Chapter 5

Medical Terminology

Unit Summary

After students complete this chapter and the related course work, they will be able to use foundational and anatomical medical terms and abbreviations in written and oral communication with colleagues and health care professionals. They will understand the purpose of medical terminology, be able to identify its components, and be able to define an unknown medical term based on the dissection and understanding of its components. Students will also be able to identify error-prone medical abbreviations and acronyms. Common direction, movement, and position terms are also presented in this chapter.

National EMS Education Standard Competencies

Medical Terminology

Uses foundational anatomical and medical terms and abbreviations in written and oral communication with colleagues and other health care professionals.

Knowledge Objectives

1. Explain the purpose of medical terminology. (p 153)

2. Identify the four components that comprise a medical term. (p 153)

3. Describe the following directional terms: anterior (ventral), posterior (dorsal), right, left, superior, inferior, proximal, distal, medial, lateral, superficial, and deep. (pp 158–161)

4. Describe the prone, supine, Fowler, and semi-Fowler positions of the body. (p 161)

5. Break down the meaning of a medical term based on the components of the term. (p 162)

7. Interpret selected medical abbreviations, acronyms, and symbols. (p 162)

5. Identify error-prone medical abbreviations, acronyms, and symbols. (p 163)

Skills Objectives

There are no skills objectives for this chapter.

Readings and Preparation

Review all instructional materials including ***Emergency Care and Transportation of the Sick and Injured*, Eleventh Edition,** Chapter 5, and all related presentation support materials.

Support Materials

* Lecture PowerPoint presentation
* Case Study PowerPoint presentation
* Photocopies of medically accepted abbreviations, acronyms, and symbols.

Enhancements

* Direct students to Navigate 2.
* If possible, arrange for a malpractice attorney to visit the class and review cases to illustrate the proper and improper use of medical terminology and how it can impact legal proceedings.
* **Content connections:** Chapter 4, “Communication and Documentation,” will discuss in detail the patient care report and documentation. Remind students that proper use of medical terminology is required for all documentation and communications. Chapter 9, “Patient Assessment,” will integrate medical terminology as the process of patient assessment is described in detail.

Teaching Tips

Remember that this is the first information about EMS that many students will have received. It is likely that some may experience “overload” or may not fully understand how all the pieces of this chapter fit together. Be sure to reinforce this information throughout the course.

* Design a *Jeopardy*-style game using different groups of related terms as categories.
* Create a bingo game using related terms for each letter.
* Hand out blank diagrams of the human body and have the students label appropriate directional terms.
* Use a manikin or model of the human body and have the students label appropriate directional terms on it.

Unit Activities

**Writing assignments:** Assign each student a research paper on the purpose of medical terminology. Have them explain the differences between acronyms and abbreviations.

**Student presentations:** Each student should give a brief presentation explaining how to break down a medical term and then the students should change the suffix or prefix of their term(s) to create a new term.

**Group activities:** Form groups and ask each group to describe a scenario that might use a directional term or a term that relates to positions of the body.

**Medical terminology review:** Ask each student define two common symbols in medical terminology.

Pre-Lecture

### You are the Provider

“You are the Provider” is a progressive case study that encourages critical thinking skills.

### Instructor Directions

**1.** Direct students to read the “You are the Provider” scenario found throughout Chapter 5.

**2.** You may wish to assign students to a partner or a group. Direct them to review the discussion questions at the end of the scenario and prepare a response to each question. Facilitate a class dialogue centered on the discussion questions and the Patient Care Report.

**3.** You may also use this as an individual activity and ask students to turn in their comments on a separate piece of paper.

Lecture

I. Introduction

A. As an EMT, you must have a strong working knowledge of medical terminology.

B. For effective communication and documentation, you must understand:

1. Key terms

2. Acronyms

3. Symbols

4. Abbreviations

C. You can determine the meaning of an unknown word by:

1. Understanding how terms are formed

2. Learning the definitions for parts of a medical term

D. Understanding medical jargon will help you communicate effectively with other members of the EMS, health care, and public safety teams.

II. Anatomy of a Medical Term

A. Medical terms are made of distinct parts that perform specific functions.

B. Changing or deleting any of those parts can significantly change the function (or meaning) of a word.

C. Components that comprise medical terms include the:

1. Word root: the foundation of the word

2. Prefix: what occurs before the word root

3. Suffix: what occurs after the word root

4. Combining vowels: vowels that join one or more word roots to other components of a term

D. How the parts of a term are combined determines its meaning.

1. Accurate spelling is essential in medical terminology.

a. The suffix *-phasia* means speaking, whereas *-phagia* means eating or swallowing.

b. The prefix *dys-* means difficult or painful. Dysphasia means difficulty speaking, while dysphagia means difficulty eating or swallowing.

c. The terms *ilium* and *ileum* are pronounced exactly the same, but refer to different anatomical parts.

2. Knowing anatomy and the context of how these words are used can help you correctly determine (and spell) the term in a given situation.

E. Word roots

1. The main part or stem of a word is called a word root (or root word).

a. Conveys the essential meaning of the word

b. Frequently indicates a body part

2. Most terms have at least one word root, and some have more than one root.

3. Adding a prefix or suffix to the word root creates a term.

4. Changing the prefix or suffix will change the meaning of the term.

a. Cardiopulmonary breaks down as follows:

i. *Cardio* is a word root meaning “heart”

ii. *Pulmon* is a word root meaning “lungs”

b. By performing CPR you introduce air into the lungs and circulate blood by compressing the heart.

5. Some word roots may also be used as prefixes or suffixes for other terms.

F. Prefixes

1. A prefix is the part of a term that appears at the beginning of a word.

2. Prefixes usually describe:

a. Location

b. Intensity

3. Prefixes are found in general language (i.e., *auto*pilot, *sub*marine, *tri*cycle), as well as in medical and scientific terminology.

4. Not all medical terms have prefixes.

5. A prefix gives the word root its specific meaning.

a. For the word root *pnea*, one can add the prefix *a-* (without), *brady-* (slow), or *tachy-* (rapid) to create three very different terms.

6. By learning the commonly used medical prefixes, you can figure out the meaning of terms that may not be immediately familiar to you.

G. Suffixes

1. Suffixes are placed at the end of words.

2. Suffixes usually indicate a:

a. Procedure

b. Condition

c. Disease

d. Part of speech

3. A commonly used suffix is *-itis*, which means “inflammation.” When paired with the word root *arthro-*, meaning joint, the resulting word is *arthritis*, an inflammation of the joints.

H. Combining vowels

1. A combining vowel is the part of a term that connects a word root to a suffix or other word root.

a. In most cases, it is an o; however, it may also be an i or an e.

b. Used when joining a suffix that begins with a consonant or when joining another word root.

c. Example: Gastroenterology

i. Gastr/o + enter/o + logy

ii.Stomach + intestines + the study of

2. The combining vowel helps ease the pronunciation of the term.

3. A combining form is a combining vowel shown with the word root.

4. Some common combining forms are:

a. cardi/o (heart)

b. gastr/o (stomach)

c. hepat/o (liver)

d. arthr/o (joint)

e. oste/o (bone)

f. pulmon/o (lungs)

III. Word Building Rules

A. When building or taking apart a medical term, it is helpful to understand some basic rules.

B. The following summarizes the rules covered thus far:

1. The prefix is always at the beginning of a term; however, not all terms will have a prefix.

2. The suffix is always at the end of the term.

3. Use a combining vowel when:

a. A suffix begins with a consonant (to make pronunciation easier).

b. A term has more than one word root; a combining vowel must be placed between the two word roots, even if the second root begins with a vowel.

IV. Plural Endings

A. To change a term from singular to plural form, certain rules apply.

B. Sometimes you can simply add an s (lung becomes lungs), but some rules are more complicated.

C. Rules you may encounter when converting from singular to plural terms are:

1. Singular words that end in *a* change to *ae* when plural.

a. Example: *vertebra* becomes *vertebrae*

2. Singular words that end in *is* change to *es* when plural.

a. Example: *diagnosis* becomes *diagnoses*

3. Singular words that end in *ex* or *ix* change to *ices*.

a. Example: *apex* becomes *apices*

4. Singular words that end in *on* or *um* change to *a*.

a. Examples: *ganglion* becomes *ganglia*, *ovum* becomes *ova*

5. Singular words that end in *us* change to *i*

a. Example: *bronchus* becomes *bronchi*

V. Special Word Parts

A. Prefixes can be used to indicate:

1. Numbers

2. Colors

3. Positions and directions

B. Numbers

1. Several prefixes are used to indicate if a term involves a number, such as half, one, or two (or more) parts or sides.

a. Examples: *uni-*, *dipl-*, *null-*, *primi-*, *multi-*, *bi-*

C. Color

1. Several word roots are used to describe color.

a. Examples: *cyan/o, leuk/o, erythr/o, cirrh/o, melan/o*

D. Positions and directions

1. Prefixes can also be used to describe a position, direction, or location.

a. Examples: *ab-*, *ad-*, *de-*, *circum-*, *peri-*, *trans-*, *epi-*, *supra-*

VI. Common Direction, Movement, and Position Terms

A. Directional terms

1. You need to know the correct directional terms to discuss:

a. Where an injury is located

b. How pain radiates in the body

2. Some directional terms include:

a. Right and left

b. Superior and inferior

c. Lateral and medial

d. Proximal and distal

e. Superficial and deep

f. Ventral and dorsal

g. Palmar and plantar

h. Apex

3. The terms *right* and *left* refer to the patient’s right and left sides, not to your right and left sides.

4. Superior and inferior

a. The superior part of any body part is the portion nearer to the head from a specific reference point. The part nearer to the feet is the inferior portion.

b. These terms are also used to describe the relationship of one structure to another.

i. Example: The knee is superior to the foot and inferior to the pelvis.

5. Lateral and medial

a. Parts of the body that lie farther from the midline are called lateral (outer) structures.

i. In general terms, lateral means side.

b. The parts that lie closer to the midline are called medial (inner) structures.

i. Example: A patient has a 5-cm laceration on the medial aspect of the thigh (means toward the inside).

6. Proximal and distal

a. The terms proximal and distal are used to describe the relationship of any two structures on an extremity.

b. Proximal describes structures that are closer to the trunk.

c. Distal describes structures that are farther from the trunk or nearer to the free end of the extremity.

i. Example: The elbow is distal to the shoulder and proximal to the wrist and hand.

7. Superficial and deep

a. Superficial means closer to or on the skin.

b. Deep means farther inside the body or tissue, and away from the skin.

i. Example: a superficial burn involves only the top layer of skin, similar to sunburn, whereas a deep laceration involves a cut deeper into the tissue such as with a knife.

8. Ventral and dorsal

a. Ventral refers to the belly side of the body, or the anterior surface of the body.

b. Dorsal refers to the spinal side of the body, or the posterior surface of the body, (think of the dorsal fin of a dolphin, which is on its back).

c. The more commonly used terms are anterior (the front surface of the body) and posterior (the back surface of the body).

9. Palmar and plantar

a. The front region of the hand is referred to as the palm or palmar surface.

b. The bottom of the foot is referred to as the plantar surface.

10. Apex

a. The apex (plural apices) is the tip of a structure.

i. Example: The apex of the heart is the bottom (inferior portion) of the ventricles in the left side of the chest.

B. Movement terms

1. The following terms relate to movement:

a. Flexion is the bending of a joint.

b. Extension is the straightening of a joint.

c. Adduction is motion toward the midline.

d. Abduction is motion away from the midline.

C. Other directional terms

1. A body part that appears on both sides of the midline is bilateral.

a. Examples: Eyes, ears, hands, feet

2. Structures inside the body also appear on both sides of the midline.

a. Examples: Lungs and kidneys

3. Something that appears on only one side of the body is said to occur unilaterally.

a. Example: Unilateral chest expansion means that only one lung is expanding with inhalation (such as with pneumothorax).

4. As an EMT, you should be able to describe the exact location of areas of the abdomen.

a. The abdominal cavity is divided into four equal quadrants:

i. Right upper quadrant

ii. Left upper quadrant

iii. Right lower quadrant

iv. Left lower quadrant

b. Again, right and left refer to the patient’s right and left, not yours.

5. It is important to learn all of these terms and concepts so you can describe the location of any injury or assessment findings.

6. Use the terms properly so that any other medical personnel who care for the patient will know immediately where to look and what to expect.

D. Anatomic positions

1. There are many terms used to describe the position of the patient on your arrival or during transport to the emergency department:

a. Prone or supine

b. Fowler position

2. The body is in the prone position when lying face down; the body is in the supine position when lying face up.

3. The Fowler position is a semi-reclining position with the head elevated to help the patient breathe easier and to control the airway. A patient who is sitting upright is said to be in the Fowler position.

a. Semi-Fowler position: Patient sits with the back of the stretcher at a 45-degree angle

b. High-Fowler position: Patient sits at a 90-degree angle

VII. Breaking Terms Apart

A. You can use knowledge of the meaning of parts to decipher the meaning of a term.

1. When trying to define a term, begin with the suffix and work backward.

2. If the term also contains a prefix, define the suffix, then the prefix, and then the word root. Here are some examples:

a. Nephropathy

i.nephr/o/pathy

ii.-pathy (suffix meaning “disease”)

iii.o (combining form)

iv.nephr (word root meaning “kidney”)

v. nephropathy = disease of the kidney

b. Dysuria

i. dys/ur/ia

ii.-ia (suffix meaning “condition of”)

iii.dys- (prefix meaning “difficult, painful, or abnormal”)

iv.ur (word root meaning “urine”)

v.dysuria = painful urination (pain when urinating) or difficulty urinating

c. Hyperemesis

i. hyper/emesis

ii. hyper- (prefix meaning “excessive”)

iii. emesis (word root meaning “vomiting”)

iv. hyperemesis = excessive vomiting

d. Analgesic

i. an/alges/ic

ii. -ic (suffix meaning “pertaining to”)

iii. -an (prefix meaning “without” or “absence of”)

iv. alges (word root meaning “pain”)

v. analgesic = pertaining to no pain

VIII. Abbreviations, Acronyms, and Symbols

A. Medical abbreviations, acronyms, and symbols are a type of shorthand used for communication.

1. Developed because one could communicate faster using this method.

a. It is important not to trade speed for accuracy.

b. Use only commonly understood acronyms and abbreviations to minimize misinterpretations and errors.

2. The Joint Commission and the Institute for Safe Medication Practices are considered two authorities on abbreviations and provide do-not-use lists.

3. When you use an abbreviation, you pronounce each letter of the abbreviation separately and distinctly.

a. For the acronym EMT, you say it “E–M–T.”

4. When you use an acronym, you are shortening several words, usually using the first letter of each word to make the acronym.

a. Acronyms can be pronounced:

i. As their own word (e.g., SAMPLE history is pronounced like the word “sample”)

ii. By reading the letters one by one (e.g., EMS is pronounced “E-M-S”)

iii. Or by a combination of the two (e.g., DCAP-BTLS is pronounced “D-cap-B-T-L-S”

5. Misunderstanding and errors occur if someone involved in patient care does not understand the meaning of abbreviations or acronyms.

a. For this reason, some agencies limit the use of abbreviations.

B. Abbreviations

1. Abbreviations take the place of words to shorten notes or documentation.

2. Remember to use only standard, accepted abbreviations to avoid confusion and errors.

3. Be familiar with accepted use of abbreviations in your local jurisdiction or service area.

**C. Symbols**

1. Like abbreviations, symbols are sometimes used as a shortcut in communication and documentation.

2. As with abbreviations, it is important to only use symbols that are widely understood and accepted.

IX. Master Tables

1. The tables in the chapter provide a thorough reference list of common word roots, combining forms, prefixes, suffixes, and abbreviations.

Post-Lecture

This section contains various student-centered end-of-chapter activities designed as enhancements to the instructor’s presentation. As time permits, these activities may be presented in class. They are also designed to be used as homework activities.

## Assessment in Action

This activity is designed to assist the student in gaining a further understanding of issues surrounding the provision of prehospital care. The activity incorporates both critical thinking and application of basic EMT knowledge.

### Instructor Directions

**1.** Direct students to read the “Assessment in Action” scenario located in the Prep Kit at the end of Chapter 5.

**2.** Direct students to read and individually answer the quiz questions at the end of the scenario. Allow approximately 10 minutes for this part of the activity. Facilitate a class review and dialogue of the answers, allowing students to correct responses as may be needed. Use the quiz question answers noted below to assist in building this review. Allow approximately 10 minutes for this part of the activity.

**3.** You may wish to ask students to complete the activity on their own and turn in their answers on a separate piece of paper.

### Answers to Assessment in Action Questions

1. C. Prone

2. A. alges

3. C. asthen

4. D. Unilateral

5. C. NKA

6. D. Diplopia

7. D. hemoptysis

8. B. HTN

9. You are dispatched to an MVC involving a motorcycle. Upon your arrival, you find a 17 y.o. ♂ pt. lying prone on the ground. The pt.'s breath smells of ETOH. He is c/o of a H/A, hemiparesis, and diplopia. Upon examination, you find a 2 in. LAC above the LUQ of his abdomen and a GSW to his R leg, proximal to the thigh. The pt. was exhibiting hemoptysis. BP was 100/60 mm Hg. HR was 90 BPM. Pupils were PEARLA. Breath sounds were clear and equal bilaterally. Pt has NKA and a Hx of HTN. You treat the pt. by placing him on 12 LPM of oxygen via a NRB mask. You begin transport of the pt. in a left lateral recumbent position with an ETA of 10 minutes.

10. Miscommunication. If a provider uses acronyms, abbreviations, or symbols that are not widely known, it can result in miscommunication, which could result the patient’s death.

## Assignments

A. Review all materials from this lesson and be prepared for a lesson quiz to be administered (date to be determined by instructor).

B. Read Chapter 6, “The Human Body,” for the next class session.