

#### Surgical and Therapeutic Interventions

Common Medical Procedures

- Appendectomy
- Cholecystectomy
- Colostomy
- Gastrectomy
- Gastrostomy
- Hemorrhoidectomy
- Ileostomy
- Laparoscopy
- Liver Biopsy
- Pancreatolithectomy
- Vagotomy

**Word Parts**

Combining Forms for the Gastrointestinal Tract (Except the Mouth) (includes tables)

Combining Forms for the Accessory Organs of Digestion and their Products, Processes and Disorders (includes tables)

Combining Forms for the Mouth (includes tables)

Prefixes Common to the Gastrointestinal Tract (includes tables)

Suffixes Common to the Gastrointestinal Tract (includes tables)

**Supplementa Terms**

Anatomy and Physiology (includes tables)

Diseases and Disorders (includes tables)

Symptoms and Signs (includes tables)

Treatments, Procedures, and Devices (includes tables)

Pharmacology (includes tables)

Abbreviations (includes tables)

**Interactive:**     22 quizzes  
                      48 graphics  
                      28 audio pronunciation prompts

## UNIT 8: INTRODUCTION TO THE ENDOCRINE SYSTEM

### CONTENT

*Introduction to the Endocrine System*  
*The Structures and Functions of the Endocrine System*  
*The Endocrine Hormones*  
*The Pituitary Gland*  
*The Thyroid and Parathyroid Glands*  
*The Adrenal Glands*  
*The Pancreas*  
*The Pineal Gland*  
*The Thymus Gland*  
*The Gonads*  
*Other Organs that Produce Hormones*  
*Disorders of Select Endocrine System Glands*  
*Diagnosing and Treating Endocrine Disorders*  
*Word Parts*  
*Supplemental Terms*

### INTRODUCTION TO THE ENDOCRINE SYSTEM

The endocrine system coordinates with the nervous system to regulate body activities. This is accomplished by endocrine hormones that affect various processes throughout the body, such as growth, metabolism, and secretions from other organs. Dysfunctional hormone production may involve either a deficiency, *hyposecretion*, or an excess, *hypersecretion*.

Because hormones are released into the blood, the endocrine glands that secrete hormones are known as the ductless glands (*aden/o* means “gland”), as compared to glands that secrete through ducts, such as sweat glands and digestive glands. Despite the fact that hormones circulating in the blood reach all parts of the body, only certain tissues respond to a specific hormone. The tissue that is influenced by a specific hormone is called the *target tissue*. The cells in a target tissue have specific receptors on their membranes or within the cells to which the hormone attaches, enabling it to act.

Like the nervous system, the endocrine system provides a method of control to keep the body functioning despite changing conditions in the environment. Thus, the primary role of the endocrine system is to achieve homeostasis, a state in which the body’s equilibrium is maintained. When the endocrine system becomes deficient due to disease, the result is a homeostatic imbalance that often affects overall health.

### OBJECTIVES

*After completing this Unit, you will be able to:*

1. Identify the major organs of the endocrine system and describe their structure and function
2. Describe hormones and their actions
3. Compare steroid and amino acid hormones
4. Describe the main disorders of the endocrine system
5. Write the names of pathologies related to the endocrine system
6. List surgical and therapeutic interventions for the endocrine system
7. Interpret abbreviations used in endocrinology
8. Define the word parts used to create terms for the endocrine system
9. Build medical terms from the word parts associated with the endocrine system
10. Break down and define common medical terms used for symptoms, diseases, disorders, procedures, treatments, and devices associated with the endocrine system

## KEY CONCEPTS COVERED IN THIS UNIT

This Unit will introduce you to the endocrine system. The endocrine system is comprised of a group of eight ductless glands that secrete hormones via the blood: the master gland is the pituitary, which is located in the brain and which regulates many of the body's other glands; the others are: the thyroid, the parathyroid(s), the thymus gland, the pancreatic islets of Langerhans, the pineal gland, the adrenal glands and the male and female gonads. Some hormones are made of steroids (from fats) and the others are made up of amino acids. Some hormones are secreted in response to stimuli from the nervous system (i.e., adrenaline and noradrenaline).

## SYLLABUS

### Structures and Functions of the Endocrine System

#### Endocrine Hormone Pathways

Nervous System Mediated Hormone  
Pituitary Mediated Hormones

### The Nine Glands of the Endocrine System

#### The Endocrine Hormones

The Two Categories of Hormones  
Steroid Hormones  
Amino Acid Hormones

#### The Endocrine Glands and their Hormones

The 23 Principal Endocrine Hormones and Their Functions  
The Pituitary Gland (Nine Hormones)  
Thyroid and Parathyroid Glands (Three Hormones)  
The Adrenal Glands (Four Hormones)  
The Pancreas (Two Hormones)  
The Pineal Gland (One Hormone)  
The Thymus Gland (One Hormone)  
The Gonads (Three Hormones)  
Other Organs That Produce Hormones

#### Disorders of Select Endocrine System Glands

Pituitary Disorders  
Pancreatic Islet Disorders  
Metabolic Syndrome  
Types of Diabetes Mellitus  
Type 1 Diabetes Mellitus (T1DM)  
Type 2 Diabetes Mellitus (T2DM)  
Comparison of Diabetes Insipidus with Diabetes Mellitus  
Monitoring and Treatment of Diabetes  
Thyroid Disorders  
Parathyroid Gland Disorders

#### Diagnosing and Treating Endocrine Disorders

Surgical and Therapeutic Interventions

#### Word Parts

Combining Forms Pertaining to the Endocrine System (includes tables)  
Prefixes for the Endocrine System (includes tables)  
Suffixes for the Endocrine System (includes tables)

**Supplemental Terms**

Anatomy and Physiology (includes tables)

Signs, Symptoms, and Disorders (includes tables)

Tests and Treatments (includes tables)

Pharmacology (includes tables)

Abbreviations (includes tables)

**Interactive:** 29 quizzes  
15 graphics  
Nine audio pronunciation prompts

## UNIT 9: INTRODUCTION TO THE INTEGUMENTARY SYSTEM

### CONTENT

*Introduction to the Integumentary System*  
*The Anatomy of the Skin*  
*The Epidermis, Dermis, and Subcutaneous Tissue*  
*The Accessory Organs of the Skin*  
*Hair, Nails, Sebaceous, and Sweat Glands, and Sensory Receptors*  
*Diseases, Disorders and Diagnostic Tests of the Integumentary System*  
*Surgical and Medical Treatments*  
*Word Parts*  
*Supplemental Terms*

### INTRODUCTION TO THE INTEGUMENTARY SYSTEM

The word integumentary comes from the Latin word *tegere*, which means “to cover.” The integumentary system includes the body’s largest organ: its skin. The integumentary system also includes smaller accessory organs and other structures that lie within or extend through the skin, such as hair and hair follicles, nails, oil glands, sweat glands, and sensory receptors. Medical terminology related to the integumentary system is extensive, largely due to the fact that the skin and its accessory glands are engaged in a constant battle with infectious agents.

The word roots *derm/o* and *dermat/o* mean “skin” and are used as an ending in words pertaining to the skin, such as *xeroderma* (*xer/o* means “dry”) and *scleroderma* (*scler/o* means “hardened”). The adjective, *cutaneous*, refers to the skin and is derived from the Latin word *cutis* (*cutane/o*).

The integumentary system can experience many types of challenges to its homeostasis. As the outermost organ of the body, the skin is more subject to extremes in temperature, damage by injury and damage by infections than any other organ. This body-covering system protects against infection, dehydration, ultraviolet radiation, and injury. Many types of inherited and acquired diseases may also afflict the skin. In many cases, the skin is the first part of the body to display symptoms of an internal condition. The protection that the skin provides to overall health is significant: a loss of skin, such as that which occurs from a serious burn, can lead to death due to dehydration and infection.

Like the eyes, the skin is a readily visible reflection of one’s health. Its color, texture, and resilience reveal much, as does the condition of the hair and nails. Extensive damage to the skin, can result in a host of dangerous complications.

The skin helps to regulate temperature by evaporation of sweat and by changes in the diameter of surface blood vessels, which control how much heat is lost to the environment. The skin also contains receptors for the sensory perceptions of touch, temperature, pressure, and pain. Medication can be delivered through the skin from patches. The sweat glands assist in temperature regulation when it is hot outside, as well as helping to remove waste materials. Meanwhile, sensory receptors in the skin provide you with valuable information about the outside environment, such as heat, cold, touch, pressure, and pain.

### OBJECTIVES

*After completing this Unit, you will be able to:*

1. Identify the major organs of the integumentary system and describe their structure and function
2. Compare the epidermis, dermis, and subcutaneous tissue
3. Describe the roles of keratin and melanin in the skin
4. Describe the glands in the skin
5. Describe the structure of hair and nails

6. Describe the main disorders that affect the skin
7. Provide diagnostic terms and pathologies related to the integumentary system
8. Describe surgical and therapeutic interventions for the integumentary system
9. Recognize the meanings of word parts and use them to build and analyze terms
10. Break down and define common medical terms used for symptoms, diseases, disorders, procedures, treatments, and devices associated with the integumentary system

### **KEY CONCEPTS COVERED IN THIS UNIT**

In this Unit, we will assemble word parts to form medical terms related to the integumentary system. We will also present some additional key terms that are not built from word parts. These terms are listed alphabetically within categorical groupings.

### **SYLLABUS**

#### **The Four Principal Functions of the Skin**

##### **The Anatomy of the Skin**

The Three Layers of Skin and their Key Properties

The Dermis

The Epidermis

The Subcutaneous Tissue

##### **The Accessory Organs of the Skin: Hair, Nails, Sebaceous Glands, Sweat Glands and Sensory Receptors**

The Five Accessory Skin Structures

Hair

Nails

Sebaceous Glands

Sweat Glands

Sensory Receptors

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

Disorders of the Integumentary System

Primary Skin Lesions

Secondary Lesions

Injuries to the Skin

The Five Kinds of Skin Wounds

Burn Categorization System for Determining Degree of Tissue Destruction

Allergic and Immune-Mediated Skin Diseases

Infectious Diseases of the Skin and their Manifestations

Ischemic Diseases of the Skin

Dysplasias

Miscellaneous Skin Diseases

Vasculitis, Purpura, and Other Vascular Diseases

##### **Testing and Diagnosing Skin Disorders**

##### **Surgical and Therapeutic Interventions**

Topical Medications

Systemic Drugs

**Word Parts**

Combining Forms Pertaining to the Skin and Accessory Organs and Conditions (includes tables)  
Prefixes Pertaining to the Skin and the Integumentary System (includes tables)  
Suffixes Pertaining to the Skin and the Integumentary System (includes tables)

**Supplementary Terms**

The Skin's Anatomy and Physiology (includes tables)  
Diseases and Disorders (includes tables)  
Treatments, Procedures, and Devices (includes tables)  
Symptoms and Signs (includes tables)  
Pharmacology (includes tables)  
Abbreviations (includes tables)

**Interactive:** 23 quizzes  
43 graphics  
28 audio pronunciation prompts

## UNIT 10: INTRODUCTION TO THE MUSCULOSKELETAL SYSTEM

### CONTENT

*Introduction to the Musculoskeletal System*  
*The Structure and Function of the Skeletal System*  
*Divisions of the Skeleton*  
*Disorders of the Musculoskeletal System*  
*Diagnosis and Treatments of Bone and Associated Tissue Illnesses*  
*Introduction to Muscles*  
*The Structure and Function of Muscles*  
*Types of Muscles*  
*Diagnosis and Treatment of Muscular Disorders*  
*Word Parts*  
*Supplemental Terms*

### INTRODUCTION TO THE MUSCULOSKELETAL SYSTEM

The skeletal and muscular systems are combined in this Unit because the medical terminology of the two systems is associated very closely. The bones (*oste/o*) and muscles (*my/o*) work hand in hand to support the body and produce body movement. Indeed, nearly every one of the 206 bones in the body is attached to muscles. As a result, the medical terminology of bones and muscles is closely related, and medical treatment is usually provided in a clinical setting that addresses both systems. When the two systems are combined in a medical treatment program, they are usually referred to as the musculoskeletal system.

The musculoskeletal system provides protection, support, and movement for the body. Bones store mineral salts and are important in the production of blood. They provide storage of fat (*lip/o*) in the bone marrow (*myel/o*), and storage and release of minerals, especially calcium (*calc/i*). Muscles move an organ or part of the body by contracting and relaxing. Muscles are closely related to the nervous system because nerve impulses stimulate the muscles to contract. The musculoskeletal system is comprised of bones, joints (*arthr/o*), muscles, and supporting structures including fascia (*fasci/o*), tendons (*ten/o* or *tend/o*), and ligaments.

The muscular system includes all types of muscle. The skeletal system consists of the bones and cartilage (*chondr/o*) of the body, which collectively provide the supporting framework for the muscles and organs as well as places for the attachment of tendons, ligaments, and muscles. A good example of this is the knee (*gen/u*), the joint that connects the thigh bone (*femer/o*) with the lower leg.

The skeleton forms the framework of the body, protects vital organs, and works with the muscular system to produce movement at the joints. The human adult skeleton is composed of 206 bones.

### OBJECTIVES

After completing this Unit, you will be able to:

1. Describe the functions of the musculoskeletal system
2. Compare the axial skeleton and the appendicular skeleton
3. Describe the structure of a long bone
4. Compare a suture, a symphysis, and a synovial joint
5. Describe the main disorders that affect the skeleton and joints
6. Describe the common methods used to diagnose and treat disorders of the skeleton
7. Interpret abbreviations used in relation to the skeleton
8. Describe the anatomy and function of smooth, cardiac, and skeletal muscles
9. Describe the main disorders that affect muscles
10. Describe the diagnostic terms and pathologies related to the musculoskeletal system

11. Define common medical terms used for symptoms, diseases, disorders, procedures, treatments, and devices for the skeletal and muscular systems
12. Identify and use roots pertaining to the musculoskeletal system
13. Construct terms from word parts associated with the skeletal and muscular systems

### **KEY CONCEPTS COVERED IN THIS UNIT**

Orthopedics is the branch of medicine involved in the prevention and correction of deformities or diseases of the musculoskeletal system, especially those of the bones, muscles, joints, ligaments, and tendons. Orthopedics was so named because the orthopedist originally aligned children's bones and corrected deformities. Today, however, an orthopedist specializes in disorders of the bones and associated structures in people of all ages. This section will explore the musculoskeletal system, its disorders and treatments.

### **SYLLABUS**

#### **Naming Bones, Joints, and Muscles**

#### **Structure and Function of the Skeletal System**

##### **The Structure of Long Bones**

##### **The Seven Principal Sections and Functions of Long Bones**

Diaphysis  
 Epiphyses  
 Periosteum  
 Medullary Cavity  
 Endosteum  
 Bone Matrix  
 Metaphysic (Epiphyseal Plate)

##### **Other Bones of the Body**

Flat Bones  
 Short Bones  
 Irregular Bones

##### **Divisions of the Skeleton**

The Three Parts of the Axial Skeleton  
 The Four Parts of the Appendicular Skeleton

##### **Bone Formation**

The Three Types of Bone Cells

##### **The Joints**

The Three Types of Joints and their Ranges of Motion

##### **Disorders of the Musculoskeletal System**

Disorders of the Bones, Joints, Ligaments, Tendons, and Cartilage  
 Skeletal Disorders and Spinal Deformities  
 The Three Kinds of Bone Fractures  
 Injuries to Bones, Joints, Tendons, and Ligaments  
 Metabolic Disturbances  
 Connective Tissue Disease and its Impact on Bones

## **Diagnosis and Treatments for Bone and Associated Tissue Illnesses**

Interventions Used To Reduce Fractures  
Surgical Interventions

## **Introduction to Muscles**

Muscles and Associated Structures  
Naming Of Muscles  
The Three Types of Muscle  
The Skeletal Muscles  
Muscle Action

## **Diagnosis and Treatment of Muscular Disorders**

Muscular Disorders

## **Word Parts**

Combining Forms for Bones and Joints (includes tables)  
Combining Forms Pertaining to Muscles and Soft Tissue (includes tables)  
Additional Combining Forms (includes tables)  
Prefixes (includes tables)  
Suffixes (includes tables)

## **Supplemental Terms**

Anatomy and Physiology (includes tables)  
Symptoms and Signs (includes tables)  
Diseases and Disorders (includes tables)  
Treatments, Procedures, and Devices (includes tables)  
Pharmacology (includes tables)  
Abbreviations (includes tables)

**Interactive:** 17 quizzes  
49 graphics  
15 audio pronunciation prompts

**UNIT 11: INTRODUCTION TO NEUROLOGY AND MENTAL HEALTH SYSTEMS****CONTENT**

*Introduction to Neurology and Mental Health Systems*  
*Structures and Organization of the Nervous System*  
*Organization of the Cells of the Nervous System*  
*Functional Organization of the Nervous System*  
*The Brain*  
*The Peripheral Nervous System and the Sense Organs*  
*Protecting the Brain*  
*The Spinal Cord*  
*The Autonomic Nervous System*  
*Signs, Symptoms, Disorders and Diagnostic Procedures*  
*Common Medical Tests*  
*Therapies and Common Surgeries*  
*Introduction to Psychological, and Behavioural Disorders*  
*Drug Treatments*  
*Word Parts*  
*Supplemental Terms*

**INTRODUCTION TO NEUROLOGY AND MENTAL HEALTH SYSTEMS**

Each body system has a specific function, yet all work together to sustain life. The nervous system serves as the control center and the body's central communications network. The nervous system stores and processes information and stimulates movement. Working with the endocrine system, the nervous system helps maintain homeostasis—an internal equilibrium within the body. Where the endocrine system performs its functions by circulating hormones, the nervous system functions by means of electric impulses and locally released chemicals called neurotransmitters. The nervous system influences other body systems; for example, damage to certain nerves may result in respiratory arrest.

Sensory receptors within the nervous system detect changes that occur inside and outside the body and convey this information to the brain. Some receptors monitor changes in the outside environment, such as room temperature, and other receptors monitor changes within the body, such as body temperature. The nervous system's integrative functions create sensations, produce thoughts and memory, and make decisions based on what is received from the sensory receptors. The nervous system also sends signals from the brain to muscles and glands to cause an effect. The part of the nervous system that is under voluntary control is called the somatic nervous system. The part of the nervous system that relates to involuntary or automatic body functions is called the autonomic nervous system.

The nervous system is comprised of the brain (*encephal/o, cerebr/o*), spinal cord (*myel/o*), and nerves (*neur/o*). Working together, these organs enable people to sense the world around them, integrate this information to form thoughts and memories, and control body movements and other internal functions. Because of the important roles performed by the nervous system, such as control and regulation of numerous body functions, nervous system diseases can have a profound effect on physical well-being and mental health.

The nervous system provides communication between its primary organ, the brain, and the distant parts of the body. The nervous system does all of this by way of electrochemical messages called nerve impulses. Nerve impulses travel along special routes, or nerves, at high speeds. As a whole, the nervous system is a complex group of organs and structures that extends throughout the body. In addition to the brain, its organs include the spinal cord and millions of nerves.

## OBJECTIVES

*After completing this Unit, you will be able to:*

1. Identify the major organs of the nervous system and describe their structure and function
2. Compare the sympathetic and parasympathetic systems
3. Describe how the central nervous system is protected
4. Describe the major disorders of the nervous system
5. List some common symptoms of neurologic disorders
6. Define the names of the diagnostic terms and pathologies related to the nervous system
7. Define common medical terms used for symptoms, diseases, disorders, procedures, treatments, and devices associated with the nervous system
8. Describe the surgical and therapeutic interventions for the nervous system
9. Identify and use word parts pertaining to the nervous system
10. Understand the meanings of nervous system word parts and use them to build and analyze terms
11. Describe the major psychological and behavioural disorders
12. Define the word parts used to create terms for mental health
13. Define common medical terms used for symptoms, diseases, disorders, procedures, treatments, and devices associated with mental health
14. Build medical terms from the word parts associated with mental health
15. Define diagnostic terms used for psychological and behavioural disorders
16. Describe therapeutic interventions for psychological and behavioural disorders

## KEY CONCEPTS COVERED IN THIS UNIT

The neurological, or nervous, system is closely involved with many body systems. Because brain function falls within the domain of the nervous system, mental health issues are often combined with neurological studies. Much of psychiatry has moved toward biological etiologies, which, again, supports the combining of the two medical specialties. In this Unit, we will first look at the nervous system; then the mental health one.

## SYLLABUS

### **The Two Parts of the Nervous System and their Functions**

The Central Nervous System (CNS)

The Peripheral Nervous System (PNS)

### **The Organization of the Cells of the Nervous System**

Neurons

Neuroglia

### **The Functional Organization of the Nervous System**

The Somatic Nervous System

The Visceral or Autonomic Nervous System (ANS)

### **The Brain**

#### **The Four Major Structures of the Brain and their Component Parts**

The Cerebrum

    The Frontal Lobe

    The Parietal Lobe

    The Occipital Lobe

    The Temporal Lobe

The Diencephalon

The Cerebellum

The Brainstem  
The Midbrain  
The Pons  
The Medulla Oblongata

## **The Peripheral Nervous System and the Sense Organs**

### **Protecting the Brain**

*Dura Mater*  
*Arachnoid Mater*  
*Pia Mater*

## **The Twelve Pairs of Cranial Nerves, their Control Regions and their Nerve Functions**

### **The Spinal Cord: Its Five Principal Regions and their Spinal Nerves**

Cervical  
Thoracic  
Coccygeal  
Sacral  
Lumbar

### **Reflexes**

### **The Autonomic Nervous System**

The Sympathetic Nervous System  
The Parasympathetic Nervous System  
Divisions of the Autonomic (Involuntary) Nervous System

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

Disorders of the Flow of Cerebrospinal Fluid  
Brain Trauma  
Fractures and Spinal Cord Injury  
Infection  
Neoplasms  
Degenerative Diseases

## **The Five Principal Medical Tests for Diagnosing Nervous System Disorders**

## **Therapies and Surgical Interventions for the Nervous System**

### **Introduction to Psychological and Behavioural Disorders**

Psychologic Disorders  
Psychosis  
Bipolar Disorders  
Schizophrenia  
Impulse Control Disorders  
Mood Disorders  
Personality Disorders  
Alzheimer's Disease  
Anxiety Disorders  
Phobias  
Obsessive-compulsive Disorder (OCD)  
Posttraumatic Stress Disorder (PTSD)  
Eating Disorders  
Other Psychological and Behavioural Disorders

## **Childhood Onset Disorders and Pervasive Developmental Disorders**

Pervasive Developmental Disorder (PDD)

Asperger Syndrome

Autism

ADHD

### **Word Parts**

Combining Forms for the Brain, Nervous System, the Spinal Cord, and Mental Health (includes tables)

Prefixes for the Brain, Nervous System, the Spinal Cord, and Mental Health (includes tables)

Suffixes for the Brain, Nervous System, the Spinal Cord, and Mental Health (includes tables)

### **Supplemental Terms**

Anatomy and Physiology (includes tables)

Symptoms and Signs (includes tables)

Diseases and Disorders (includes tables)

Treatments, Procedures, and Devices (includes tables)

Pharmacology (includes tables)

Abbreviations (includes tables)

**Interactive:**    26 quizzes  
                      31 graphics  
                      28 audio pronunciation prompts

## UNIT 12: INTRODUCTION TO THE MALE REPRODUCTIVE SYSTEM

### CONTENT

*Introduction to the Male Reproductive System*

*Anatomy and Physiology*

*The Internal and External Organs*

*The Testis*

*The Male Glands*

*The Male Tubules*

*The Transport of Spermatazoa*

*Secondary Sex Characteristics*

*Signs, Symptoms, and Diagnostic Procedures*

*Disorders of the Male Reproductive System*

*Common Medical Tests*

*Therapies and Common Surgeries*

*Word Parts*

*Supplemental Terms*

### INTRODUCTION TO THE MALE REPRODUCTIVE SYSTEM

The male reproductive system produces the sex cells, or gametes, of the male. Male gametes are called spermatazoa (*sperm/o*, *spermat/o*) or sperm cells, which are sustained and transported by the male urogenital system (*ur/o* means “urinary system” and *genit/o* means “reproductive system”). In addition, the male reproductive system secretes the hormone testosterone, which regulates sperm cell production and the expression of secondary sexual characteristics, such as hair distribution, bone (*oste/o*) and muscle (*my/o*) development, and enlargement of the larynx (*laryng/o*).

The function of the sex cells, called the gonads (*gonad/o*), in both males and females is to produce the reproductive cells, the gametes, and to produce hormones. The gametes, or sex cells, are generated by meiosis, a process of cell division that halves the chromosome number from 46 to 23. When male and female gametes unite in fertilization, the original chromosome number is restored.

The reproductive tract develops in close association with the urinary tract. In females, the two systems become completely separate, whereas the male reproductive and urinary tracts share a common passage, the urethra (*urethr/o*). Thus, the two systems are referred to together as the genitourinary (GU) or urogenital (UG) tract, and urologists treat disorders of the male reproductive system as well as those of the urinary system.

A properly functioning male reproductive system has the capability of transmitting sperm cells to a female during sexual intercourse, or *coitus*, which is Latin for a sexual union. The release of sperm cells is called ejaculation, and it usually accompanies sexual climax, or orgasm.

The primary organs of the male reproductive system are the paired testes that produce sperm cells and secrete testosterone. Other organs either transport the sperm cells or produce substances that support the sperm. The organs that transport sperm are tubules (*tub/o*, *tubulo-*) that include the epididymis (*epididym/o*), vas deferens (*vas/o*), and urethra; and the male glands that provide supportive secretions are the seminal vesicles (*vesicul/o*), the prostate gland (*prostat/o*), and the bulbourethral glands. The male reproductive organs are divided into the external organs and internal organs.

## OBJECTIVES

*After completing this Unit, you will be able to:*

1. Identify and describe the major organs of the male reproductive system and describe their structures and functions
2. Describe the main disorders of the male reproductive system
3. Describe diagnostic terms related to the male reproductive system
4. Define terms for sexually transmitted infections (STIs)
5. Interpret abbreviations used in referring to the reproductive system
6. Describe appropriate surgical and therapeutic interventions for the male reproductive system
7. Identify and use roots and combining forms pertaining to the male reproductive system
8. Break down and define common medical terms used for symptoms, diseases, disorders, procedures, treatments, and devices associated with the male reproductive system
9. Use word parts to build and analyze terms

## KEY CONCEPTS COVERED IN THIS UNIT

The male reproductive system overlaps with the male urinary system. Consequently, it is often referred to as the urogenital system. This Unit concentrates on the reproductive functions of the system, its anatomical structures and functions, and its most common disorders and their respective therapies.

## SYLLABUS

### **Anatomy and Physiology of the Male Reproductive Organs**

#### **The External Organs**

The Penis  
The Scrotum  
The Urethra

#### **The Internal Organs**

The Gonads/Testes  
The Epididymis  
The Vas Deferens  
The Seminal Vesicles  
The Ejaculatory Ducts  
The Prostate Gland  
The Bulbourethral Glands

#### **Anatomy of the Testes**

#### **The Male Glands**

#### **The Male Tubules**

#### **Transport of Spermatozoa**

#### **The 15 Secondary Sex Characteristics**

#### **Signs, Symptoms, and Diagnostic Procedures**

Bacteria Mediated Sexually Transmitted Infections  
Virus Mediated Sexually Transmitted Infections  
Other Infective Agents  
Neoplasia and Hyperplasia  
The TNM System for Staging Prostate Cancer  
Other Disorders of the Male Reproductive System

## **The 11 Most Common Surgical and Therapeutic Interventions**

### **Word Parts**

Combining Forms Pertaining to the Male Reproductive System (includes tables)

Prefixes Pertaining to the Male Reproductive System (includes tables)

Suffixes Pertaining to the Male Reproductive System (includes tables)

### **Supplemental Terms**

Anatomy and Physiology (includes tables)

Symptoms and Signs (includes tables)

Diseases and Disorders (includes tables)

Treatments, Procedures, and Devices (includes tables)

Pharmacology (includes tables)

Abbreviations (includes tables)

**Interactive:** 17 quizzes  
Four graphics  
19 audio pronunciation prompts

**UNIT 13: INTRODUCTION TO THE FEMALE REPRODUCTIVE SYSTEM****CONTENT**

*Introduction to the Female Reproductive System*  
*The Accessory Organs of the Female Reproductive System*  
*The External Accessory Structures*  
*The Internal Accessory Structures*  
*The Principal Organs of the Female Reproductive System*  
*The Menstrual Cycle*  
*Diseases, Disorders, and Diagnostic Terms*  
*Therapeutic and Surgical Interventions*  
*Introduction to Obstetrics and Human Development*  
*Pregnancy and Childbirth*  
*Postnatal Development*  
*Obstetrical Diseases, Disorders, Diagnoses, and Interventions*  
*Word Parts*  
*Supplemental Terms*

**INTRODUCTION TO THE FEMALE REPRODUCTIVE SYSTEM**

Reproduction is the process by which genetic material is passed from one generation to the next. The major function of the reproductive system is to produce offspring. The female reproductive system aids in the creation of new life and provides an environment and support for the developing child.

The female reproductive system produces the sex cells, or gametes, of the female—the egg cells, called ova (*ov/o*, *ovul/o*, *oo*) (ovum is the singular form), or oocytes (*-cyte means “cell”*). The female system also provides support for the developing embryo and fetus once fertilization has occurred. In addition, the female reproductive system secretes the hormones estrogen and progesterone, which regulate female cycles. Estrogen also regulates the expression of secondary female characteristics, including fat distribution, bone and muscle development, and hair distribution.

The primary organs of the female reproductive system are the ovaries (*ovari/o*, *oophor/o*). Other female organs support embryonic (*embry/o*) and fetal (*fet/o*) development and the internal process of fertilization. These other organs include the fallopian tubes (*salping/o*), uterus (*uter/o*), vagina (*colp/o*, *vagin/o*), and external genitalia (*vulv/o*). Although the breasts, or mammary glands (*mamm/o*, *mast/o*), are not part of the reproductive system, they are considered to be an accessory organ and are usually included with a discussion of this system, as their purpose is to nourish an infant.

In contrast to the continuous gametogenesis (sperm cell production) in males, formation of the female gamete is cyclic, with an egg released midway in the menstrual cycle. Each month, the uterus is prepared to receive a fertilized egg. If fertilization occurs, the developing offspring is nourished and protected by the placenta and surrounding fluids until birth. If the released egg is not fertilized, the lining of the uterus is sloughed off in menstruation.

Gynecology (*gynec/o*) is the study of diseases of the female reproductive organs, and a gynecologist is a specialist in the study of these diseases. Female genitalia include both external and internal structures. Obstetrics (*obstetr/o*) is the field of medicine that deals with pregnancy and birth. Often the two specialties are combined into obstetrics-gynecology, abbreviated as OB-GYN.

## Objectives

After completing this Unit, you will be able to:

1. Describe the organs and functions of the female reproductive system and label a diagram of the female reproductive tract
2. Outline the events in the menstrual cycle
3. Describe the structure and function of the mammary glands
4. Describe the main disorders of the female reproductive system
5. Describe sexually transmitted infections and their causative agents
6. Describe therapeutic interventions for the female reproductive system
7. Describe the stages of childbirth
8. Identify and use roots pertaining to the female reproductive system, pregnancy, and birth
9. Break down and define common medical terms used for symptoms, diseases, disorders, procedures, treatments, and devices associated with the female reproductive system
10. Define the word parts used to create terms for obstetrics and human development

## KEY CONCEPTS COVERED IN THIS UNIT

The organs of the female reproductive system produce and maintain the female sex cells, or egg cells; and transport these cells to the site of fertilization to provide an environment for a developing off-spring. The organs move the off-spring outside during birth. Additionally, the organs produce female sex hormones.

## SYLLABUS

### The Primary Organs of the Female Reproductive System

The Ovaries

### The Accessory Organs of the Female Reproductive System

#### The External Accessory Structures

The Mons Pubis

The Labia Majora

The Labia Minora

The Vestibule

Bartholin's glands

The Clitoris

The Mammary Glands

#### The Internal Accessory Structures

The Vagina

The Uterus

The Fallopian Tubes or the Oviducts

#### The Three Layers of the Uterus and their Functions

Endometrium

Myometrium

Perimetrium

#### The Three Layers of the Vagina and their Functions

The Inner Mucosal Layer

The Middle Muscular Layer

The Lower, Soft Tissue, Layer

#### The Menstrual Cycle

## **The 17 Most Common Methods of Birth Control**

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

The 23 Most Common Gynecological Disorders

### **Common Causes of Female Infertility**

Infection

Gynecological Diseases and Disorders

Cancers of the Female Reproductive Tract and Breasts

## **The 13 Most Common Surgical and Therapeutic Interventions**

### **Introduction to Obstetrics and Human Development**

Pregnancy and Childbirth

Describing Pregnancy and Birth Numbers

Pregnancy Number References: Gravid

Viable Birth Number References: Para

The Placenta and Fetal Circulation

Labour

The Four Stages of Vaginal Labour

Caesarean Section

Lactation

Postnatal Development

### **Diseases, Disorders, Diagnosis, and Therapeutic Interventions**

The Seven Most Common Pregnancy- and Birth-Related Problems

Congenital Disorders

### **Diagnosis of Specific Disorders**

### **Therapeutic and Surgical Interventions**

#### **Word Parts**

Combining Forms for Female Reproduction and the Ovaries (includes tables)

Combining Forms for the Female Accessory Structures (includes tables)

Combining Forms Pertaining to Pregnancy and Birth (includes tables)

Prefixes Pertaining to the Female Reproductive System (includes tables)

Suffixes Pertaining to the Female Reproductive System (includes tables)

#### **Supplemental Terms**

Anatomy and Physiology (includes tables)

Diseases and Disorders (includes tables)

Symptoms and Signs (includes tables)

Tests, Treatments and Surgical Interventions (includes tables)

Pharmacology (includes tables)

Abbreviations (includes tables)

**Interactive:** 29 quizzes  
25 graphics  
19 audio pronunciation prompts

## UNIT 14: INTRODUCTION TO THE URINARY SYSTEM

### CONTENT

*Introduction to the Urinary System*  
*Organs and Functions of the Urinary System*  
*Principal Functions of the Kidneys*  
*The Nephrons*  
*Urine Formation*  
*Transport and Removal of Urine*  
*The Ureters*  
*The Urinary Bladder*  
*The Urethra*  
*The Micturition Reflex*  
*Diseases, Disorders and Diagnostic Procedures*  
*Tests and Evaluation Procedures*  
*Word Parts*  
*Supplemental Terms*

### INTRODUCTION TO THE URINARY SYSTEM

The urinary system functions as the sanitary engineer of the body, maintaining the health of the body's fluids by removing unwanted waste materials and recycling other materials. The most important organs of the urinary system are the kidneys (*nephro*, *ren/o*), which filter gallons of fluids from the bloodstream every day. The kidneys remove metabolic wastes, toxins (*toxic/o*), excess ions, and water (*hydr/o*), which leave the body as urine (*ur/o*, *urin/o*), while returning needed materials back to the blood. This function is called excretion, a term that means to eliminate waste from the body. In addition to performing excretion, the kidneys also help regulate blood pressure, pH, and red blood cell production (hematopoiesis). Because these functions are essential for survival, the kidneys are vital organs; a loss of both kidneys requires medical intervention in order to sustain life.

The body eliminates waste in several ways. The lungs and other parts of the respiratory system eliminate carbon dioxide; the digestive system rids the body of solid waste; and the skin eliminates wastes through perspiration. Through urination, the urinary system eliminates waste products that accumulate as a result of cellular metabolism. Urination is the act of voiding urine.

In forming and eliminating urine, the urinary system also regulates the composition, volume, and acid-base balance (pH) of body fluids. Kidney activity affects the circulation. The urinary system is thus of critical importance in maintaining homeostasis, the state of internal balance.

### OBJECTIVES

*After completing this Unit, you will be able to:*

1. Identify the major organs of the urinary system and describe their structure and function
2. Explain how urine is formed and eliminated
3. Explain the relationship between the kidney and the blood circulation
4. Describe the major disorders of the urinary system
5. Break down and define common medical terms used for symptoms, diseases, disorders, procedures, treatments, and devices associated with the urinary system
6. Write the meanings of urinary system word parts and use them to build and analyze terms
7. Write the names of the diagnostic terms and pathologies related to the urinary system

## KEY CONCEPTS COVERED IN THIS UNIT

In this Unit we will study the urinary system. The urinary system or renal system is the organ system that produces, stores, and eliminates urine. In humans it includes two kidneys, two ureters, the bladder, and the urethra. The female and male urinary system are very similar, they differ only in the length of the urethra. The urinary system is crucial for the elimination of waste matter, the regulation of blood pH, the regulation of blood pressure, and the development of red blood cells.

## SYLLABUS

### The Organs and Functions of the Urinary System

Two Kidneys  
Two Ureters  
The Urinary Bladder  
The Urethra

### The Main Functions of the Kidneys

Maintenance of an Appropriate Blood Volume  
Maintenance of the Chemical Composition of Blood  
Maintenance of Blood pH  
Excretion of Waste Products of Protein Metabolism  
Regulation of Blood Pressure  
Stimulation of Erythrocyte Production

### The Kidney

The Nephrons  
Urine Formation  
The Three Processes of Urine Formation  
Transport and Removal of Urine  
The Ureters  
The Urinary Bladder  
The Urethra  
The Micturition Reflex  
Blood Supply to the Kidneys

### Diseases, Disorders, and Diagnostic Procedures

Infection  
Inflammation  
Nephrotic Syndrome  
Nephritic Syndrome  
Urinary Stones  
Neoplasms

### Tests and Evaluation Procedures

### Surgical and Therapeutic Interventions

The Two Primary Methods of Dialysis  
Hemodialysis  
Peritoneal Dialysis

### Word Parts

Combining Forms for the Kidney and Renal Pelvis (includes tables)  
Combining Forms That Apply to the Anatomy and Physiology of the Urinary Tract (Except the Kidney) (includes tables)  
Prefixes That Apply to the Urinary System (includes tables)  
Suffixes That Apply to the Urinary System (includes tables)

**Supplemental Terms**

Anatomy and Physiology (includes tables)  
Symptoms and Signs (includes tables)  
Diseases and Disorders (includes tables)  
Treatments, Procedures, and Devices (includes tables)  
Pharmacology (includes tables)  
Abbreviations (includes tables)

**Interactive:** 29 quizzes  
23 graphics  
Seven audio pronunciation prompts

## UNIT 15: INTRODUCTION TO THE EYES AND EARS

### CONTENT

*Introduction to the Senses: the Eyes and Ears*  
*The Principal Senses and their Receptors*  
*The Five Special Senses*  
*Introduction to the Eye and Vision*  
*Anatomy and Physiology of the Eye*  
*Diseases, Disorders and Diagnostic Terms: the Eye and Vision*  
*Anatomy and Physiology of the Ear*  
*The Three Principal Sections of the Ear*  
*Equilibrium*  
*Diseases, Disorders and Diagnostic Terms: the Ear and Audition*  
*Word Parts*  
*Supplemental Terms*

### INTRODUCTION TO SENSES

The sensory system is our network for detecting stimuli from both internal and external environments. It is needed to maintain homeostasis and protect us from harm. The senses alert us to pain and also provide us with pleasure. Pain is an important warning sign of tissue damage. The signals generated in the various receptors of the sensory system must be transmitted to the central nervous system for interpretation.

The senses are divided according to whether they are widely distributed or localized in special sense organs. The receptors for the general senses are found throughout the body. Many are located in the skin. The special senses are localized within complex sense organs in the head. The special senses provide the brain with information about the outside environment. There are five special senses: taste (gustation), smell (olfaction), hearing (audition), equilibrium (balance), and vision. The special senses are perceived with the help of highly specialized organs, which include the eyes (sight), the ears (hearing and equilibrium), organs on the tongue (taste), and sensory patches within the nose (smell). In each case, the special sensory organ contains sensory receptors. The sensory receptors are sensitive to a particular stimulus and generate a nerve impulse when the stimulus is sufficiently strong. The nerve impulse then travels to the brain to be interpreted as something you see, hear, taste, or smell. In this section, we will study the eyes and ears and their special senses.

### OBJECTIVES

*After completing this Unit, you will be able to:*

1. Explain the role of the sensory system
2. Identify the anatomic parts of the eyes and ears and describe their structures and functions
3. Define common medical terms used for the eyes and ears
4. Define common medical terms used for symptoms, diseases, disorders, procedures, treatments, and devices for the eyes and ears
5. Identify and use word parts pertaining to the senses

### KEY CONCEPTS COVERED IN THIS UNIT

The special senses are localized within complex sense organs in the head. The special senses provide the brain with information about the outside environment. There are five special senses: taste (gustation), smell (olfaction), hearing (audition), equilibrium (balance), and vision. In this Unit we will be looking at vision, hearing, and equilibrium. Recently, there has been a movement away from including taste as one of the special senses.

## **SYLLABUS**

### **The Five Principal Senses and their Receptors**

#### **Physiology of the Senses**

##### **Introduction to the Eye and Vision**

##### **Anatomy and Physiology of the Eye**

The Fibrous Layer  
 The Vascular Layer  
 The Nervous Layer  
 The Three Layers of the Eye's Wall  
 Vision

##### **Diseases, Disorders and Diagnostic Terms: The Eyes and Vision**

##### **Introduction to the Ear and Hearing**

##### **Anatomy and Physiology of the Ear**

The Three Sections of the Ear  
 The Parts of the Outer Ear  
 The Parts of the Middle Ear  
 The Parts of the Inner Ear  
 Equilibrium

##### **Diseases, Disorders, and Diagnostic Terms: The Ears And Audition**

##### **Word Parts**

Combining Forms Pertaining to the Ear and Hearing (includes tables)  
 Combining Forms Pertaining to the Eye and Vision (includes tables)  
 Common Prefixes Applied to the Eye, Vision, Ear and Hearing (includes tables)  
 Common Suffixes Applied to the Eye, Vision, Ear, and Hearing (includes tables)  
 Miscellaneous Suffixes that Apply to the Senses (includes tables)

##### **Supplemental Terms**

Anatomy and Physiology (includes tables)  
 Symptoms and Signs (includes tables)  
 Diseases and Disorders (includes tables)  
 Treatments, Procedures, and Devices (includes tables)  
 Pharmacology (includes tables)  
 Abbreviations (includes tables)

**Interactive:** 21 quizzes  
 28 graphics  
 13 audio pronunciation prompts

## UNIT 16: INTRODUCTION TO CANCER

### CONTENT

*Introduction to Cancer*  
*Cancer Diagnosis*  
*Cancer Treatments*  
*Word Parts*  
*Supplemental Terms*

### INTRODUCTION TO CANCER

Cancer is a disease of cells and tissues. It is currently one of the most life-threatening diseases among adults. Cancer is characterized by an abnormal growth of cells. The disease begins when the DNA within a cell undergoes a change, or mutation, which results in the loss of regulated cell division, in many cases forming a cluster of non-functional cells called a tumour or neoplasm.

If the cells grow slowly into a mass without spreading to other body tissues, the tumour usually is not life threatening and is called benign. On the other hand, if the tumour cells grow quickly and spread, the tumour is malignant and the condition of cancer can be diagnosed. The word malignant is derived from the Latin word root “mal,” which means bad. Cells spread from a malignant tumour along blood and lymphatic pathways during the process called metastasis, which leads to the establishment of secondary tumours in other areas of the body.

Benign means “favourable for recovery” and “not having a tendency to spread.” Malignant means tending to grow worse, to spread, and possibly become life threatening. Cancer cells are malignant, exhibiting the properties of invasion and metastasis. Cancer cells metastasize by several means, including the bloodstream, lymphatic system, and direct extension to neighboring tissue. The immune system acts against cancer cells to block or impede their spread and invasion of sites distant from their source.

Cancers may arise from epithelial tissue, connective tissue, muscle tissue, or even nervous tissue. Cancers are named primarily from the tissue of origin. A cancer type may also be named by colour characteristics or certain other distinguishing features. The use of the word root *carcin/o* indicates that the tumour is malignant.

The combining form *onc/o* means “tumour.” Similarly, the suffix *-oma* can also mean tumour. The word tumour is used in different ways. It sometimes means a swelling or enlargement, but it often refers to a spontaneous new growth of tissue that forms an abnormal mass. This latter definition is also called a neoplasm. A benign tumour is not cancerous, so it does not spread to other parts of the body. Benign is the opposite of malignant. A benign neoplasm may, however, cause damage at the site where it grows. A physician who specializes in the treatment of cancer is an oncologist.

The constructed terms pertaining to cancer are formed from word parts which are assembled according to some basic rules. As a general rule, benign tumours that arise from connective tissue or muscle tissue are usually named by adding the suffix *-oma*. Malignant tumours (cancers) of connective or muscle tissue origin are often named by adding the term sarcoma, because sarcomas are almost always malignant. For example, a *myoma* is a benign tumour of muscle, whereas a *myosarcoma* is a malignant tumour of muscle. A *lipoma* is a benign tumour of fat, while a *liposarcoma* is a malignant tumour of fat. For tumours that arise from epithelial and nervous tissue, the suffix *-oma* is used to describe both benign and malignant tumours. If the tumour arises in glandular epithelium, it is an adenocarcinoma (the root *aden/o* means “gland”); a cancer of pigmented epithelial cells (melanocytes) is a melanoma. A neuroma is a tumour of nervous tissue, but it might be benign or malignant. A *neurocarcinoma* is a malignant tumour, or cancer, of nervous tissue.

Often mistaken for a malignancy is a cyst, a sac, or pouch filled with fluid or semisolid material that is abnormal but not cancerous. Common sites for cyst formation are the breasts, the skin’s sebaceous glands, and the ovaries. Causes of cyst formation include infection or blockage of a duct.

**OBJECTIVES**

*After completing this Unit, you will be able to:*

1. Define and give examples of various neoplasms
2. Define common medical terms used for cancer
3. Define medical terms pertaining to cancer
4. Define the word parts used to create medical terms for cancer
5. Define common medical terms used for symptoms, diagnostic procedures, and treatments for cancer

**KEY CONCEPTS COVERED IN THIS UNIT**

This Unit takes a brief look at cancer, particularly the ways in which cancers are named. Because each of the course's individual units contains information about cancers that are specific to their particular field, this section is a corollary to those.

**SYLLABUS****Introduction to Cancer****Naming Cancers****Cancer Diagnosis****Cancer Treatments****Word Parts**

Combining Forms for Cells, Tissue, and Cancer (includes tables)

Prefixes for Cells, Tissue, and Cancer (includes tables)

Suffixes for Cells, Tissue, and Cancer (includes tables)

**Supplemental Terms**

Anatomy, Physiology, and General Terms Related to Cancer (includes tables)

Cancer Related Diseases and Disorders (includes tables)

Signs, Symptoms, and Diagnosis (includes tables)

Treatments for Cancer (includes tables)

Pharmacology (includes tables)

Abbreviations (includes tables)

**Interactive:**     Nine quizzes

## UNIT 17: INTRODUCTION TO PEDIATRIC MEDICINE

### CONTENT

*Introduction to Pediatric Medicine*

*Neonates*

*Allergies and Asthma*

*Pediatric Diabetes*

*Congenital and Inherited Disorders*

*Childhood Cancers*

*Eye Conditions*

*Infections Common in Childhood*

*Vaccines*

*Autoimmune Juvenile Arthritis*

*Mental Health, Developmental, and Nervous System Conditions*

*Urinary System Disorders*

*Gastrointestinal Conditions*

### INTRODUCTION TO PEDIATRIC MEDICINE

Infants and children are not simply small adults. As such, their medical care should rest in the hands of experts in the fields of child medicine. While in some cases, children may develop the same diseases that adults do, the course of their illnesses and the outcomes may be very different from those of adults.

The smaller body of a child is substantially different physiologically from that of an adult. Congenital defects, genetic variance, and developmental issues are of greater concern to pediatricians than they often are to adult physicians.

A newborn up to the age of one month is referred to as a neonate. Generally, an infant is a baby between the ages of one month and 12 months. Childhood is often divided into three parts: toddlerhood, early childhood (pre-school), and middle childhood (school age). Adolescence is the transitional period between puberty (the onset of fertility) and the fully developed young adult.

A key difference between pediatrics and adult medicine is that children cannot make decisions for themselves. The issues of guardianship, privacy, legal responsibility and informed consent must always be considered in every pediatric procedure. In a sense, pediatricians often have to treat the parents and sometimes, the family, rather than just the child. Adolescents are in their own legal class, having rights to their own health care decisions in certain circumstances. In basic terms, pediatricians take care of all of the children's needs from emotional support to medical support.

### OBJECTIVES

*After completing this Unit, you will be able to:*

1. List the meaning of each letter of the APGAR and describe how it is used to evaluate neonatal health
2. Describe the neonate's body systems and related anatomies that are evaluated immediately after birth
3. List the different stages of development from birth to adulthood
4. Explain the differences between Type 1 and Type 2 Diabetes
5. Describe the relationship between allergy and asthma
6. Explain the ways in which allergy medicines are delivered
7. Explain the meaning of "congenital"
8. List and describe the congenital disorders that are most commonly found in children
9. List and describe the 12 most common cancers found in the pediatric population
10. Describe the most common pediatric eye conditions
11. List and describe the infections that are most commonly seen in babies and older children
12. List the vaccines that are routinely given to infants and older children
13. Describe the different forms of Juvenile Arthritis that can affect children

14. Describe the disorders that are mental/emotional, neurological, or developmental in origin
15. List and describe the urinary and gastrointestinal conditions that affect children

### KEY CONCEPTS COVERED IN THIS UNIT

In this section, we will assemble the word parts to form medical terms related to the pediatric medicine. You will already have come across many of these terms and word parts in previous sections. We will also present some additional key terms that are not built from word parts. These terms are listed within the categorical groupings in the Supplemental Terms.

### SYLLABUS

#### The Neonates

Newborn History Taking  
 Examining the Neonate  
 The Apgar Score  
 Common Terms that Describe a Child's Developmental Age

#### Allergies and Asthma

Common Symptoms and Signs of Allergic Reaction  
 Food Allergies  
 Anaphylaxis  
 Asthma and the Link Between Allergic Rhinitis  
 Reactive Airways Disease  
 Medications that Can Help Ease Asthma  
 A metered Dose Inhaler  
 Nebulizers  
 Eczema

#### Pediatric Diabetes

Diabetes Mellitus (DM) Type 1  
 Potential Long-Term Complications of Type 1 Diabetes  
 Types of Insulin Therapy

#### Congenital and Inherited Disorders

Congenital Heart Defects  
 Septal Defects  
 Two Types of Congenital Septal Defects  
 Valve Defects  
 Three Principal Causes of Congenital Valve Defects  
 Muscular Dystrophy  
 Forms of Childhood-Onset Muscular Dystrophy  
 Cystic Fibrosis  
 Respiratory Effects of Cystic Fibrosis  
 Common Respiratory Signs and Symptoms in Cystic Fibrosis  
 Digestive Effects of Cystic Fibrosis  
 Common Digestive signs and Symptoms in Cystic Fibrosis  
 Down Syndrome  
 Spina Bifida / Neural Tube Defects  
 Spina Bifida Occulta  
 Meningocele  
 Myelomeningocele

Cerebral Palsy  
 The Three Main Types of Cerebral Palsy  
 Cleft Lip and Cleft Palate  
 Management and Treatment  
 Birth Marks  
 Salmon Patch Birthmark  
 Port Wine Birthmark  
 Strawberry Hemangioma Birthmark  
 Cavernous Hemangioma Birthmark  
 Pigmented Nevi Birthmark (Moles)  
 Dysplastic Nevi (Atypical Moles)  
 Mongolian Spots  
 Café au Lait Macules

### **Childhood Cancers**

Cancers Found in Children  
 Leukemias  
 Brain and Intracranial Tumours  
 Lymphomas  
 Soft Tissue Sarcoma  
 Bone Sarcoma  
 Embryonal Tumours  
 Renal Tumours  
 Sympathetic Nervous System (SNS) Tumours  
 Retinoblastoma  
 Hepatic Tumours  
 Carcinomas and Malignant Melanoma  
 Germ Cell and Gonadal Tumours  
 Cancer Five-Year Survival Rates

### **Eye Conditions**

Eye and Vision Disorders Found in the Pediatric Population

### **Infections Common to Childhood**

Respiratory Syncytial Virus (RSV)  
 Fifth Disease  
 Hand-Foot-And-Mouth Disease (HFMD)  
 Roseola  
 Impetigo  
 Pediatric Candidiasis  
 Pediatric Aseptic Meningitis  
 Otitis Media (OM)  
 The Three Types of Otitis Media  
 Pharyngitis and Tonsillitis  
 Croup  
 Epiglottitis

### **Vaccines**

Vaccines Given to Children  
 Tetanus Vaccine  
 Varicella-Zoster Virus (VZV) - Chicken Pox Vaccine  
 Diphtheria Vaccine  
 Rubella - German Measles Vaccine  
 Pertussis (Whooping Cough) Vaccine  
 Mumps Vaccine

Measles (Rubeola) Vaccine  
Pediatric Bacterial Meningitis Vaccine

### **Autoimmunity Juvenile Arthritis**

Juvenile Idiopathic Arthritis (JIA) or Juvenile Rheumatoid Arthritis (JRA)  
The Seven Major Types of Juvenile Idiopathic Arthritis

### **Mental Health, Developmental, and Nervous System Conditions**

Attention-Deficit / Hyperactivity Disorder (ADHD)  
Three Types of ADHD  
Eating Disorders  
Anorexia Nervosa  
Bulimia Nervosa  
Three Forms of Anorexic Behaviours  
Learning Disorders  
Autism Spectrum Disorder  
Epilepsy

### **Urinary System Disorders**

Bedwetting (Enuresis) or Urinary Incontinence  
The Four Categories of Enuresis  
Urinary Tract Infections (UTI)  
Parts of the Urinary Track that May Be Involved in UTIs

### **Gastrointestinal Conditions**

Colic  
Intussusception  
Pyloric Stenosis

### **Word Parts**

Combining Forms Pertaining to Pediatric Medicine (includes tables)  
Prefixes Pertaining to Pediatric Medicine (includes tables)  
Suffixes Pertaining to Pediatric Medicine (includes tables)

### **Supplemental Terms**

Anatomy and Physiology (includes tables)  
Symptoms and Signs (includes tables)  
Diseases and Disorders (includes tables)  
Tests and Treatments (includes tables)  
Pharmacology (includes tables)  
Abbreviations (includes tables)

### **Interactive**

9 quizzes  
48 graphics

