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Welcome to Medical Terminology, which is a language all its own. As you prepare for a career in health care, learning medical terminology is essential. But why?

Let’s think about it using a familiar example. All the abbreviations and acronyms associated with computers and computer networks can be frustrating. What do they mean? Those abbreviations are created as shortcuts that allow computer people to save time when working together on problems or when creating new products. It's the same with medical terminology.

It can be frustrating to try to read something medical or listen to a doctor who uses a lot of abbreviations when you don't know what they mean. In this course, you will learn what's behind all those mysterious words and abbreviations. You'll learn the code, so to speak. And then, you'll be able to get connected!

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Here are the Learning Objectives for this chapter. Remember, learning objectives are your guide to what you need to learn in the chapter. Upon completing this chapter, you should be able to:

- Identify the three types of medical terms.
- Explain the differences between prefixes, suffixes, word roots, and combining vowels.
- Form combining forms.

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- Explain how to analyze (build and interpret) medical terms.
- Describe how to pluralize medical terms.
- Understand how to pronounce medical terms.

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Each of us is surrounded by medical terminology. Not only do health professionals use it when communicating with one another, but it pops up in news articles, on television, and in conversations with friends. The reason for this is simple—medical terminology offers an efficient way for conveying specific, important information.

Each medical term has a precise meaning, and it allows detailed information to be shared quickly. As a future health care professional, you have a lot to gain in your career by understanding medical terminology; you also stand to gain in your personal life by knowing about it!

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There are three common types of medical terms.

The first type comes from Latin and Greek word parts. For example, the term cardiology is built from the Greek term *kardi*, which is spelled with a k. Similarly, the term tonsillectomy comes from the Latin term *tonsil*. Many medical terms are drawn from Latin and Greek, and that is a good thing—many of the word parts are used over and over again, and you will come to recognize and understand them.

The second type of terms is eponyms, which are words that come from a person's name. For example, James Parkinson was an English physician who published an article in 1817 on shaking palsy, a condition we know today as Parkinson disease. In the past, it was common for eponyms to use the possessive form of the individual's name—so, Parkinson's instead of Parkinson. However, current use is leaning toward just the name without the possessive, and that is how eponyms will be presented in this course.

Finally, the third type of terms uses modern English words. Examples include magnetic resonance imaging and irritable bowel syndrome.

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Learning medical terminology is a lot like learning a foreign language, and with good reason when you consider so many terms are from Greek and Latin. As you learn this new language, you will generally use the following process:

First, you will have to memorize individual word parts.

Then, using what you've memorized, you will learn how to analyze and build terms from those parts.

As time goes on, you will gain skill and confidence in building terms through repetition.

Finally, you will be able to seamlessly make these terms part of your professional vocabulary.

This process will be eased by the fact that Latin- and Greek-based medical terms are constructed from four basic types of word parts—word roots, suffixes, prefixes, and combining vowels. We will look closely at these on the following screens.

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The word root is the foundation of most medical terms, and it gives the essential meaning of the term. In many—but not all—cases the word root refers to a body structure, an organ, or a body system.

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Here you see some examples of word roots, some of which may be familiar to you; for example, you've likely heard words with the root carcin, meaning cancer, and cardi, meaning heart.

You'll hear these terms pronounced in a moment. Do your best to learn them now. Putting these into your memory bank will help you get a head start on learning this new language.

Now, on to the roots!

arthr
joint

carcin
cancer

cardi
heart

cephal
head

electr
electricity

gastr
stomach

hepat
liver

my
muscle

oste
bone

rhin
nose

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As you probably noticed with our word root examples, none of the roots on its own forms a complete word. The roots need another word part in order to make terms.

Suffixes are one such word part, and they are found at the end of a medical term. Suffixes typically provide information about conditions, diseases, and surgical and diagnostic procedures involving the word root.

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Here we have some examples of suffixes; as with the word roots, a few probably seem familiar. For example, -ectomy means surgical removal, like a tonsillectomy or an appendectomy.

I will pronounce these suffixes for you in just a minute. First, however, notice that each of these suffixes is preceded by a hyphen. This is a standard way of writing suffixes by themselves; however, it is important to note that the hyphen must be removed when the suffix is used as part of a medical term.

Now, let's move on with our example suffixes.

-ectomy
surgical removal

-gram
a record

-itis
inflammation

-logy
study of

-megaly
enlarged

-pathy
disease

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Prefixes are another word part, and they are found at the beginning of a medical term. Like a suffix, they add information to the word root; however, the information they add is of a different type from the information added by suffixes. Prefixes typically indicate abnormal conditions, numbers, positions, or times.

Many medical terms do not have a prefix. Also, some medical terms are built just from a prefix and a suffix with no root.

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On this screen, you see some examples of prefixes. Notice that the prefixes end with a hyphen when written by themselves. This hyphen must be removed when the prefix is included in a medical term.

As with the other word parts, some of these prefixes probably look familiar. For example, the prefix inter- means “between,” like an interstate highway that goes between the states.

The prefixes shown here are pronounced as follows:

a-
without

bi-
two

dys-
abnormal, difficult, or painful

inter-
between

post-
after

sub-
under

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The last word part we will discuss is combining vowels. Combining vowels are used for two reasons: to connect word parts and to make medical terms easier to spell and pronounce. Not every medical term uses a combining vowel. The most common combining vowel is o.

The combining vowel is only placed between a word root and a suffix or between two word roots. It is never used between a prefix and word root.

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When using a combining vowel between a word root and a suffix, you must look at the first letter of the suffix. If that first letter is a consonant, use the combining vowel. If that first letter is a vowel, do not use the combining vowel.

For example, the term arthritis is built from the root arthr and the suffix -itis. If we added the combining vowel in this term, we'd wind up with arthroitis.

When placing a combining vowel between two word roots, always use the combining vowel—even if the second root begins with a vowel.

For example, the term gastroenterology needs the combining vowel. If it wasn't used, it would be gastrenterology, which is difficult to pronounce and incorrect.

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The combining vowel plus the word root is often referred to as the combining form. You will see a lot of the combining form as you work with medical terms; you will recognize it because it will appear in red text and will be a root word followed by a slash followed by a vowel.

The combining vowel is not another category of word part because it is actually built from two word parts. For the remainder of this course, we will give word roots as combining forms.

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In Figure 1.2, parts of the body are called out and shown as combining forms. We reviewed the word roots earlier—hopefully, you remember them. We'll now go through them quickly as combining forms so that you can hear the way they are pronounced with the combining vowel. We will start at the top right-hand side and move around in a clockwise fashion.

rhin/o
Nose

cardi/o
Heart

gastr/o
Stomach

oste/o
Bone

arthr/o
Joint

my/o
Muscle

hepat/o
Liver

cephal/o
head

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Using medical terms goes two ways—you will need to know both how to define a medical term when you hear or see it and how to build a medical term when you need to use one. Luckily, there are strategies that can help you do both things. We will start with strategies for defining terms.

Most importantly, when you encounter an unfamiliar medical term, do not panic. Identifying the individual word parts gives you the information you need to understand the basic meaning.

Once you've overcome your initial panic impulse, divide the word into its parts.

After that, define each word part.

Finally, put together the meaning of the word parts to figure out what the term is describing.

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Let's practice this defining process with the term dysmenorrhea.

This word breaks into three parts: the prefix dys-, the combining form men/o, and the suffix -rrhea.

Dys- means abnormal, difficult, or painful.

Men/o means menstruation.

-rrhea means discharge.

If we assemble these meanings, we get difficult or painful menstrual discharge.

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For some people, it is helpful to think about medical terms as a puzzle and the individual word parts as puzzle pieces.

You can see that symbolically represented in Figure 1.3, which shows how to work out the meaning of a medical term by dividing it into its word parts and then defining each part. Note the color and shape associated with each part of the word.

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Now that you know how to define a term, let's look at the way to build a medical term. This is essentially the reverse process of that used to define terms.

In this case, we start with the definition.

Then, we identify the word parts that make up this definition.

Finally, we string the word parts together to make a medical term.

We will practice this by creating a term that means fibrous skin tumor.

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We know our definition is fibrous skin tumor.

The word parts we need are the root fibr/o, which means fibrous, the root dermat/o, which means skin, and the suffix -oma, which means a tumor or mass.

We string this together as dermatofibroma. Notice that we use the combining vowel between the two roots, but we do not use it between the root and the suffix.

This term also shows us an interesting truth—not all possible combinations of word parts yield actual medical terms. We could have strung these parts together to make the term fibrodermatoma. While that term meets our definition and uses our word parts correctly, it is not a recognized medical term. This is frustrating for beginning students, but don't get discouraged. Over time, picking the correct combination gets easier.

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Because many medical terms come from Latin and Greek, they follow Latin and Greek rules of pluralization. These rules are not the same as the pluralization rules used in English. In other words, you don't pluralize most medical terms by adding an -s or an -es to the end.

The table on screen shows rules for pluralizing medical terms. Take a few minutes to look through this table now, and work on committing these rules to memory as you work through this chapter of the text.

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In addition to learning new pluralization rules for medical terms, you will have to learn some new methods of pronunciation. This is, again, largely due to the Latin and Greek backgrounds of many of these terms.

On this slide and the following slide, we'll show some pronunciation hints that will help you work through the new terms you are learning. I will pronounce the terms covered onscreen so you can hear them, but it is up to you to read through the hints yourself.

First, we have bursae and coelom.

Then, cerebrum and gingivitis.

Cardiac and gastric.

Then cholesterol and chemical.

And finally, syncope and nares.

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Here we start with bronchi and nuclei.

Then, pneumonia and pneumogram.

Tachypnea and hypopnea.

Finally, psychiatry and psychology.

Congratulations! You have now finished your first chapter!

When you feel like you've got a good handle on the Chapter 1 material—and you've compared what you've learned to the Chapter Objectives—you will be ready to move on to Chapter 2.

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