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Welcome to Chapter 2, Suffixes. As you learned in Chapter 1, suffixes are the last part of a medical term. Suffixes add a lot of information to a word root or combining form, and they help you communicate more accurately with other healthcare providers. There are a lot of suffixes in this chapter, but they will appear over and over again in the following chapters. As such, it is a good idea to take the time to learn them now; it will save so much time later!

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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:

- Explain the role of suffixes in building medical terms.
- Use suffixes to indicate diseases or abnormal conditions.
- Use suffixes to indicate surgical procedures.

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- Use suffixes to indicate diagnostic procedures.
- Use general suffixes to build additional medical terms.
- Use suffixes to indicate medical specialties or personnel.
- Use suffixes to convert word roots into adjectives.

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Suffixes are found at the end of medical terms built from Latin or Greek word parts. All constructed terms **MUST** have a suffix—it is the only mandatory word part!

Changing the suffix on a term changes the meaning of the entire term. Consider some examples built using the combining form *cardi/o*, which means heart.

In the first term, the suffix is -logy, which is a suffix you are probably familiar with from your biology or psychology courses. It means study of. In this case, cardiology means study of the heart.

In the second term, -dynia is the suffix. It means pain, and it is one of several suffixes with that meaning. This gives us the term cardiodynia, or heart pain.

In the third term, the suffix is -megaly, which means enlarged. It creates the term cardiomegaly, which means enlarged heart.

Notice that the suffixes in each of these terms begins with a consonant, making it necessary to use the combining vowel o. Remember, using or dropping the combining vowel makes the difference between spelling and pronouncing terms correctly or incorrectly.

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Most suffixes are not associated with just one medical specialty or body system; as such, you will use many of the same suffixes throughout your study of medical terminology.

In this lesson, the suffixes will be divided into categories based on what they indicate about the word root. In particular, we will look at suffixes that indicate:

- Diseases or abnormal conditions;
- Surgical procedures;
- Diagnostic procedures;
- General information,
- And, medical specialties or personnel.

We will also consider some suffixes that are used to convert word roots into adjectives.

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On this screen and the subsequent screens, we will pronounce and define each suffix. Then, we will give an example of a word that uses that suffix. We will begin with suffixes indicating diseases or abnormal conditions.

The suffix -algia means pain. An example using this suffix is gastralgia, which is stomach pain.

-asthenia means weakness. An example is myasthenia, or muscle weakness.

-cele means protrusion. A cystocele is protrusion of the urinary bladder.

-dynia is another suffix meaning pain. Cardiodynia, or heart pain, is an example that uses this suffix.

-cytosis means an abnormal condition of too many cells. Erythrocytosis is too many red cells.

-ectasis means dilated. Bronchiectasis refers to dilated bronchi.

-edema means swelling. Lymphedema is lymphatic swelling.

-emesis means vomiting. Hematemesis is vomiting blood.

-emetic is a prefix meaning pertaining to vomiting. An antiemetic helps prevent vomiting.

-emia means blood condition. Leukemia is a blood condition involving white cells.

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-ia means condition. Pneumonia is a lung condition.

-iasis means abnormal condition. Lithiasis is an abnormal condition of stones.

-ism means state of. Hypothyroidism is a state of insufficient thyroid hormones.

-itis means inflammation, and it is a very common suffix. Dermatitis is inflammation of the skin.

-lith means stone. A cystolith is a bladder stone.

-lysis means to destroy. Osteolysis is to destroy bone.

-lytic is similar to -lysis, and it means destruction. If a medication is described as thrombolytic, it is used for the destruction of blood clots.

-malacia means abnormal softening. Chondromalacia is abnormal softening of cartilage.

-megaly means enlarged. Cardiomegaly refers to an enlarged heart.

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-oma refers to a tumor or mass. A carcinoma is a cancerous tumor.

-osis is another suffix that means abnormal condition. Cyanosis is an example, and it refers to an abnormal condition of blue skin.

-pathy means disease. Myopathy is muscle disease.

-penia means too few. Cytopenia is a condition in which there are too few cells.

-phobia means fear, and it is likely a suffix you have heard before. An example of a word with this suffix is photophobia, which is fear of light.

-plegia means paralysis, and it is typically used with a prefix that indicates where the paralysis occurs. Paraplegia, for example, is paralysis of both lower extremities.

-ptosis means drooping. Proctoptosis is a drooping rectum.

-rrhage means abnormal flow. A hemorrhage is an abnormal flow of blood.

-rrhagia is an abnormal flow condition. Menorrhagia is an abnormal menstrual flow condition.

Let's stop for a minute to consider the difference between those last two suffixes, -rrhage and -rrhagia. Where the suffix -rrhage typically refers to a one-time abnormal flow, the suffix -rrhagia refers to an ongoing state of abnormal flow. With practice, it will become easier for you to differentiate between these suffixes.

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-rrhea means discharge. The discharge referred to by the suffix -rrhea is generally less severe than the abnormal flow referred to by the suffixes -rrhage and -rrhagia. Rhinorrhea is an example that uses this suffix, and it means discharge from the nose, as in the case of a runny nose.

-rrhexis is the last of our double r suffixes in this set, and it means rupture. Hysterorrhexis is rupture of the uterus.

-sclerosis means hardening. Arteriosclerosis is hardening of an artery.

-spasm means involuntary muscle contraction. A bronchospasm is an involuntary contraction of the bronchi muscles.

-stasis means stopping. Hemostasis is stopping the flow of blood.

-stenosis means narrowing. Angiostenosis is narrowing of a blood vessel.

-toxic means poison. A substance that is cytotoxic is poisonous to cells.

Finally, -uria means urine condition. Hematuria is a condition of blood in the urine.

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Now we will move on to suffixes that indicate surgical procedures. Some of these suffixes will appear in every chapter of your book. The first two, -clasia and -desis, are specifically used with roots referring to bones and joints.

-clasia means surgical breaking. Osteoclasia is surgical breaking of a bone.

-desis means surgical fusing. Arthrodesis is surgical fusing of a joint.

-ectomy means surgical removal and is a very common suffix. A gastrectomy is surgical removal of the stomach.

-ostomy means to surgically create an opening. A colostomy surgically creates an opening for the colon, usually through the abdominal wall.

-otomy means cutting into. When a thoracotomy is performed, the doctor is cutting into the chest.

Let's stop for a second to talk about those last three prefixes, -ectomy, -ostomy, and -otomy. These suffixes are easily confused by beginning students. Take some time to practice these three suffixes—they refer to very different procedures even though they have a similar sound.

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-pexy means surgical fixation. It is similar to the suffix -desis, which means surgical fusing. The primary difference is that -desis is used for bones and joints, whereas -pexy is used for other parts of the body. Nephropexy is surgical fixation of a kidney.

-plasty means surgical repair and it is a very common suffix. Dermatoplasty is surgical repair of the skin.

-rrhaphy means suture. Myorrhaphy is suturing together of muscle.

-tome is an instrument to cut. It is related to the suffix -otomy, which means cutting into. A dermatome is an instrument to cut skin.

Lastly, -tripsy means surgical crushing. Lithotripsy is surgical crushing of a stone.

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Now let's review some suffixes that are used for terms that indicate diagnostic procedures.

-centesis means puncture to withdraw fluid, and -centesis procedures typically involve the use of a needle. Arthrocentesis is a puncture to withdraw fluid from a joint.

The next three suffixes are related but have very different meanings. The first is -gram, which means a record. An electrocardiogram is a record of the heart's electrical activity.

The next suffix is -graph, which means an instrument for recording. An electrocardiograph is an instrument used to record the heart's electrical activity.

The last of these three suffixes is -graphy, which means the process of recording. Electrocardiography is the process of recording the heart's electrical activity.

Let's take a moment to consider the way that words using these three suffixes fit together. To create an electrocardiogram printout, a technician must use an electrocardiograph instrument. The process of using the instrument to create the printout is electrocardiography.

Moving on, we have -manometer, which means an instrument for measuring pressure. A sphygmomanometer measures blood pressure.

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-meter means an instrument for measuring. An audiometer is an instrument to measure hearing.

-metry is the process of measuring. Audiometry is the process of measuring hearing.

These two suffixes, -meter and -metry, are similar to -graph and -graphy on the previous screen. An audiometer is an instrument used in the process of audiometry.

-scope is an instrument for viewing. A gastroscope is used to view the stomach.

-scopy is the process of visually examining. Gastroscopy is the process of visually examining the stomach.

Yet again, we see the same relationship with -scope and -scopy that we did with -meter and -metry and -graph and -graphy: a gastroscope is the instrument used in the process of gastroscopy.

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Now we are going to turn to general suffixes that don't fit into any of the other categories. Some of these suffixes are very specialized, and you may only see them in the examples shown here. Others may look familiar to you from terms you've seen in the past.

-cle means small. A vesicle is a small sac or blister.

-cycosis means pregnancy. A salpingocycosis is a pregnancy in the uterine tube.

-cyte means cell. A leukocyte is a white blood cell.

-derma means skin condition. Leukoderma is a condition of white patches on the skin.

-dipsia means thirst. Polydipsia means much or frequent thirst, and it is often a symptom of diabetes.

-esthesia means feeling or sensation. Anesthesia means without sensation.

The last three suffixes on this slide are related. The first, -gen, means that which produces. A mutagen is that which produces mutations.

The next, -genesis, means produces. Osteogenesis produces bone.

The last, -genic, means producing. Something that is carcinogenic is producing cancer.

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The next two suffixes, -globin and -globulin, mean protein. Hemoglobin is a blood protein and immunoglobulin is a protective protein of the immune system.

-gravida means pregnancy, and it is often used with a prefix that indicates the number of times a woman has been pregnant. For example, multigravida means many pregnancies.

-kinesia means movement. Bradykinesia is slow movement.

-oid means resembling. A lipoid resembles fat.

-ole means small. An arteriole is a small artery.

-opia means vision. Diplopia is double vision, or seeing two of something.

-opsy means view of, and it is a suffix you probably recognize. Biopsy means view of life, and it refers to a procedure in which cells are removed for examination with a microscope.

-osmia means sense of smell. A person with anosmia has no sense of smell.

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-oxia means oxygen. Anoxia means without oxygen.

The suffix -para means to bear offspring. A woman who is nullipara has borne no children. In the next chapter we will see there is also a prefix para- that has a very different meaning.

-partum means childbirth. Postpartum means after childbirth.

-pepsia means digestion. Bradypepsia is slow digestion.

-phagia, spelled with a g, means eating or swallowing. Dysphagia is difficulty swallowing. -phasia, spelled with an s, means speech. Aphasia is lack of speech. Take care not to confuse -phagia with a g and -phasia with an s!

-phil means attracted to. An eosinophil is attracted to a rosy-colored dye.

-phonia means voice. A person with aphonia is without voice.

-plasia means formation of cells. Hyperplasia is excessive formation of cells.

-plasm is related to -plasia, and it means formation. A neoplasm is a new formation of tissue.

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-pnea means breathing. Apnea is lack of breathing. You may be familiar with the word apnea from the term sleep apnea, which means lack of breathing during sleep.

-poiesis means formation. Hematopoiesis is blood formation.

-porosis means porous. Osteoporosis refers to porous bone.

-ptysis means spitting. Hemoptysis is spitting blood.

-therapy means treatment, and it is a suffix you already know from everyday life. Chemotherapy is treatment with chemicals.

-thorax means chest. Hemothorax is blood in the chest. This term does not refer to the blood that normally flows through the organs in your chest; rather, it refers to blood that has accumulated in the chest and is not supposed to be there!

-trophic means development. Amyotrophic means without muscle development. Related to -trophic is -trophy, which also means development. Hypertrophy is excessive development.

Finally, -ule means small. A venule is a small vein.

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Now we come to suffixes that indicate a specialty or profession, and you may know some or all of these. As we've done on the previous screens, I will read the suffixes and meanings and then give an example term.

The suffix -er means one who. A radiographer is one who takes X-rays.

-iatric means medical specialty. Psychiatric refers to the medical specialty of the mind.

-iatrist means physician. A psychiatrist is a physician who specializes in the mind.

-iatry means medical treatment. Podiatry is medical treatment of the foot.

-ician means specialist. A pediatrician is a specialist for children.

-ist also means specialist. A pharmacist is a drug specialist.

-logist means one who studies. A cardiologist is one who studies the heart.

Finally, -logy means study of. Cardiology is study of the heart.

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Now we are ready for our last group of suffixes. Before we begin this group, let's take a minute to discuss them.

In some cases, one term is paired with a second term to indicate location, as in the case of the term gastric ulcer. Ulcer is a condition and gastric tells you that it is in the stomach. To create the word gastric, the suffix -ic is paired with the combining form gastr/o, giving us the adjective form for stomach.

All of the adjective suffixes discussed here have the same meaning—pertaining to. In addition, these suffixes are all quite short, between two and four letters long.

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Let's review these suffixes and examples. Because each of these roots has the same meaning, I will read the suffix and provide the example, but I will not define each suffix individually as I have on previous screens.

The first suffix is -ac. It is used in the term cardiac, which means pertaining to the heart.

-al is used in the term duodenal, which means pertaining to the duodenum.

-an appears in the term ovarian. Ovarian means pertaining to the ovary.

-ar is used in ventricular, which means pertaining to a ventricle.

-ary is part of the term pulmonary, which means pertaining to the lungs.

-atic is used in lymphatic. Lymphatic means pertaining to lymph.

-eal appears in the term esophageal, which means pertaining to the esophagus.

-iac is used in hypochondriac, which means pertaining to below the cartilage.

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-ic, as we saw previously, is used in the term gastric. Gastric means pertaining to the stomach.

-ine is used in the term uterine, which means pertaining to the uterus.

-ior is part of the term superior. Superior means pertaining to above.

-nic is used in embryonic, which means pertaining to an embryo.

-ory is used in auditory. Auditory means pertaining to hearing.

-ose, spelled o-s-e, appears in adipose, which means pertaining to fat.

-ous, spelled o-u-s, is in venous, which means pertaining to a vein.

Finally, -tic is found in the term hepatic. Hepatic means pertaining to the liver.

Congratulations! You have finished the lesson about suffixes. Take some time on your own to review the word parts presented here. There are a lot of them, and you will be seeing them again and again throughout this course. Investing some time in learning these now will benefit you later.

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