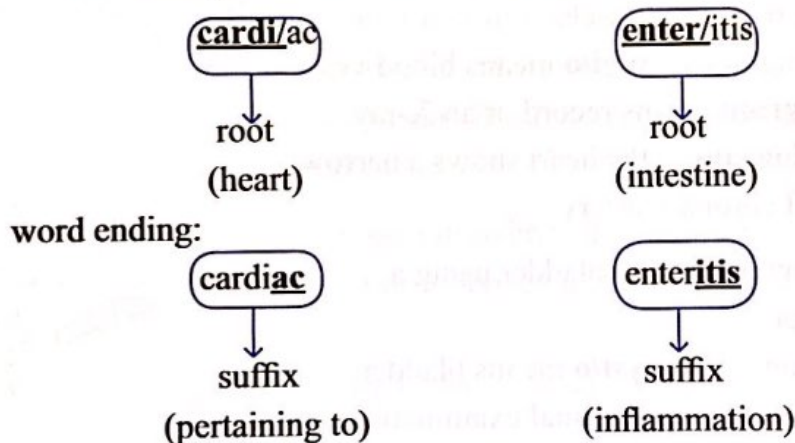


CHAPTER 01

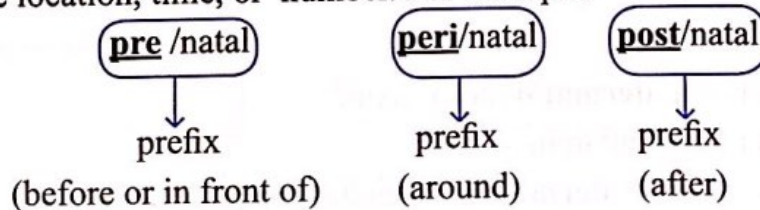
Basic Word Structure

Students beginning any kind of medical or paramedical course are faced with a large number of complex medical words. However, it is possible to understand many medical terms and build new ones by learning word parts that can be combined in a variety of ways. The four types of word parts are:

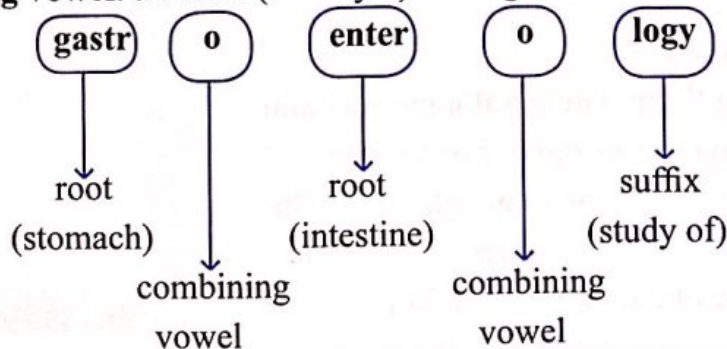
1. Word root: the main part or foundation of a word:



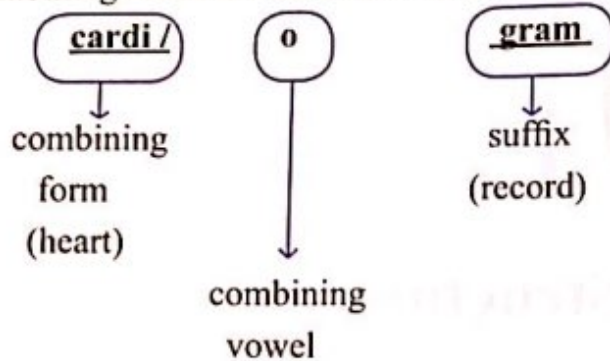
2. Prefix: word beginning. It changes the meaning of the root. Prefixes usually - but not always - indicate location, time, or number. For example:



4. Combining vowel: a vowel (usually o) linking the root to the suffix or to another root:



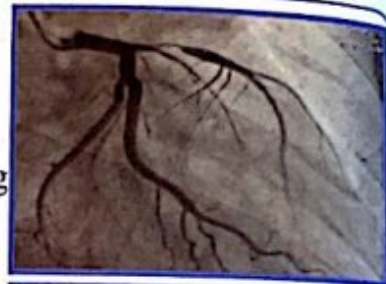
5. Combining form: the combination of a word root with the combining vowel:



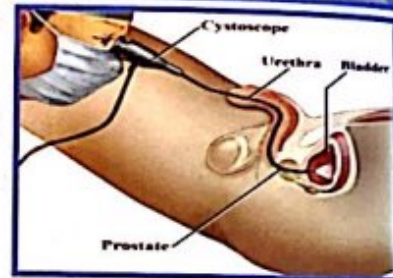
1. Commonly-Used Combining Forms

Study these words, which show some of the commonly-used combining forms, and then do the exercises following them.

angiogram (n)
(AN-jee-o-gram) an X-ray of blood vessels
Combining Form: **angi/o** means blood vessel.
Suffix: **-gram** means record or an X-ray.
The **angiogram** of the heart shows a narrowing in the left coronary artery.



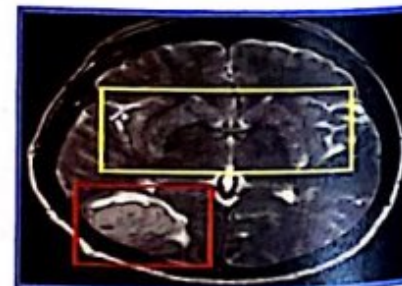
cystoscopy (n)
(si-STAW-kə-pee) an examination of the bladder using a cystoscope
Combining Form: **cyst/o** means bladder.
Suffix: **-scopy** means visual examination.
The **cystoscopy** showed that she had bladder cancer.



dermatitis (n)
(DER-mə-TAI-təs) skin inflammation
Combining Form: **dermat/o** means skin.
Suffix: **-itis** means inflammation.
She develops contact **dermatitis** when her hands touch soap.



encephaloma (n)
(en-SE-fə-LO-mə) a brain tumour
Combining Form: **encephal/o** means brain.
Suffix: **-oma** means tumour or swelling.
The final diagnosis was **encephaloma**; the tumour was occupying a large part of the left hemisphere of the brain.



gingivectomy (n)
(JIN-jə-VEK-tə-mee)

the surgical removal of excess gum tissue
Combining Form: **gingiv/o** means gums of the mouth.

Suffix: **-ectomy** means surgical removal.

A **gingivectomy** is necessary when the gums have pulled away from the teeth creating deep pockets.

A **gingivectomy** can be done to remove overgrown gum tissue and improve the appearance of the gums.



haematoma (n)
(US – **hematoma**;
HEE-mə-TO-mə)

mass of blood under the skin

Combining Form: **haemat/o** means blood.

Suffix: **-oma** means swelling.

Note: in this term **-oma** does not mean a tumour in the sense of a growth of cells.

The patient was involved in a car accident and developed a big **haematoma** on his forehead.



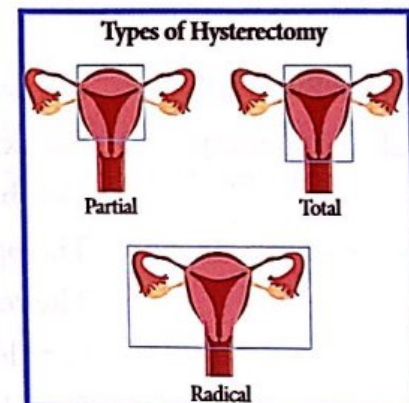
hysterotomy (n)
(HI-ster-REK-tə-mee)

surgical incision into the womb or uterus

Combining Form: **hyster/o** means womb or uterus.

Suffix: **-tomy** means surgical incision or cutting into.

She had a **hysterotomy** during her caesarean section to remove the uterine contents.



otoplasty (n)
(O-tə-pla-stee)

surgical repair of the ear

Combining Form: **ot/o** means ear.

Suffix: **-plasty** means surgical repair.

The patient had an **otoplasty** to repair the right-ear deformity.



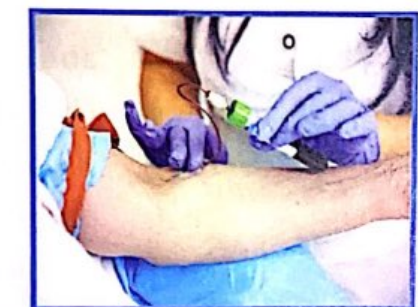
phlebotomy (n)
(fle-BAW-tə-mee)

an incision into a vein for the purpose of drawing blood

Combining Form: **phleb/o** means a vein.

Suffix: **-tomy** means surgical incision.

She works in the **phlebotomy** department, drawing blood samples from patients.



splenomegaly (n) enlargement of the spleen
(SPLEE-nə-ME-gə-lee) Combining Form: **splen/o** refers to the spleen.

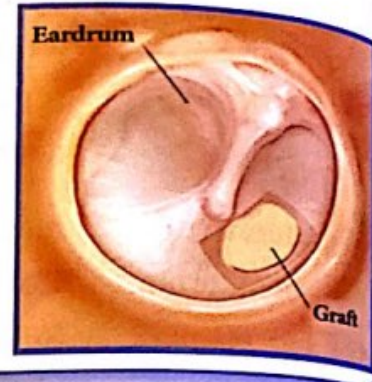
Suffix: **-megaly** means enlargement.

A clinical examination showed mild **splenomegaly**; the spleen looks abnormally large.

tympanoplasty (n) surgical repair of the eardrum
(tim-PA-no-pla-stee) Combining Form: **tympan/o** means eardrum.

Suffix: **-plasty** means surgical repair.

In order to improve his hearing and stop frequent ear infections, the doctor decided to do a **tympanoplasty** to close a hole in the patient's left eardrum.



2. Commonly-Used Prefixes

Study these words, which show some of the commonly-used prefixes, and then do the exercises following them.

abnormal (adj) not normal or away from normal
(ab-NOR-məl) Prefix: **ab-** means away from (**not** in this word).
Combining Form: **norm/o** means normal.
The opposite of it is **normal**.

The results of the blood test were **abnormal**. The red blood-cell count was very low.

The chest X-ray was **abnormal**. It showed the heart was enlarged.

abnormality (n) the condition of not being normal
(AB-nor-MAL-i-tee) Prefix: **ab-** means away from (**not** in this word).
Combining Form: **normal/o** means normal.
Suffix: **-ity** means condition.

The X-ray of the kidneys showed no **abnormalities**. Both kidneys were quite normal.

No **abnormality** was detected in the nervous system.

The adverb is **abnormally**.

She had an **abnormally** fast heartbeat.

Her periods were **abnormally** frequent.



afebrile (adj)	without fever
(ay-FE-bril)	Prefix: a- means no, not, or without.
OR	Combining Form: febrile means fever. The opposite of afebrile is febrile .
(ay-FEE-bril)	She is afebrile now. Her temperature went down to normal. The febrile patient was given a 500mg-paracetamol tablet and cold compresses to lower his temperature.
dysuria (n)	pain on or difficulty in passing urine
(dis-YUR-ree-ə)	Prefix: dys- means difficult or painful. Combining Form: ur/o means urine or urinary tract. Suffix: -ia means an abnormal condition. She was complaining of dysuria . He had a long history of dysuria .

Word Formation Note: the prefix **dys-**

The prefix **dys-** carries the idea of difficult. Thus,

dysarthria (dis-AR-three-ə) means difficulty in speaking clearly;

dyspepsia (dis-PEP-see-ə) means difficulty in digestion;

dysphagia (dis-FAY-jee-ə) means difficulty in swallowing; and

dyspnoea (UK; US – **dyspnea**; disp-NEE-ə) means difficulty in breathing.

hyperlipidaemia (n) excessive cholesterol in one's blood

US: **hyperlipidemia** Prefix: **hyper-** means above, excessive, or beyond.

(HAI-per-LI-di-DEE-mee-ə) Combining Form: **lipid** means fat.

Suffix: **-aemia** means blood condition.

The blood-test results showed that the patient is suffering from **hyperlipidaemia**.

Word Formation Note: the prefix **hyper-**

The prefix **hyper-** carries the idea of high or excessive. Thus,

hyperglycaemia (UK: US – **hyperglycemia**; HAI-per-glai-SEE-mee-ə) means high blood sugar;

hyperpyrexia (HAI-per-pai-REK-see-ə) means high body temperature;

hyperventilation (HAI-per-VEN-ti-LAY-shən) means very fast breathing;

hyperthyroidism (HAI-per-THAI-roy-di-zəm) means the thyroid gland is too active; and

hypertension (HAI-per-TEN-shən) means high blood pressure.

intercostal (adj)
(IN-ter-KAW-stəl)

between the ribs
Prefix: **inter-** means between.
Combining Form: **cost/o** means ribs.
Suffix: **-al** means pertaining to or referring to.
He had **intercostal** bleeding.
The **intercostal** muscles stiffen the chest wall.



preoperative (adj)
(pree-AW-prə-tiv)

before a surgical operation
Prefix: **pre-** means before.
Root: **operat** means operation.
Suffix: **-ive** means pertaining to or referring to.
The opposite is **postoperative**. The prefix **post-** means after.
All necessary **preoperative** investigations were done for the patient before admission.
The result of her **preoperative** haemoglobin check was normal.
His **postoperative** recovery took a few weeks.
The adverb is **preoperatively**.
She developed a fever **preoperatively**.
He was X-rayed **preoperatively**.
Postoperatively she had some complications.
Postoperatively her condition stabilized.

supracostal (adj)
(SU-prə-KAW-stəl)

above the ribs
Prefix: **supra-** means above, over, on the top of, or beyond.
Combining Form: **cost/o** means rib.
He experienced **supracostal** trauma.

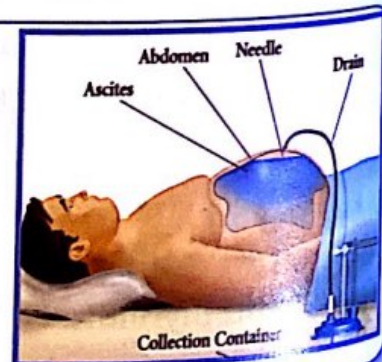
3. Commonly -Used Suffixes

Study these words, which show commonly-used suffixes, and then do the exercises on pages 9-13.

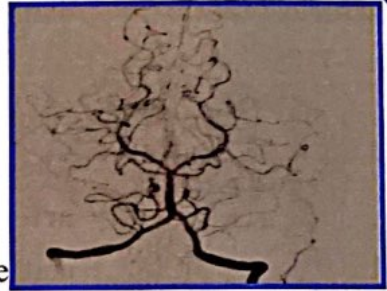
abdominocentesis (adj) surgical puncture of the abdominal cavity
(ab-DAW-mi-no-sen-TEE-sis) Combining Form: **abdomin/o** means abdomen.

Suffix: **-centesis** means the puncture and aspiration of.

The patient had **abdominocentesis** to remove excess fluids from the abdomen.



angiography (n) an X-ray examination of blood vessels
 (AN-jee-o-gra-fee) Combining Form: **angi/o** means blood vessel.
 Suffix: **-graphy** means an X-ray examination.
 The **angiography** shows that the left coronary artery is partially blocked.
 She had an **angiography** performed to evaluate her blood-vessel condition.



angiographic (adj) referring to an X-ray examination of blood vessels
 (AN-jee-o-GRA-fik) Combining Form: **angi/o** means blood vessel.
 Suffix: **-graphy** means an X-ray examination.
 Suffix: **-ic** means pertaining to.
 The **angiographic** procedure was necessary to examine her blood vessels.

angiograph (n) an X-ray or film of blood vessels after injection of a radiopaque substance

(AN-jee-o-graf)

angiogram (n) (same as **angiograph** above) a roentgenogram made by angiography
 (AN-jee-o-gram) Combining Form: **angi/o** means blood vessel.
 Suffixes: **-graph** or **-gram** both mean record or X-ray.
 The **angiograph** (or **angiogram**) showed a narrowing in the right coronary artery.

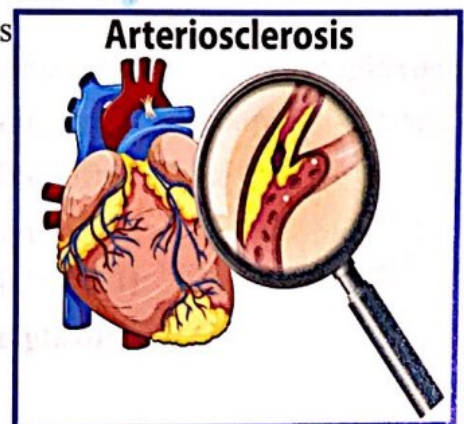
The doctor wrote a report on the last **angiograph** (**angiogram**).

arterionecrosis (n) necrosis (death of tissue) of an artery or arteries
 (ar-TIR-ree-o-ne-KRO-sis) Combining Form: **arteri/o** means artery.
 Suffix: **-necrosis** means the death of tissue.

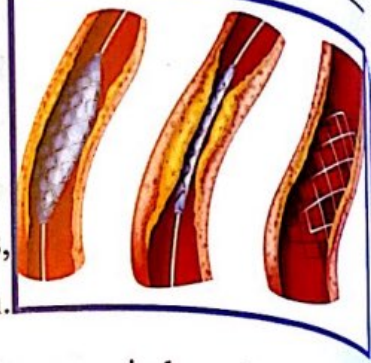
arteriosclerosis (n) abnormal hardening of the walls of arteries
 (ar-TIR-ree-o-skler-RO-sis) Combining Form: **arteri/o** means artery.

Suffix: **-sclerosis** means abnormal hardening or thickening.

The test results show that the patient has **arteriosclerosis** affecting the coronary arteries.



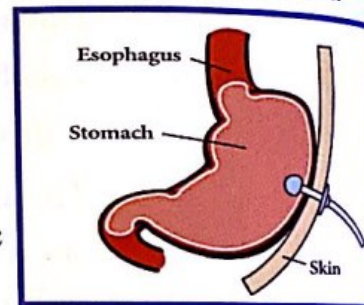
arteriostenosis (n) abnormal narrowing of an artery or arteries
(ar-TIR-ree-o-ste-NO-sis) Combining Form: **arteri/o** means artery.
Suffix: **-stenosis** means abnormal narrowing.
The cardiac catheter shows that there is severe **arteriosclerosis** affecting the coronary arteries, and so the patient requires surgical intervention.



diarrhoea (n) frequent flow of loose or watery stools and an increase in bowel movement
(dye-ah-REE-ah) Prefix: **dia-** means through or completely.
(US – **diarrhea**) Suffix: **-rrhoea** means flow or discharge.
Food poisoning is often associated with stomach pain and **diarrhoea**.

gastrodynia (n) pain in the stomach
(GA-sto-DAI-nee-ə) Combining Form: **gastr/o** means stomach.
Suffix: **-dynia** means pain.
Another suffix indicating pain is **-algia**.
She suffered from **gastrodynia** after eating her lunch at the restaurant.

gastrotomy (n) a surgical incision into the stomach
(ga-STRAW-tə-mee) Combining Form: **gastr/o** means stomach.
Suffix: **-tomy** means surgical incision.
The **gastrotomy** showed that she had a gastric ulcer.

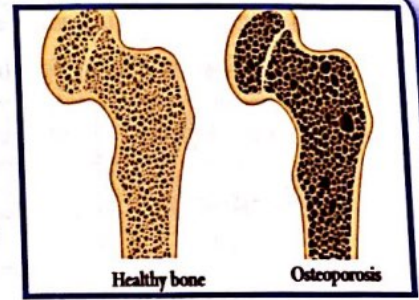


hepatomegaly (n) enlargement of the liver
(HE-pə-to-ME-gə-lee) Combining Form: **hepat/o** means liver.
Suffix: **-megaly** means enlargement.
The doctor found that the patient had significant **hepatomegaly**.

neuralgia (n) sharp and severe pain along the course of a nerve
(nur-AL-jee-ə) Combining Form: **neur/o** means nerve.
Suffix: **-algia** means pain.
She complains of **neuralgia** in the left leg.
He was given some painkillers to relieve his **neuralgia**.



osteomalacia (n) abnormal softening of bone
 (AW-stee-o-mə-LAY-see-ə) Combining Form: **oste/o** means bone.
 (oss-tee-oh-mal-LAY-she-ah) Suffix: **-malacia** means softening or
 loss of consistency, of an organ or tissue.
 Older women often suffer from **osteomalacia**
 and so their bones break easily.



**Now test how well you have studied the words from
angiogram to osteomalacia.**

Exercise 1

Match each word on the left with its meaning on the right. Write each answer on the line provided.

Word		Meaning
1. gastrodynia	_____	a. an abnormal softening of bone
2. supracostal	_____	b. a high body temperature
3. osteomalacia	_____	c. a narrowing of the arteries
4. dysuria	_____	d. difficulty in passing urine
5. arteriostenosis	_____	e. frequent flow of loose or watery stool
6. diarrhoea	_____	f. pain in the stomach
7. dyspnoea	_____	g. pertaining to above the ribs
8. hyperpyrexia	_____	h. difficulty in breathing
9. gingivectomy	_____	i. surgical repair of the eardrum
10. tympanoplasty	_____	j. a bladder examination using a cystoscope
11. phlebotomy	_____	k. surgical removal of excess gum tissue
12. cystoscopy	_____	l. an incision into a vein so to be able to draw blood

Exercise 2

Write the meaning of each word part.

Word part	Meaning	Word part	Meaning
1. -graphy		7. -scopy	
2. -sclerosis		8. -plasty	
3. -stenosis		9. -oma	
4. -tomy		10. -ectomy	
5. -megaly		11. -itis	
6. -malacia		12. -algia	

Exercise 3

Circle the letter (a, b, c, or d) of the best word-part for each meaning given.

1. urine or urinary tract

- a. splen/o b. stenosis c. ur/o d. phleb/o

2. ribs

- a. oto/o b. gingiv/o c. cost/o d. angi/o

3. brain

- a. spondyl/o b. abdomin/o c. arteri/o d. encephal/o

4. urinary bladder

- a. neur/o b. cyst/o c. dermat/o d. necrosis

5. blood vessel

- a. gingiv/o b. arteri/o c. angi/o d. abdomin/o

6. vein

- a. phleb/o b. hyster/o c. gingiv/o d. tympan/o

7. bone

- a. spondyl/o b. hepat/o c. oste/o d. cyst/o

8. nerve

- a. splen/o b. neur/o c. hepat/o d. cost/o

9. stomach

- a. dermat/o b. gastr/o c. phleb/o d. angi/o

10. uterus/womb

- a. cost/o b. abdomin/o c. arteri/o d. hyster/o

11. gums

- a. spindyl/o b. gingiv/o c. encephal/o d. ur/o

12. vertebra or vertebral column

- a. spindyl/o b. arteri/o c. hepat/o d. oste/o

Exercise 4

Circle the letter (a, b, c, or d) of the best answer to each question.

- Norah suffers from difficulty speaking clearly. This is recorded on her chart as _____.
a. dysphagia b. dyspepsia c. dyspnoea d. dysarthria
- After the patient's temperature decreased and returned to normal, the patient was described as _____.
a. afebrile b. preoperative c. angiographic d. hyperpyretic
- The patient's temperature was over 41°C. He's _____.
a. supracostal b. postoperative c. febrile d. gastric
- Hessah Al Shuhri had an operation last night. Her _____ period was smooth.
a. preoperative b. cardiac c. postoperative d. abnormal
- Khalid was involved in a car accident. Several ribs were broken and he had _____ bleeding.
a. intercostal b. cardiac c. dyspnoeic d. angiographic
- The cardiologist asked the patient to have a/an _____ to examine the blood vessels of the heart.
a. osteomalacia b. gastrodynia c. angiography d. neuralgia
- He avoids eating salt because he suffers from _____.
a. hypertension b. hyperventilation c. hyperglycaemia d. dysuria
- He developed nausea, vomiting, and severe _____ immediately after eating his lunch.
a. hysterectomy b. splenomegaly c. haematoma d. diarrhoea
- The patient had a/an _____ to correct the deformity of his external ear (pinna) and improve its shape.
a. tympanoplasty b. otoplasty c. cystoplasty d. arteriosclerosis
- The patient was referred to the _____ department so that venous blood samples could be drawn for testing.
a. phlebotomy b. gastrotomy c. encephaloma d. spondylitis

Exercise 5

Write the correct word or word part on the line and then combine them to form the new word.

1. abnormal hardening of arterial walls

- a. The combining form _____ means artery.
 b. The suffix _____ means hardening.
 c. The term _____ means an abnormal hardening of arterial walls.

2. surgical incision into the stomach

- a. The combining form _____ means stomach.
 b. The suffix _____ means incision.
 c. The term _____ means surgical incision into the stomach.

3. enlargement of the liver

- a. The combining form _____ means liver.
 b. The suffix _____ means enlargement.
 c. The term _____ means enlargement of the liver.

4. difficulty in breathing

- a. The combining form _____ means breathing.
 b. The prefix _____ means difficult.
 c. The term _____ means difficulty in breathing.

Exercise 6

Read each of the following passages. Then do the exercises following each.

A.

Coronary angioplasty is used to widen coronary arteries that are narrowed or blocked by fatty deposits. The technique may be carried out at the same time as coronary angiography. Under local anaesthesia, a guide wire is inserted through the femoral artery in the groin and up into the affected coronary artery. A balloon catheter is passed up the wire, and the balloon is inflated in the narrowed area to widen it. (From Smith, 2000. *Complete Family Health Guide*.)

Circle the letter (a, b, c, or d) of the best answer.

- What is the topic of this paragraph?
 - coronary angiography
 - coronary angioplasty
 - local anaesthesia
 - coronary arteries
- How is a coronary angioplasty performed?
 - with a balloon catheter
 - by fatty deposits
 - with coronary angiography
 - by blocked arteries

3. Where is the balloon inflated?

- a. in the arteries
- b. in the femoral artery
- c. in the guide wire
- d. in the narrowed area

4. Identify each of the suffixes in the following words and write its meaning on the lines provided.

- a) angioplasty: _____
- b) angiography: _____
- c) femoral: _____

B.

In the UK, about one in six adults has persistent high blood pressure, also known as hypertension. The condition puts strain on the heart and arteries, resulting in damage to delicate tissues. If it is left untreated, hypertension may eventually affect the eyes and kidneys. The higher the blood pressure, the greater the risk that complications such as heart attacks, coronary artery disease, and stroke will develop. (From Smith, 2000. *Complete Family Health Guide*.)

1. What does hypertension mean?

2. How does hypertension affect the heart and blood vessels?

3. When may hypertension affect the eyes and kidneys?

4. What are the complications of hypertension?

5. Find a word in the passage which is similar in meaning to each of the following:

a) excessive working (of a muscle): _____

b) continuing: _____

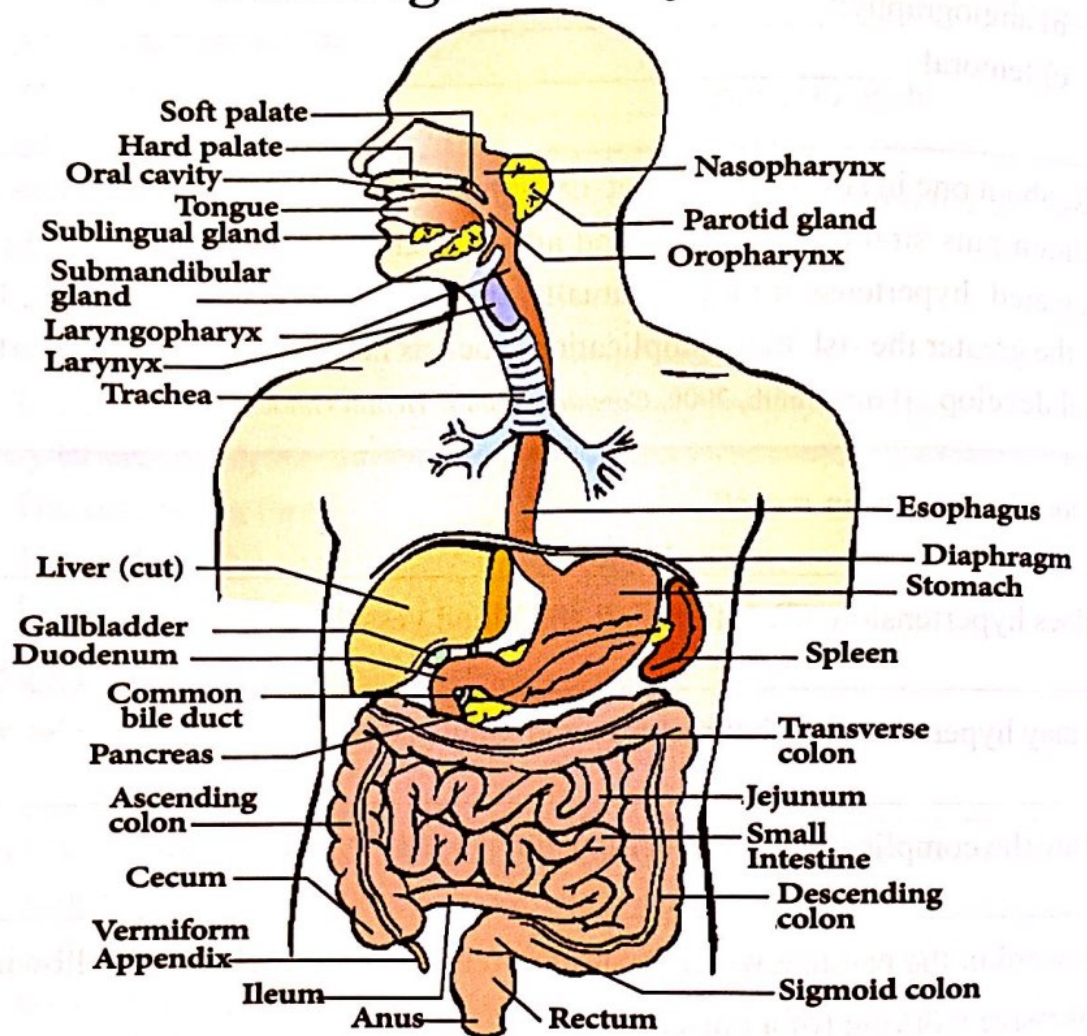
c) relating to the arteries which supply blood to the heart muscles:

d) a sudden attack of weakness affecting one side of the body and resulting from cerebral bleeding or a blood clot in the brain: _____

e) a prefix which means high or excessive: _____

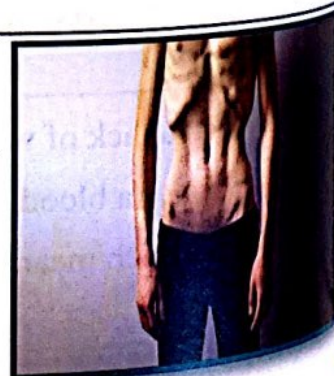
CHAPTER 02

The Digestive System



In this chapter, terms related to the digestive system are introduced. Study these terms carefully and then do the exercises following them.

anorexia nervosa (an-oh-RECK-see-ə ner-VO-sə) (n), known as anorexia, lack or loss of appetite (for food); a serious eating-behaviour disorder primarily of young women in their teens and early 20s that is characterized especially by a pathological fear of weight gain leading to faulty eating



patterns, malnutrition, and usually excessive weight loss

Prefix: **an-** means not or without.

Combining Form: **-orexia** means appetite.

Anorexia can lead to various diseases such as anaemia, for example.

anorexic (adj)
(A-ner-REK-sik)

pertaining to lack or loss of appetite

Prefix: **an-** means not or without.

Combining Form: **-orexia** means appetite.

Suffix: **-ic** means pertaining to or referring to.

Anorexic patients feel weak and are thin. They have no appetite for food.

antiemetic (n)
(AN-tee-e-NE-tik)

a drug that prevents or relieves nausea and vomiting

Prefix: **anti-** means against.

Suffix: **-emetic** means an agent producing vomiting.

Antiemetics are prescribed to relieve or prevent nausea and vomiting.



antiemetic (adj)
(; AN-tee-e-ME-tik)

relating to a drug that relieves or prevents nausea and vomiting

Prefix: **anti-** means against.

Suffix: **-emetic** means relating to or causing vomiting.

The doctor prescribed an **antiemetic** drug to relieve the patient's nausea and vomiting.

ascites (n)
(ə-SAI-teez)

an abnormal accumulation of fluid in the abdomen

Ascites can occur as a complication of trauma, appendicitis, or inflammation of the colon.



buccal (adj)
(Bə-kəl)

pertaining to the cheeks

Combining Form: **bucc/o** means cheek.

Suffix: **-al** means pertaining to or referring to.

She had some ulcers in the **buccal** region.

The **buccal** mucosa is one of the most common sites of oral cancer.



cheilitis (n)
(kai-LAI-təs)

inflammation of the lips
Combining Forms: **cheil/o** means lip.
Suffix: **-itis** means inflammation.
She had a second attack of **cheilitis** this year.
Her lips were red and badly swollen.



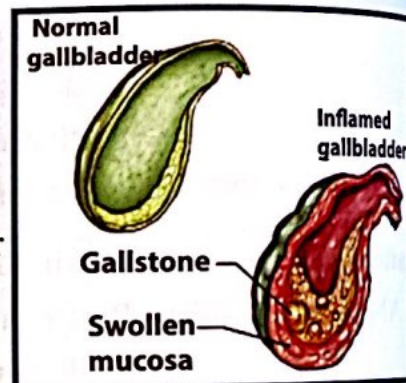
cheilosis (n)
(kai-LO-seez)

fissuring and dry scaling of the lips (plural: **cheiloses** (kai-LO-səs)
Combining Form: **cheil/o** means lip.
Suffix: **-osis** means an abnormal condition.
The patient presented to the clinic complaining of a painful inflammation and cracking of the corners of the mouth, a condition known as **cheilosis**.



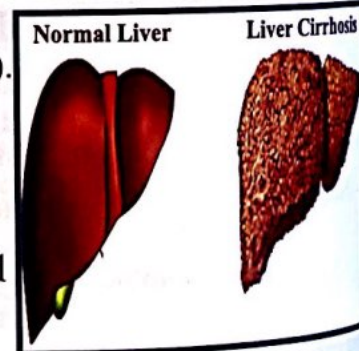
cholecystitis (n)
(KO-lə-si-STAI-təs)

inflammation of the gallbladder
Combining Form: **cholecyst/o** means gallbladder.
Suffix: **-itis** means inflammation.
The patient's gallstones are the cause of her **cholecystitis** that has resulted in severe abdominal pain.



cirrhosis (n)
(sir-RO-səs)

a chronic degenerative disease of the liver
Combining Form: **cirrh/o** means yellow (liver).
Suffix: **-osis** means disease or an abnormal condition.
Tests show that the patient is suffering from chronic **cirrhosis** that has damaged the normal liver cells and replaced them with scar tissue.



cirrhotic (adj)
(sir-RAW-tik)

relating to cirrhosis
Combining Form: **cirrh/o** means yellow (liver).
Suffix: **-otic** means relating to disease or an abnormal condition.

Cirrhotic patients have scarring of the liver and swelling in the legs and abdomen.

defecate (v)
(DE-fə-kayt)

void faeces (stool) from the bowels
The patient **defecated** four times a day. Her stool was watery.

defecation (n)
(DE-fə-KAY-shən)

The patient **defecated** blood in his faeces.

the evacuation or emptying of the bowels; bowel movement (BM)

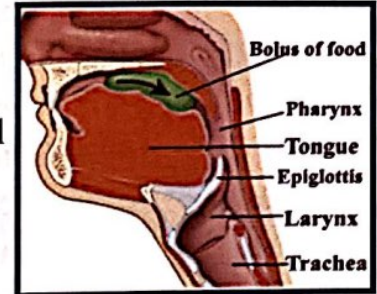
Defecation is the act of eliminating solid or semisolid waste materials (faeces) from the digestive tract.

She has normal **defecation** without straining or constipation.

deglutition (n)
(DEE-glu-TI-shən)

the process of swallowing

The structures involved in **deglutition** include the tongue, the hard and soft palates, pharyngeal muscles, oesophagus, and gastroesophageal junction.



dental caries (n)
(DEN-təl KAR-eez OR KER-eez)

the formation of cavities in the teeth by the

action of bacteria; tooth decay

Oral hygiene is very important to prevent

dental caries.

Dental caries is caused by the action of acids on the enamel surface.



dentition (n)
(den-TI-shən)

1. the number, type, and arrangement of teeth as a whole in the mouth

2. the process of growing new teeth; teething

Combining Form: **dent/o** means teeth.

Suffix: **-ion** means condition (and forms nouns).

There are two types of **dentition**: temporary and permanent.

He started **dentition** at the age of 7 months.

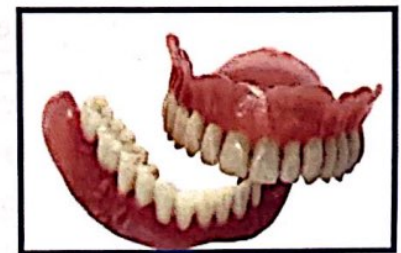


denture (n)
(DEN-cher)

a set of false teeth, fixed to a plate which fits inside the mouth

Dentures are always removed from the patient's mouth before surgery.

He lost all his teeth in the crash, so he now has **dentures** instead.



dysphagia (n)
(dis-FAY-jee-ə)

difficulty in swallowing

Prefix **dys-** means bad, difficult, or painful.

Combining Form: **-phagia** or **-phagy** mean eating or swallowing.



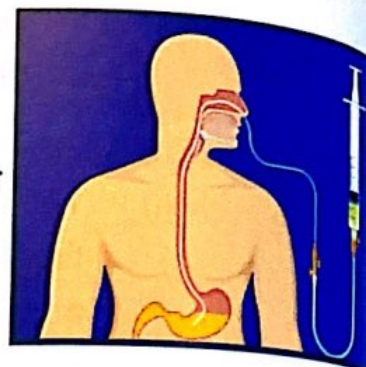
Patients with oral cancer suffer from **dysphagia**.
Some patients with **dysphagia** have problems swallowing certain foods liquids, while others can't swallow at all.

enteral (adj)
(EN-ter-rəl) OR
enteric
(EN-ter-rik)

pertaining to the intestine
Combining Form: **enter/o** means the intestine or bowel.

Suffixes: **-al** and **-ic** both mean pertaining to or referring to.

Enteral nutrition is performed through a tube placed in the nose, the stomach, or the small intestine.



enteritis (n)
(EN-ter-RAI-təs)

inflammation of the small intestine

Combining Form: **enter/o** means the intestine or bowel.

Suffix: **-itis** means inflammation.

He suffered from **enteritis** caused by eating contaminated food.

Her condition was diagnosed as acute **enteritis**, a severe inflammation of the small intestine.

Word Formation Note: -itis

The suffix **-itis** carries the idea of inflammation. Thus, **gastritis** means an inflammation of the stomach; **hepatitis** means an inflammation of the liver; **tonsillitis** means an inflammation of the tonsils; **pharyngitis** means an inflammation of the pharynx; and **laryngitis** means an inflammation of the larynx.

enterostomy (n)
(EN-ter-RAW-stə-mee) surgical incision to make an opening in the intestine

Combining Form: **enter/o** means intestine.

Suffix: **-stomy** means surgical creation of an opening.

The patient had an **enterostomy** to drain away faeces.

The patient has a permanent **enterostomy** because of intestinal cancer.



flatus (n)
(FLAY-tus)

gas in the stomach or intestines that is expelled through the anus
The patient complains of **flatus** and fullness after eating food difficult to digest.

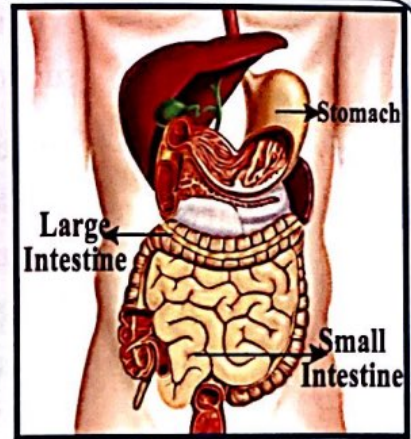
gastroenteritis (n) inflammation of the stomach and intestines
(GA-stro-EN-ter-RAI-təs) Combining form **gastr/o** means the stomach.

Combining Form: **enter/o** means the intestine or bowel.

Suffix: **-itis** means inflammation.

The doctor diagnosed him as having **gastroenteritis** as a result of eating contaminated food.

With **gastroenteritis**, the main symptoms one probably has are diarrhoea and vomiting.



gastroenterologist (n) specialist in the diseases of the stomach and intestines (the digestive
(GA-stro-EN-ter-RAW-lə-jəst) system)

Combining form **gastr/o** means the stomach.

Combining Form: **enter/o** means the intestine or bowel.

Suffix: **-logist** means specialist.

The patient with the gastric ulcer was referred to the **gastroenterologist** for treatment.

The **gastroenterologist** examined the patient and found that she had duodenitis (inflammation of the duodenum).

gastroscopy (n) visual examination of the inside of the stomach using a gastroscope

(ga-STRAW-skə-pee) Combining form **gastr/o** means the stomach.

Suffix: **-scopy** means visual examination.

Gastroscopy is usually done to investigate the cause of symptoms such as heartburn, abdominal pain, difficulty swallowing, vomiting or bleeding from the digestive tract, and to make or confirm a diagnosis.



gingivectomy (n) surgical removal of diseased gum tissue
(JIN-jə-VEK-tə-mee) Combining Form: **gingiv/o** means gingiva or gums.

Suffix: **-ectomy** means surgical removal.

A **gingivectomy** is necessary when the gums have pulled away from the teeth, creating deep pockets.



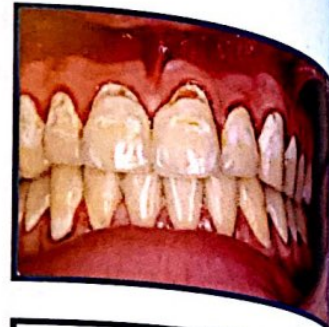
gingivitis (n)
(JIN-jə-VAI-təs)

A **gingivectomy** is usually done before gum disease has damaged the bone supporting the teeth.

inflammation of the gums
Combining Form: **gingiv/o** means gingiva or gums.

Suffix: **-itis** means inflammation.

Chronic **gingivitis** makes the teeth loose and might lead to losing teeth.



hepatorrhaphy (n)
(HE-pə-TOR-rə-fee)

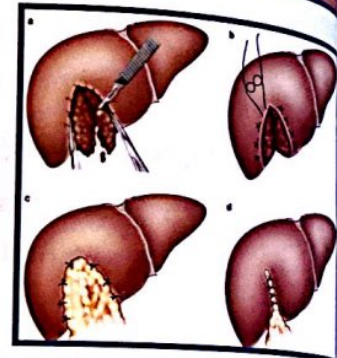
suture of a wound of the liver

Combining Form: **hepat/o** means liver.

Suffix: **-rrhaphy** means to suture.

She underwent a **hepatorrhaphy** after removing diseased tissue from the liver.

In a **hepatorrhaphy**, the liver is anchored to the abdominal wall.



ileectomy (n)
(I-lee-EK-tə-mee)

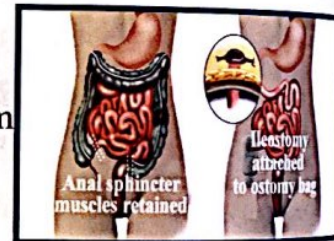
surgical removal of the ileum or part of the ileum

Combining Form: **ile/o** means ileum.

Suffix: **-ectomy** means surgical removal.

She had an **ileectomy** to remove a tumour from the ileum.

She developed several complications after the **ileectomy**.



jaundice (n)
(JAWN-dis)

a yellow discolouration of the skin and other tissues caused by an increased level of bilirubin in the blood

In one's **jaundice**, the skin and the whites of the eyes become abnormally yellow.

The adjective is **jaundiced**.

The test may be repeated frequently in a **jaundiced** newborn to assure that bilirubin levels are dropping.



labioplasty (n)
(LAY-bee-o-pla-stee)

surgical repair of the lips

Combining Forms: **labi/o** and **cheil/o** both mean lip.



Suffix: **-plasty** means surgical repair.

She had a **labioplasty** to repair her cleft lip.

The **labioplasty** was very successful. The lip now looks normal.

mastication (n)

(MA-sti-KAY-shən)

breaking food down into smaller pieces and mixing it with saliva; chewing

The verb **masticate** means chew.

Mastication takes place in the oral cavity (mouth).

In **mastication**, food is crushed and ground by the teeth.

palatoplasty (n)

(PA-lə-to-pla-stee)

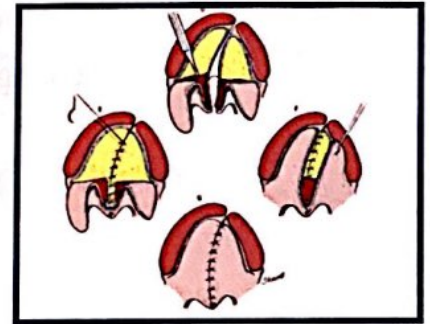
surgical repair of the roof of the mouth

Combining form **palat/o** means palate.

Suffix: **-plasty** means a surgical repair.

He had a **palatoplasty** performed to correct a cleft palate.

She was admitted for a **palatoplasty** to reconstruct her cleft palate.



Word Formation Note: -plasty.

The suffix **-plasty** carries the idea of a surgical repair. Thus,

nephroplasty means a surgical repair of the kidney/s;

angioplasty means a surgical repair of blood vessels;

gastroplasty means a surgical repair of the stomach;

anoplasty means a surgical repair of the anus;

colonoplasty means a surgical repair of the colon; and

duodenoplasty means a surgical repair of the duodenum.

regurgitation (n)

(ree-GER-jə-TAY-shən)

the return of swallowed food to the mouth; vomiting

Regurgitation sometimes occurs after eating too much.

The verb is **regurgitate**: bring (swallowed food) up again to the mouth; vomit

Sometimes he **regurgitates** the food we give him because it won't stay down.



sigmoidoscopy (n) visual examination of the interior of the sigmoid colon using a

(sig-MOY-do-skaw-pee) sigmoidoscope

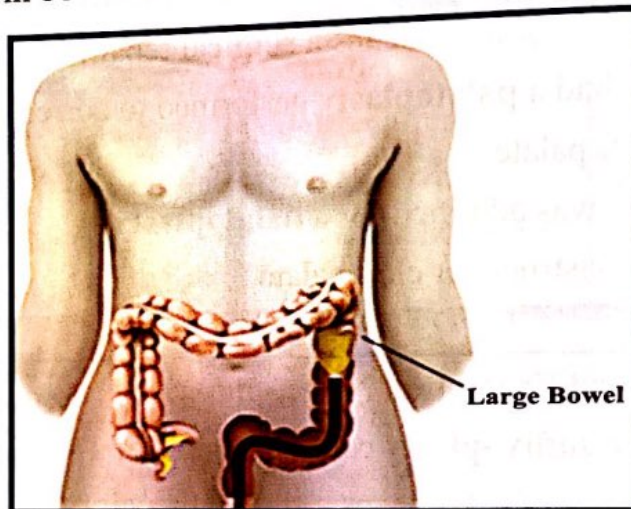
OR

Combining Form: **sigmoid/o** means the sigmoid colon.

(sig-MOY-də-skaw-pee) Suffix: **-scopy** means visual examination.

A flexible **sigmoidoscopy** exam can help the doctor explore possible causes of abdominal pain, rectal bleeding, changes in bowel habits, chronic diarrhoea, and other intestinal problems.

Sigmoidoscopy is a diagnostic test for patients who have rectal bleeding, a change in bowel habits, or other symptoms.



Sigmoidoscopy

stomatitis (n)

inflammation of the mouth

(STO-mə-TAI-təs)

Combining Form: **stomat/o** means mouth.

Suffix: **-itis** means inflammation.

Mouth ulcers are a form of **stomatitis**.

Stomatitis can occur in the cheeks, gums, inside of the lips, or on the tongue.



Now test how well you have studied the words from anorexia to stomatitis.

Exercise 1

Write the meaning of each of the following prefixes and suffixes.

Prefix/Suffix	Meaning	Prefix/Suffix	Meaning
1. an-		6. -logist	
2. anti-		7. -scopy	
3. -ic		8. -tomy	
4. dys-		9. -plasty	
5. -stomy		10. -osis	

Exercise 2

Circle the letter (a, b, c, or d) of the best answer for each meaning on the left.

- relating to vomiting
 - duoden/o
 - tonsil/o
 - emetic
 - orexia
- the cheeks
 - gingiv/o
 - bucc/o
 - labi/o
 - palat/o
- the lips
 - stomat/o
 - angi/o
 - colon/o
 - cheil/o
- eating or swallowing
 - phagia
 - pharyng/o
 - enter/o
 - gastr/o
- intestine
 - stomat/o
 - ile/o
 - enter/o
 - dent/o
- gums
 - bucc/o
 - gingiv/o
 - cheil/o
 - orexia
- palate
 - palat/o
 - labi/o
 - angi/o
 - ile/o
- mouth
 - pharyng/o
 - laryng/o
 - stomat/o
 - labi/o
- blood vessels
 - bucc/o
 - angi/o
 - an/o
 - sigmoid/o
- ileum
 - gastr/o
 - enter/o
 - ile/o
 - gingiv/o

Exercise 3

Match each term on the left with its meaning on the right. Write the answers on the line provided.

Term		Meaning
1. mastication		a. a chronic degenerative disease of the liver
2. deglutition		b. gas in the stomach or intestines that is expelled through the anus
3. flatus		c. the action that moves the food bolus from the mouth into the pharynx and on into the oesophagus; swallowing
4. jaundice		d. breaking food down into smaller pieces and mixing it with saliva
5. cirrhosis		e. a substance that prevents or relieves nausea and vomiting
6. antiemetic		f. a yellow discolouration of the skin and other tissues caused by greater than normal amounts of bilirubin in the blood
7. duodenoplasty		g. the return of swallowed food into the mouth; vomiting
8. defecation		h. a surgical repair of the duodenum
9. regurgitation		i. suture of a wound or injury to the liver
10. hepatorrhaphy		j. the evacuation or emptying of the bowels

Exercise 4

Circle the term that best matches each meaning below.

1. any inflammation of the mouth

- a. gastroplasty b. hepatitis c. stomatitis d. defecation

2. surgical repair of the anus

- a. duodenoplasty b. nephroplasty c. angioplasty d. anoplasty

3. surgical repair of the roof of the mouth

- a. palatoplasty b. mastication c. dentition d. denture

4. inflammation of the gums

- a. cholecystitis b. cheilitis c. pharyngitis d. gingivitis

5. surgical repair of injury or deformity of the lips

- a. nephroplasty b. labioplasty c. cholecystitis d. duodenoplasty

6. surgical removal of the ileum or part of the ileum

- a. ileectomy b. gastrectomy c. gastrostomy d. colectomy

7. inflammation of the stomach and intestines

- a. cirrhosis b. dysphagia c. gastroenteritis d. nephritis

8. difficulty in swallowing

- a. dysphagia b. dysuria c. dysarthria d. dysphonia

9. fissuring and dry scaling of the lips

- a. labioplasty b. palatoplasty c. cheilosis d. cheilitis

10. an abnormal accumulation of fluid in the abdomen

- a. anorexia b. ascites c. stomatitis d. jaundice

Exercise 5

Circle the letter (a, b, c, or d) of the best answer to each question.

1. He had a/an _____ to repair the upper cleft lip.

- a. anoplasty b. gastroplasty c. labioplasty d. palatoplasty

2. Direct viewing of the stomach can be achieved by means of a _____.

- a. colonoscopy b. nephroscopy c. pharyngoscopy d. gastroscopy

3. She had a new upper _____ fitted because her previous one was broken.

- a. denture b. flatus c. enteritis d. ileectomy

4. The _____ artery takes blood to the liver.

- a. hepatic b. gingival c. ileal d. palatine

5. The most common sites for a/an _____ are the stomach and the first few centimetres of the duodenum.

- a. gingivitis b. regurgitation c. ileectomy d. pharyngitis

6. The patient underwent surgical repair of the palate. This procedure is known as a _____.

- a. labioplasty b. angioplasty c. gastroplasty d. palatoplasty

7. _____ drugs are administered through the digestive tract.

- a. Jaundiced b. Enteral c. Gastroscopic d. Gingival

8. The child started _____ when he was about six months old.

- a. dentition b. defecation c. gingivectomy d. gastroenterologist

9. _____ is the return of swallowed food into the mouth.

- a. Jaundice b. Regurgitation c. Mastication d. Deglutition

10. _____ is lack or loss of appetite for food.

- a. Stomatitis b. Flatus c. Anorexia d. Cirrhosis

Exercise 6

Fill in each blank with the best word from the box below. Use each word only once.

Enteritis
Dysphonia
Dysphagia

gingivitis
Enterostomy
regurgitation

denture
Gastroscopy
buccal

cirrhosis
enteral

Ascites
Dental caries

1. _____ is often associated with liver disease and results in the accumulation of fluids in the body.
2. In _____ feeding, the patient is fed through the gastrointestinal (GI) tract.
3. _____ is caused by the action of acids on the enamel surface.
4. A _____ is a removable replacement for missing teeth and surrounding tissues.
5. _____ is mostly caused by eating or drinking things contaminated with bacteria or viruses.
6. _____ is needed when stool can no longer travel through the bowels and out the anus.
7. _____ shows that the patient is suffering from a bleeding peptic ulcer.
8. The patient was diagnosed as having _____ resulting from the accumulation of plaque and bacteria on the teeth.
9. _____ is a disorder of the voice, often caused by abnormalities that affect vocal cord vibration. It hampers the ability to speak easily and clearly.
10. In _____, the liver does not function properly due to long-term damage. This damage is characterized by the replacement of normal liver tissue by scar tissue.

Exercise 7

Write the correct word or word part on the line and then combine the parts to form the new word.

1. difficulty in swallowing

- a. The prefix _____ means difficult.
- b. The combining form _____ means swallowing.
- c. The term _____ means difficulty in swallowing.

2. suture of the liver

- a. The combining form _____ means liver.
- b. The suffix _____ means suturing.
- c. The term _____ means suturing the liver.

3. inflammation of the mouth

- The combining form _____ means mouth.
- The suffix _____ means inflammation.
- The term _____ means inflammation of the mouth.

4. inflammation of the gallbladder

- The combining form _____ means gallbladder.
- The suffix _____ means inflammation.
- The term _____ means inflammation of the gallbladder.

Exercise 8

Read each of the passages below, and then do the exercises following it.

A.

In dyspepsia the symptoms of gastritis are present without any definite changes having taken place in the gastric mucosa. Dyspepsia may be associated with the intake of food, or such diseases as those relating to the gallbladder, appendix, colon, and cardiac or renal failure.

Examination should include a gastroduodenoscopy so that a gastric or duodenal ulcer will not be missed.

Nervous dyspepsia occurs in people who are subjected to psychological stress. This condition may be relieved by the administration of antacids and anticholinergic drugs or, if necessary, psychological therapy. In any case, it is essential that investigations be undertaken to exclude any gastrointestinal disorders and thus confirm the diagnosis. (From Gribble, 1977. *Gastroenterological Nursing and Wikipedia*, 2009.)

1. Indicate whether each of the following statements is true (T) or false (F) according to the passage.

- _____ 1. In dyspepsia, the symptoms of gastritis occur without affecting the gastric mucosa.
- _____ 2. Dyspepsia is only associated with the intake of food.
- _____ 3. A gastroscopy should be done to rule out a gastric ulcer.
- _____ 4. Dyspepsia is not associated with diseases of the gallbladder or kidney failure.
- _____ 5. Nervous dyspepsia occurs in people who are under psychological stress.
- _____ 6. Nervous dyspepsia may be relieved by antacids and anticholinergic drugs.

2. Circle the letter beside the correct answer.

1. **Dyspepsia**, line 1, means difficulty in _____.
a. breathing b. ulceration c. digestion d. secretion
2. **Associated with**, line 2, means _____.
a. separated from b. connected with c. mixed with d. divided into
3. **Gastritis**, line 1, means an inflammation of the _____.
a. kidney b. heart c. appendix d. stomach

3. Taken from the passage, write the adjectival form from the passage of each of the following words.

- a) stomach: _____
- b) heart: _____
- c) kidney: _____
- d) nerve: _____
- e) psychology: _____
- f) duodenum: _____

B.

A cholecystostomy is an operation to remove stones from the gallbladder, and it may be followed subsequently by a cholecystectomy. Following the evacuation of the stones, a drainage tube is passed into the gallbladder and then brought to the surface through a 'stab' incision. The tubing is connected to a sterile polythene drainage bag. Provided there is no pyrexia and the stools are of normal colour, the drainage tube is removed in 7-10 days' time following a cholangiography, which will show the radio-opaque fluid passing unobstructed into the common bile duct and duodenum. The biliary fistula closes spontaneously. (From Gribble, 1977. *Gastroenterological Nursing* and www.wellsphere.com, 2009.)

1. Why is a cholecystostomy performed?

2. What is inserted after the removal of the stones?

3. When is the drainage tube removed?

4. What does a cholangiography show?

5. Find a term from the passage which is similar in meaning to each of the following.

- removal: _____
- with no microbes or infectious organisms: _____
- a rise in body temperature; fever: _____
- a passage or an opening which has been made between two organs: _____

6. Break down each of the following words into its component parts, and then write the meanings of these on the lines below.

1. cholecystostomy:

- The combining form _____ means _____.
- The suffix _____ means _____.

2. cholecystectomy:

- The combining form _____ means _____.
- The suffix _____ means _____.

3. cholangiography:

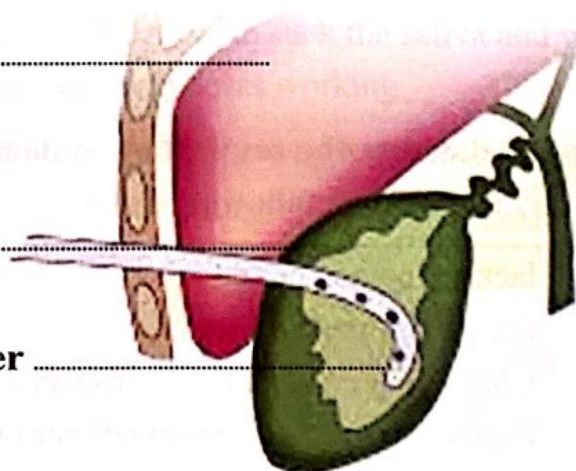
- The combining form _____ means _____.
- The suffix _____ means _____.

Cholecystostomy (drainage)

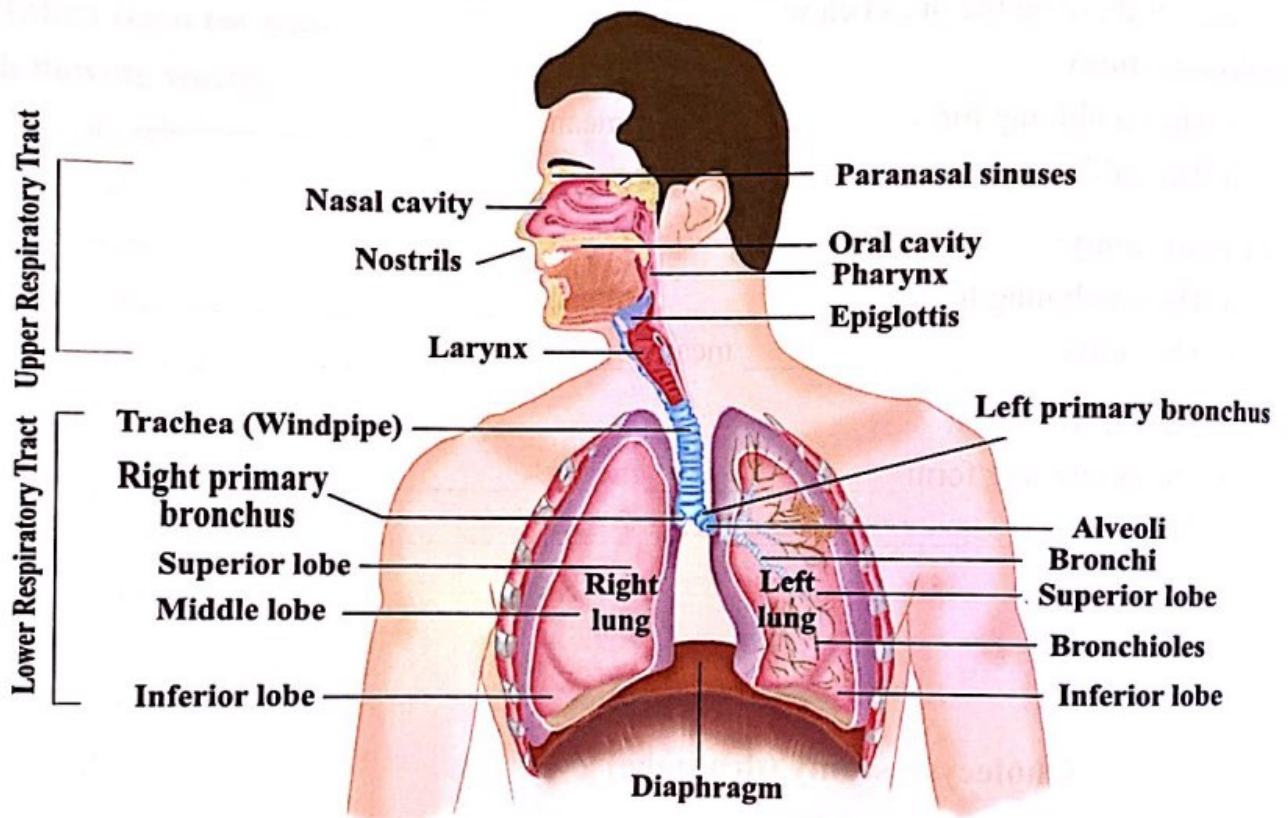
Liver

Gallbladder

Drainage catheter



The Respiratory System



In this chapter, terms related to the respiratory system are introduced. Study these terms carefully and then do the exercises following them.

anoxia (n)
(a-NAWK-see-ə)

lack of oxygen in body tissue
Prefix: **an-** means without.
Combining Form: **ox/o** means oxygen.
Suffix: **-ia** means an abnormal state or condition.
The condition was diagnosed as **anoxia**.
Anoxia is a serious condition which may lead to the death of tissue.



apnoea (n)
(AP-nee-ə)

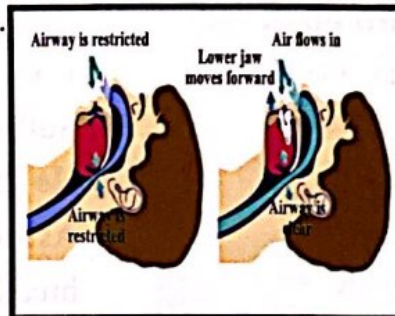
absence of spontaneous breathing or respiration.

Prefix: **a-** means without or no.

Combining Form: **-pnoea** means breathing or respiration.

She suffers from **apnoea** in which breathing stops during sleep for at least 10 seconds five times an hour.

Sleep **apnoea**, also spelled **apnea**, is a sleep disorder where a person has pauses in breathing or periods of shallow breathing during sleep.



aspiration (n)
(A-sper-RAY-shən)

1. removing fluid from a cavity in the body (using a hollow needle)

She was admitted to the hospital for **aspiration** of the fluid from the right ankle.

The **aspiration** of pus relieved the pain.

2. inhaling foreign material (e.g. vomited stomach contents) into the lungs

This elderly man has developed **aspiration** pneumonia.



aspirate (v)
(A-sper-rayt)

to remove (a liquid or gas) from the body by aspiration; to suction (a body part or growth, for example) for the removal of a liquid or gas

The fluid was **aspirated** from the right knee.

aspirator (n)
(A-sper-ray-ter)

an instrument to suck fluid out of a cavity, out of the mouth in dentistry, or from an operation site

The dentist didn't extract the tooth because the **aspirator** was broken. She was holding the **aspirator** to suck the saliva and water from the patient's mouth as the dentist was working.

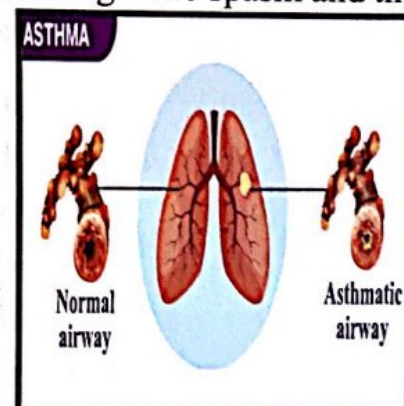
asthma (n)
(US – AZ-mə)
(UK – AS-mə) OR
(AS-thmə)

narrowing of the bronchial tubes, where the muscles go into spasm and the patient has difficulty in breathing.

Her **asthma** is triggered by changes in the weather.

He's been suffering from **asthma** for seven years.

People with **asthma** have attacks of wheezing and shortness of breath that vary in severity from day to day and month to month.



asthmatic (adj)
(as-THMA-tik)

relating to the narrowing of the bronchial tubes
Root: **asthma** means narrowing of the bronchial tubes.
Suffix: **-ic** means relating to or pertaining to.

He has **asthmatic** attacks every spring.

Asthmatic patients usually suffer from wheezing and have difficulty breathing.

bronchodilator (n) a drug which expands/widens the openings of the passages into the lungs
BRAUNG-ko-DAI-lay-ter) Combining Form: **bronch/o** means bronchus.

Combining Form: **dilator** means something that dilates – enlarges, expands – something in size or extent.

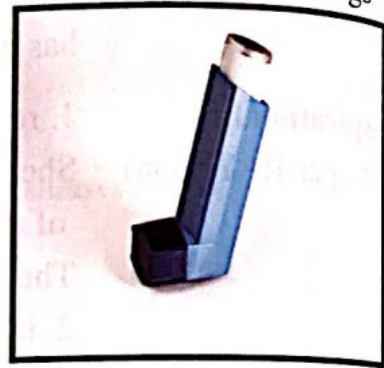
The opposite is **bronchoconstrictor**.

Combining Form: **bronch/o** means bronchus.

Combining Form: **constrictor** means something that constricts or narrows something else.

The asthmatic patient was given a **bronchodilator** to help him breathe.

Bronchodilators made the patient feel comfortable as his air passages became open.



cyanosis (n)
(SAI-ə-NO-sis)

bluish discolouration of the skin or mucous membranes caused by inadequate oxygen

Combining Form: **cyan/o** means blue.

Suffix: **-osis** means abnormal condition.

He presented to the clinic with **cyanosis**, especially around the lips and fingertips.

She gets **cyanosis** when she exerts herself.



cyanosed (adj)
(SAI-ə-NOST) OR

suffering from **cyanosis**: a bluish discolouration of the skin and mucous membranes

cyanotic (adj)
(SAI-ə-NAW-tik)

The patient was **cyanosed** round the lips.

The child was **cyanosed** at birth.

The patient suffers from a **cyanotic** congenital heart disease.

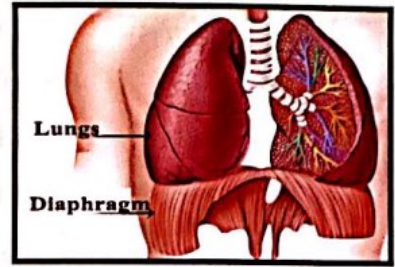
The **cyanotic** patient was fully investigated.

diaphragm (n)
(DAI-ə-fram)

the partition separating the chest and abdominal cavities in mammals

Combining Form: **phren/o** means diaphragm.

Inhalation is caused by the **diaphragm** contracting.



diaphragmatic (adj) relating to the diaphragm

DAI-ə-frag-MA-tik) Suffix: **-ic** means pertaining to or relating to.

The patient suffers from a **diaphragmatic** hernia.

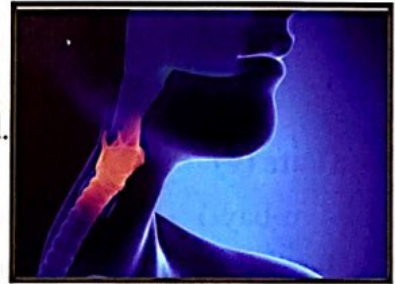
dysphonia (n) any voice impairment

(dis-FO-nee-ə) Prefix: **dys-** means difficult.

Combining Form: **phon/o** means voice or sound.

Suffix: **-ia** means an abnormal condition.

He developed **dysphonia** following the larynx operation.



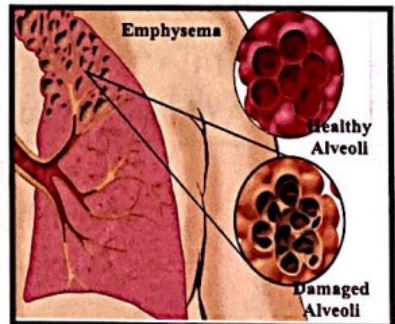
The vocal-cord inflammation resulted in **dysphonia**.

emphysema (n) a lung condition of abnormal enlargement of the air spaces causing shortness of breath

(EM-fə-SEE-mə)

Emphysema can be caused by smoking, by living in a polluted environment, by old age, asthma or whooping cough.

The patient is suffering from pulmonary **emphysema**, in which the alveoli of the lungs are enlarged and damaged.



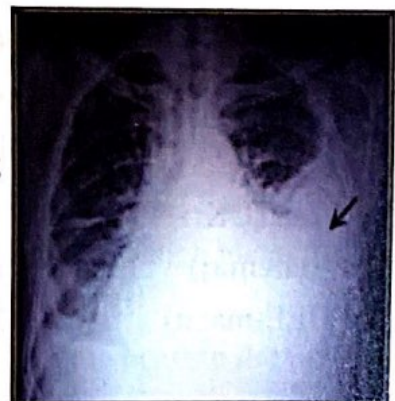
haemothorax (UK; accumulation of blood in the pleural cavity

US – **hemothorax**; n) Combining Form: **haem/o** means blood.

(HEE-mo-THOR-raks) Combining Form: **thorax** means chest.

His condition was diagnosed as **haemothorax**; blood had accumulated in the pleural cavity.

(**Pleural cavity/sac**: the delicate serous membrane that lines each half of the thorax of mammals and is folded back over the surface of the lung of the same side)



hypopnoea (UK;
US – **hypopnea**; n)
(hai-POP-nee-ə)

abnormal decrease in the rate and depth of breathing

Prefix: **hypo-** means low, deficient, or insufficient.

Combining Form: **-pnoea** means breathing or respiration.

The opposite is **hyperpnoea**. The prefix **hyper-** means high or excessive.

He was brought to the emergency room with **hypopnoea**.

The doctor tried to control the patient's **hyperpnoea**.



intubate (v)
(IN-tyu-bayt)

to insert a tube into any organ or part of the body

She was **intubated** to help her breathe. A tube was inserted into her trachea.

The doctor **intubated** the patient to save his life.



intubation (n)
(IN-tyu-BAY-shən)

the insertion of a cannula or tube into a hollow body organ

The patient received urgent **intubation** to help him breathe.

She underwent nasogastric **intubation**.

laryngoscopy (n)

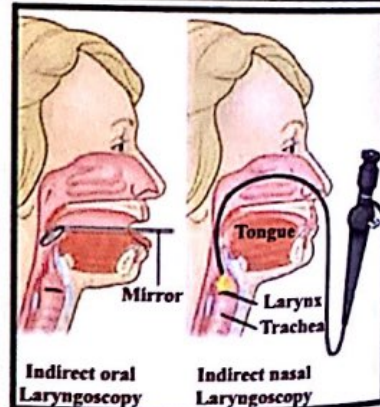
visual examination of the larynx

(LAR-rən-GAW-skə-pee) Combining Form: **laryng/o** means larynx.

Suffix: **-scopy** means visual examination.

He had a **laryngoscopy** performed to examine his voice box.

The **laryngoscopy** showed that the lump was benign.



oedema (UK;
US – **edema**;) (ee-DEE-mə; n)

an excessive accumulation of serous fluid in connective tissues or in a serous cavity

She developed pulmonary **oedema** following her last attack of acute bronchitis.

Her main problem was **oedema** of the feet.



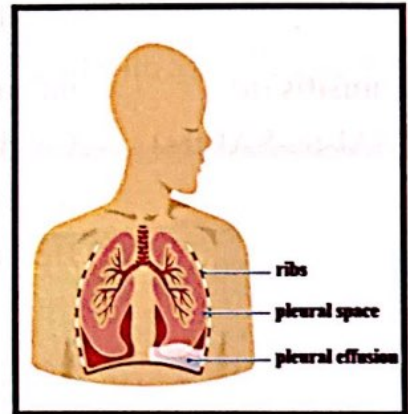
pharyngectomy (n) surgical removal of the pharynx
 (far-rən-JEK-tə-mee) Combining Form: **pharyng/o** means pharynx.
 Suffix: **-ectomy** means a surgical removal.
 He underwent a **pharyngectomy** because of throat cancer.
 He received a course of chemotherapy after the **pharyngectomy**.



pleural effusion (n) excess fluid formed in the pleural sac
 (PLUR-rəl ee-FYU-zhən) **Pleural effusion** can be caused by congestive heart failure, cirrhosis, or pneumonia.

Pleural effusion is removed by thoracentesis, in which a needle is inserted into the pleural space to aspirate the fluid.

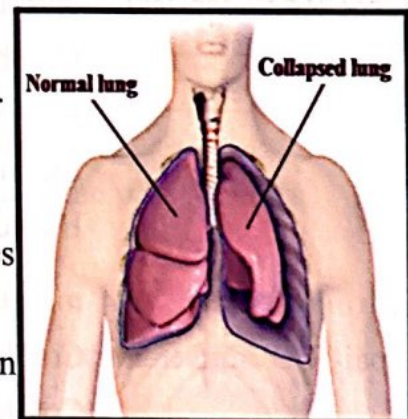
(**Pleural cavity/sac**: the delicate serous membrane that lines each half of the thorax of mammals and is folded back over the surface of the lung of the same side)



pneumothorax (n) air in the pleural cavity (also see above)
 (NU-mo-THOR-raks) Combining Form: **pneum/o** means air or lung.
 Root: **thorax** means chest.

In **pneumothorax**, air enters between the two layers of the pleura, the membrane that separates the lungs from the chest wall.

Pneumothorax may develop as a complication of lung disorders such as asthma.



pulmonary (adj) pertaining to the lung/s

(PəL-mə-NER-ree) Combining Form: **pneumon/o** means the lung and air.

Pulm/o and **pulmon/o** are additional combining forms which mean the lung/s.

Pulmonary arteries take deoxygenated blood from the heart to the lungs for oxygenation.

He suffered from a **pulmonary** embolism (blocked vessel).

rhinoplasty (n)

(RAI-no-pla-stee)

surgical repair of the nose

Combining Form: **rhin/o** means nose.

Suffix: **-plasty** means surgical repair.

The patient had a **rhinoplasty** performed to repair the septum.

The injury required a **rhinoplasty** to reshape and reconstruct the nose.

Rhinoplasty is often done to change the appearance of the nose, improve breathing, or both.



sinusitis (n)

(SAI-nu-SAI-təs)

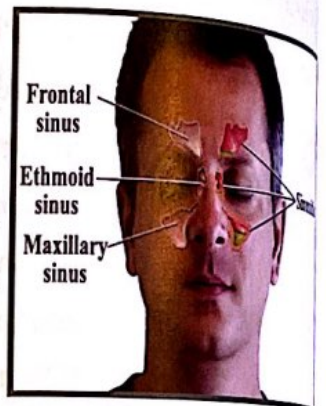
inflammation of one or more sinuses

Combining Form: **sin/o** means sinus or cavity.

Suffix: **-itis** inflammation.

He suffers from **sinusitis**, causing him to have a runny, stuffy nose, severe headaches, and fever.

The common cause of **sinusitis** is a viral infection, such as the common cold.



spirometer (n)

(spai-RAW-mə-ter)

an instrument for measuring the volume of air entering and leaving the lungs

Combining Form: **spir/o** means breathing.

Root: **-meter** means an instrument for measuring.

His ventilation was measured with a **spirometer**.



spirometry (n)

(spai-RAW-mə-tree)

measurement of the volume of air entering and leaving the lungs

Combining Form: **spir/o** means breathing.

Combining Form: **-metry** means measuring or measurement.

Spirometry can be used to monitor the effectiveness of certain lung-disorder treatments.

sputum (n)

(SPYU-təm)

mucus found in an inflamed nose, throat, and/or lung and coughed up by the patient, also known as phlegm (*flem*)

She was coughing up bloody **sputum**.

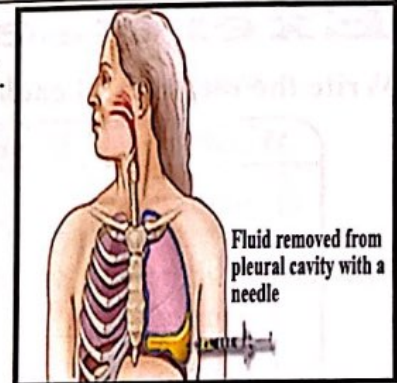
The **sputum** specimen showed bacterial growth.

thoracocentesis removal of fluid from the chest by puncturing (THOR-rə-ko-sen-TEE-sis) Combining Form: **thorac/o** means chest.

OR **thoracentesis** Combining Form: **-centesis** means surgical (THOR-rə-sen-TEE-sis); n) puncture.

The patient had a **thoracocentesis** performed to drain the fluids from his chest. Her condition improved after the **thoracocentesis**.

Thoracocentesis is done by puncturing the chest wall with a needle inserted into the pleural cavity to drain fluid or air.



Now test how well you have studied the words from anoxia to thoracocentesis.

Exercise 1

Match each item in the left-hand column to its meaning in the right-hand column. Write the answers on the lines provided.

Term		Meaning
1. anoxia	_____	a. removing fluid from a cavity in the body
2. aspiration	_____	b. a drug which expands the opening of the passage into the lungs
3. oedema	_____	c. lack of oxygen in body tissue
4. cyanosis	_____	d. bluish discolouration of the skin or mucous membranes caused by a lack of adequate oxygen
5. dysphonia	_____	e. an excessive accumulation of liquid in the body tissues
6. bronchodilator	_____	f. any voice impairment
7. emphysema	_____	g. a lung condition that causes shortness of breath due to abnormal enlargement of the air spaces
8. haemothorax	_____	h. the insertion of a cannula or tube into a hollow body organ
9. intubation	_____	i. visual examination of the larynx
10. laryngoscopy	_____	j. an accumulation of blood in the pleural cavity

Exercise 2

Write the meaning of each of the following word parts.

Word Part	Meaning	Word Part	Meaning
1. ox/o		7. pneumon/o	
2. -ia		8. rhin/o	
3. -pnoea		9. -metry	
4. cyan/o		10. spir/o	
5. phren/o		11. hypo-	
6. hemat/o		12. phon/o	

Exercise 3

Circle the letter (a, b, c, or d) of the best answer.

- removal of fluid from the chest by puncturing
 - anorexia
 - thoracocentesis
 - oedema
 - asthma
- measurement of the volume of air entering and leaving the lungs
 - cyanosis
 - diaphragm
 - aspiration
 - spirometry
- air in the pleural cavity
 - pneumothorax
 - haematothorax
 - intubation
 - dysphonia
- excess fluid formed in the pleural sac
 - pleural effusion
 - bronchoconstrictor
 - bronchodilator
 - emphysema
- abnormal decrease in the rate and depth of breathing
 - sinusitis
 - rhinoplasty
 - aspiration
 - hypopnoea
- the muscle separating the chest and abdomen
 - apnoea
 - diaphragm
 - spirometer
 - sputum
- mucus found in an inflamed nose, throat or lung and coughed up by the patient
 - regurgitation
 - deglutition
 - sputum
 - jaundice
- surgical removal of the pharynx
 - laryngectomy
 - ileectomy
 - pharyngectomy
 - ostectomy

Exercise 4

Fill in each blank with the best word from the box below. Use each word only once.

anoxia	cyanosis	intubated	asthma	pulmonary
apnoea	aspirate	dysphonia	bronchodilator	emphysema

1. The paramedics found the man in bed with _____. There was no movement of the inhalation muscles.
2. In _____, the patient's skin, lips, tongue, ear lobes and/or nail beds are blue or grey.
3. During anaesthesia the patient developed _____.
4. The orthopaedic surgeon admitted the patient in order to _____ the liquid from his swollen knee.
5. The main symptoms of _____ are coughing, wheezing, and shortness of breath.
6. He developed _____ after the laryngoscopy.
7. The patient was _____ so she could breathe.
8. Ventolin is a _____ which reduces spasms and helps the patient to breathe.
9. In _____, tobacco smoke and other airborne pollutants have damaged the air-sac tissues.
10. The results show that the _____ arteries are almost completely blocked.

Exercise 5

Circle the letter (a, b, c, or d) of the best answer to each question.

1. Mr. Zayd Al Nassir was brought to the emergency department with _____, which is an abnormal decrease in the rate and depth of breathing.
a. pharyngitis b. dysphonia c. hypopnoea d. pneumothorax
2. Norah Al Qhatani is suffering from _____. This inflammation is so severe that she cannot swallow anything.
a. laryngitis b. pharyngitis c. dysphonia d. aspiration
3. Fahd Al Zamil has a sinus inflammation. This diagnosis is recorded on his chart as _____.
a. oedema b. spirometry c. rhinoplasty d. sinusitis
4. Hudah Al Saleh had a _____ performed to improve the appearance of her nose.
a. rhinoplasty b. laryngoscopy c. thoracocentesis d. pharyngectomy

5. The patient had a/an _____ performed to drain fluids from his chest.
a. oedema b. pneumothorax c. thoracocentesis d. pharyngectomy
6. The doctor's examination showed that Hessah Al Zahrani has an accumulation of blood in the pleural cavity. This diagnosis is recorded on her chart as _____.
a. pneumothorax b. haemothorax c. tracheostomy d. cyanosis
7. Faisal Al Hassan is suffering from _____, which is a narrowing of the bronchial tubes.
a. aspiration b. cyanosis c. intubation d. asthma
8. During the surgery, Dr. Abu Melha performed a _____; that is, the surgical removal of the pharynx.
a. thoracentesis b. bronchodilator c. rhinoplasty d. pharyngectomy

Exercise 6

Each set of the jumbled letters forms a word. Rearrange the letters to find the word to fill in the blank.

1. The patient had bleeding from his _____. (neso)
2. The doctor diagnosed her condition as a _____ infection. (isnsu)
3. The examination of the _____ showed a severe inflammation in the throat. (lranyx)
4. His ventilation was measured with a _____. (sprimoerte)
5. The _____ shows a large mass in the larynx. (lrynagosocpy)
6. Lack of oxygen in body tissues is known as _____. (naxaio)
7. The _____ contains the lungs and the heart. (tohrxa)
8. Dust and animal hair can trigger _____, causing narrowing of the airways and shortness of breath. (sadmha)
9. The right _____ has three lobes while the left has only two. (lngu)
10. The X-ray shows that the patient has pulmonary _____. Quite a lot of liquid has accumulated in the lungs. (odeame)
11. A specimen of _____ was sent to the lab for analysis. (suptmu)
12. The knee was _____ in order to remove liquid from it. (apsriaetd)

Exercise 7

Read each of the passages below. Then do the exercises following each.

A.

Upper respiratory infections (URIs) affect the nose, throat, sinuses, and larynx. They are among the most common of all illnesses, affecting nearly eighty million people each year. These illnesses (which include the common cold, pharyngitis, tonsillitis, sinusitis, laryngitis, and croup) are rarely life-threatening. They often, however, exacerbate underlying pulmonary conditions and may lead to significant infections in patients with suppressed immune function. A variety of bacteria and viruses can cause URIs. Group A streptococci are responsible for 20% to 30% of cases; however, 50% of cases have no demonstrated bacterial or viral cause. (From Sanders, 2000. *Mosby's Paramedic Textbook*.)

1. What is the topic of this paragraph?

2. Which parts of the body are affected by URIs?

3. Who would be more seriously affected by URIs?

4. Which bacteria is responsible for 20% to 30% of URI cases?

5. Which organ is affected by each of the following conditions?

Condition

Organ

a) pharyngitis

b) tonsillitis

c) sinusitis

d) laryngitis

6. Find a term in the passage which is similar in meaning to each of the following:

a) to make a condition more severe: _____

b) related to the lung: _____

c) reduced: _____

d) the suffix which means 'inflammation': _____

B.

Allergic asthma occurs in children and young adults who have atopic (Type 1) hypersensitivity to foreign protein, e.g., pollen, dust from feather pillows containing mites, animal dandruff, and fungi. A history of infantile eczema or food allergies is common.

The same disease process occurs with hay fever. Antigens (allergens) are inhaled and absorbed by the bronchial mucosa. This stimulates the production of IgE antibodies that bind to the surface of most cells and basophils around the bronchial blood vessels. When the allergen is encountered again, the antigen-antibody reaction results in the release of histamine and other related substances that stimulate mucus secretions and muscle contraction. Attacks tend to become less frequent and less severe with age. (From Wilson, 1990. Ross and Wilson *Anatomy and Physiology in Health and Illness* and www.webmd.com. Asthma and Allergies, 2009.)

1. What is the topic of this paragraph?

2. Who contracts allergic asthma?

3. Which disease is similar to allergic asthma?

4. What do antigens (allergens) stimulate?

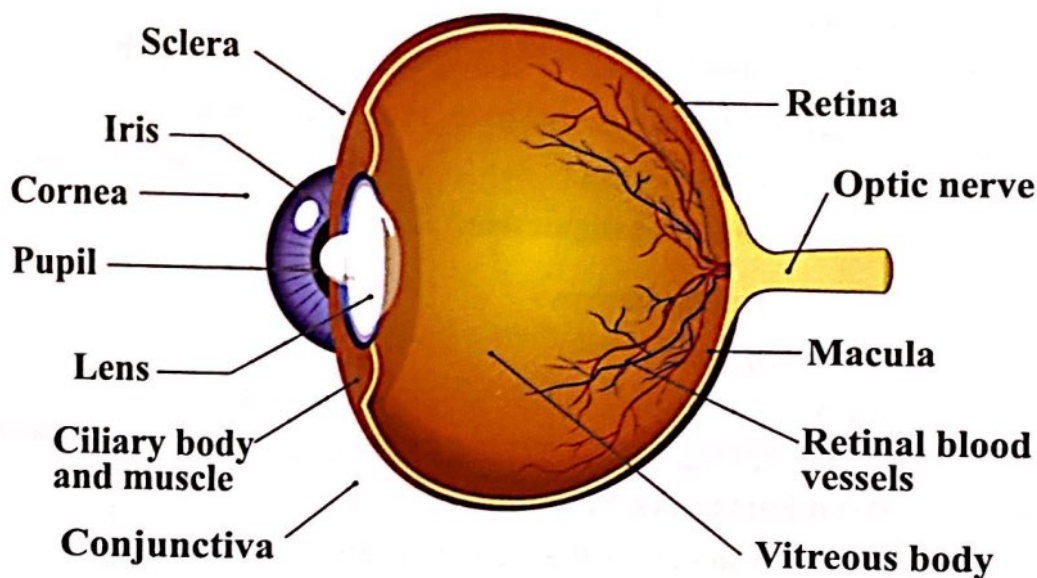
5. When are histamine and other related substances released?

6. Find a term in the passage which is similar in meaning to each of the following:
 - a) referring to small children: _____
 - b) strong reaction to something: _____
 - c) to make an organ react or respond: _____
 - d) substance which produces an allergy: _____

 **Online Progress Test (1)**

CHAPTER 09

The Eye and Vision



In this chapter, terms related to the eye and vision are introduced. Study these terms carefully and then do the exercises following them.

aphakia (n)
(ə-FAY-kee-ə)

absence of the lens of the eye

Prefix: **a-** means no or without.

Combining Form: **phak/o** means lens of the eye.

Suffix **-ia** means an abnormal condition.

The patient was admitted to the hospital with a left **aphakia** due to a penetrating injury to the eye.

aphakic (adj)
(ə-FAY-kik)

pertaining to **aphakia**

Prefix: **a-** means no or without.

Combining Form: **phak/o** means lens of the eye.

Suffix: **-ic** means pertaining to or referring to.

The **aphakic** patient was admitted last week for a surgical correction of his eye.



astigmatism (n) a defect in the eye which prevents the eye from focusing correctly
(ə-STIG-mə-ti-zəm; n) Prefix: **a-** means no or without.

Root: **-stigmatism** means the normal condition of the eye, in which rays of light from a single point are focused upon a single point; normal eyesight.

Suffix: **-ism** means condition or disease.

In people with **astigmatism**, the transparent cornea at the front of the eye is unevenly curved and to different degrees refracts (bends) the light rays striking different parts of it.

Astigmatism may be due to an eye injury that causes a corneal ulcer.

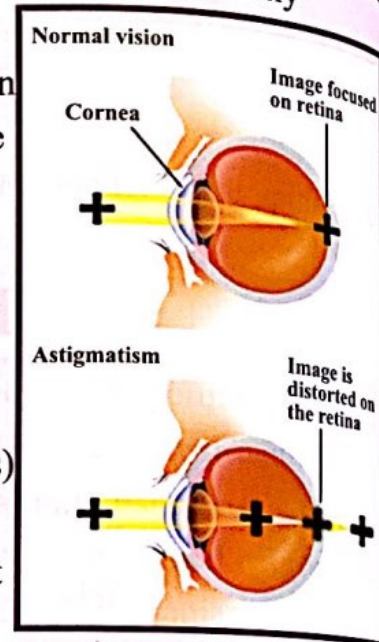
She suffers from **astigmatism**.

astigmatic (adj)
(A-stig-MA-tik)

relating to **astigmatism**

He is **astigmatic**.

The **astigmatic** patient was prescribed glasses.



Word Formation Note: the prefix a-

The prefix **a-** carries the idea of negative [not or without, absent, deficient, lack of]. Thus, **aphagia** means loss of the ability to swallow; **aphonia** means absence or loss of the voice; **apnoea** means the cessation of breathing; **afebrile** means relating to the absence of fever; and **asepsis** means the complete absence of bacteria.

blepharitis (n)
(BLE-far-RAI-təs)

inflammation of the eyelids

Combining Form: **blephar/o** means eyelid.

Suffix: **-itis** means inflammation.

In **blepharitis**, the eyelids are swollen and itchy. The symptoms of **blepharitis** can be relieved by holding a clean, warm, damp cloth against the eyelid.

Blepharitis may be due to a bacterial infection or an allergy to cosmetics.



blepharoptosis (n) drooping of the upper eyelid
(BLEF-ar-rəp-TO-səs) Combining Form: **blephar/o** means eyelid.
Suffix: **-ptosis** means drooping or sagging.
This patient is suffering from severe right **blepharoptosis**. The eyelid covers most of the superior part of the cornea.



The patient has congenital **blepharoptosis** of the left eye, where the eyelid is drooping.

In adults, **blepharoptosis** is caused by aging, eye surgery, or diseases affecting the levator (pron: li-VAY-ter) muscle or its nerve.

cataract (n)
(KA-tə-rakt)

a clouding of the eye lens (or of its surrounding transparent membrane) that obstructs the passage of light

Cataracts usually develop over a period of months or years and cause visual symptoms such as blurred vision.

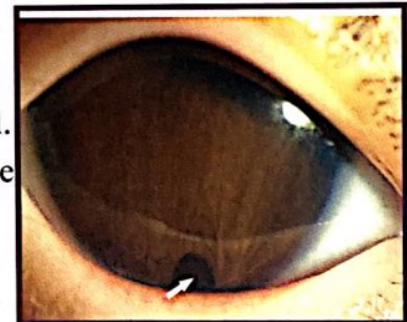
With **cataracts**, the normally transparent lens of the eye becomes cloudy as a result of changes in protein fibres in the lens.



Some **cataracts** result from injuries to the eye, exposure to great heat or radiation, or inherited factors.

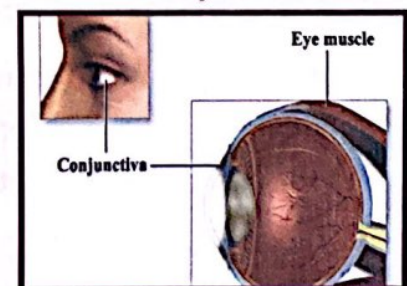
corectopia (n) the displacement of the eye's pupil from its
(KOR-rek-TO-pee-ə) normal central position
Combining Form: **core/o** or **cor/o** means pupil.
Suffix: **-ectopia** means displacement, not in the normal position.

Patients with **corectopia** suffer pain and decreased vision.



conjunctiva (n) the delicate mucous membrane that covers the front of the eye and lines
(KAWN-jəng-TAI-və) the inside of the eyelids
OR
(KAWN-jəng-TEE-və) Combining Form: **conjunctiv/o** means conjunctiva.

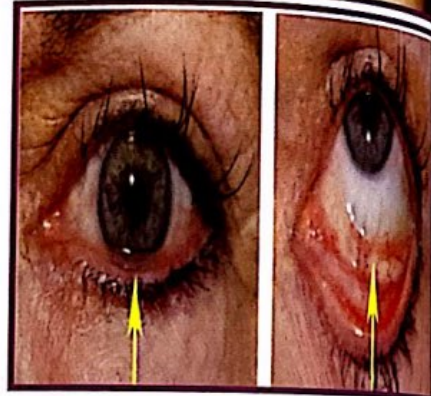
She injured her **conjunctiva** with the eyedrop dropper.



conjunctivitis (n) inflammation of the conjunctiva
(kən-JəNGK-ti-VAI-təs) Combining Form: **conjunctiv/o** means conjunctiva.
Suffix: **-itis** means inflammation.
In **conjunctivitis**, the affected eye becomes red and sore and may look alarming.
The **conjunctivitis** virus is often carried by dust blown into people's eyes.



conjunctivoplasty (n) surgical repair of the conjunctiva
(kən-JəNGK-ti-vo-PLA-stee) Combining Form: **conjunctiv/o** means conjunctiva.
Suffix: **-plasty** means repair.
Conjunctivoplasty is used to correct defects in the conjunctiva.



dacryocystitis (n) inflammation of the tear sac (lacrimal sac) at the inner corner of the eye
(DA-kree-o-si-STAI-təs) Combining Form: **dacry/o** means tear; lacrimal duct.
Combining Form: **cyst/o** means sac.
Suffix: **-itis** means inflammation.
The patient was diagnosed as having **dacryocystitis** with excessive watering of the right eye due to blockage of the lacrimal sac.



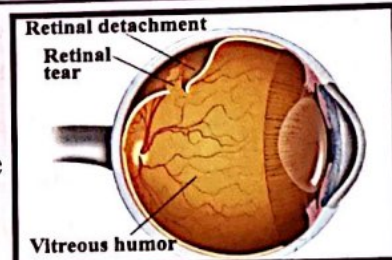
detach (v)
(dee-TACH) to separate one thing from another; disconnect
The opposite is **attach**.
Diabetes caused the retina to detach.
The retina is normally **attached** to the underlying tissue.

detached (adj)
(dee-TACHT) separated; disconnected
A **detached** retina can be caused by a blow to the eye.
A **detached** retina can sometimes be repaired by lasers.

detachment (n)
(dee-TACH-mənt)

separation of a structure from its support
In retinal **detachment**, part of the retina peels away from the underlying tissue.

The patient has retinal **detachment** that can be repaired with treatment by lasers.



glaucoma (n)
(glaw-KO-mə)

a disease of the eye in which pressure within the eyeball damages the optic nerve

The patient lost vision in the right eye because of **glaucoma**. The high pressure inside the eye damaged the optic nerve.

She was admitted for **glaucoma** surgery to relieve the pressure inside the eye.

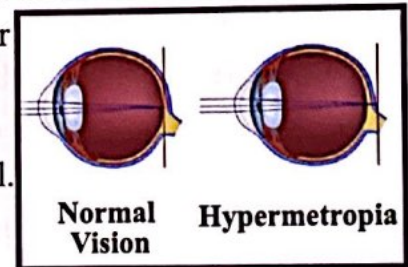
Glaucoma may cause blindness if left untreated.



hypermetropia (n) a condition in which visual images come to a focus behind the retina of the (HAI-per-me- TRO-pee-ə) eye and vision is better for distant than for near objects: **hyperopia**, **farsightedness**, **longsightedness** (UK)

Prefix: **hyper-** means excessive or above normal.

Combining Form: **-opia** means a visual defect or condition.



Young people with **hypermetropia** often see distant objects very clearly.

Hypermetropia is the opposite of **myopia**. See below.

hypermetropic (adj) relating to **hypermetropia**: farsightedness

(HAI-per-me-TRO-pik) Prefix: **hyper-** means excessive or above normal.

Combining Form: **-opia** means a visual defect or condition.

Suffix: **-ic** means pertaining to or referring to.

Hypermetropic people can see close objects blurrily and far objects normally.

intraocular (adj)
(IN-trə-AW-kyu-ler)

located or occurring within the eye

Prefix: **intra-** means within.

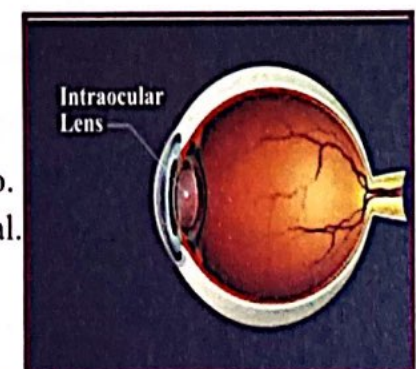
Combining form: **ocul/o** means eye.

Suffix: **-ar** means pertaining to or referring to.

The **intraocular** pressure in the right eye is normal.

The doctor gave the patient some drops to

control the **intraocular** pressure.



keratoplasty (n) surgical repair of the cornea
(KER-ə-to-PLA-stee) Combining Form: **kerat/o** means cornea.

Suffix: **-plasty** means surgical repair.

He was admitted to the hospital for a **keratoplasty** to repair his left cornea.
Her vision improved after the **keratoplasty**.

lacrimation (n)

(LA-kri-MAY-shən)

secretion of tears or tearing, especially when abnormal or excessive

Combining Forms: **lacrim/o** and **dacry/o** mean tears or tear duct.

Suffix: **-ion** forms nouns meaning action or condition.

The examination showed that **lacrimation** was normal in both eyes.
The **lacrimation** improved after the surgery.



lacrimal (adj)

(LA-kri-məl)

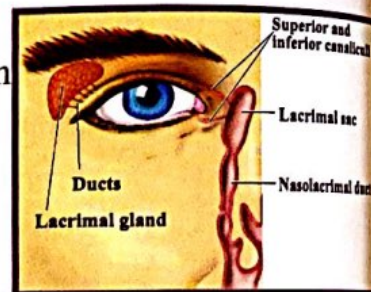
relating to producing tears or tear duct

Combining Forms: **lacrim/o** and **dacry/o** mean tears or tear duct.

Suffix: **-al** means pertaining to or referring to.

It seems the lacrimal duct in the right eye is blocked.

The **lacrimal** glands are located above the outer corner of each eye.



lens (n)

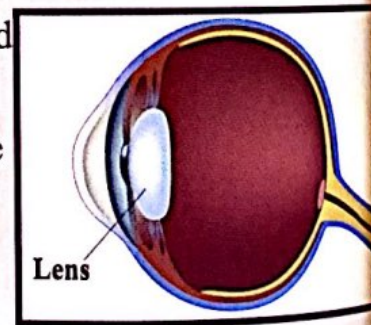
(lenz)

the flexible and curved structure located behind the iris and pupil (plural n: **lenses** – LEN-zəz)

Combining Form: **phac/o** or **phak/o** means the lens of the eye.

Under the influence of the ciliary muscle, the **lens** in the eye can change its

shape, allowing the eye to focus on objects at different distances.
Glasses and contact **lenses** correct refractive errors in the eye.



lenticular (adj)

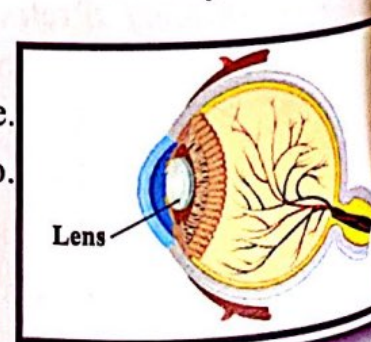
(len-TI-kyu-ler)

relating to the lens of the eye

Combining Form: **lenti/o** means the lens of the eye.

Suffix: **-ular** means pertaining to or relating to.

The **lenticular** formation regulates the functioning of the lens.



myopia (n)
(mai-O-pee-ə)

a condition where a patient can see clearly close objects, but not ones which are further away, and it is also known as **shortsightedness** or **nearsightedness**

Combining Form: **myo-** means muscle.

Combining Form: **-opia** means a visual defect or condition.

The patient wears glasses to correct her **myopia**.
With **myopia** there is difficulty seeing distant objects clearly.

Myopia can be corrected with glasses or contact lenses.

relating to **myopia**: **short-sightedness**

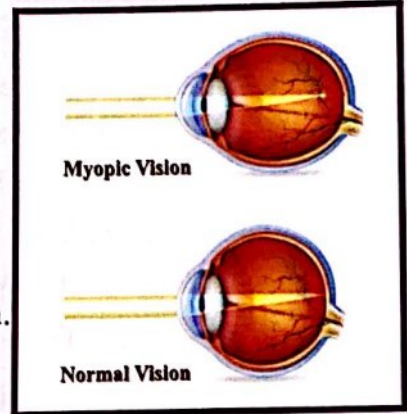
Combining Form: **-opia** means a visual defect or condition.

Suffix: **-ic** means pertaining to or referring to.

Myopic patients wear glasses to correct their myopia.

The vision of the **myopic** patient was improved with a laser operation.

Myopic patients usually wear glasses.



myopic (adj)
(mai-O-pik)

nystagmus (n)
(nis-TAG-məs)

rapid movement of the eyes up and down or from side to side

Nystagmus can be caused by cataracts, stroke, head injuries, or inner eye problems.

Nystagmus cannot be cured, but there are several treatments that can help.

Focusing problems can be corrected with glasses or contact lenses, but **nystagmus** will still nonetheless affect the sufferer's eyesight.



optician (n)
(awp-TI-shən)

a person who specialises in making glasses, testing the eyes, and prescribing lenses

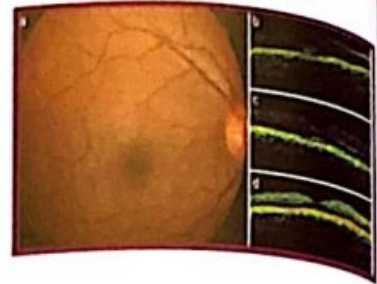
The **optician** prescribed new reading glasses for the patient. .

The **optician** measured the woman's visual acuity and found it to be 20/20 in the right eye.

Note: an **optometrist** is the common US term for one who practices the art

photoretininitis (n)
(FO-to-RE-ti-NAI-təs)

or profession of examining the eye for defects and faults of refraction, and prescribes correctional lenses or exercises; an older UK term is 'occulist'.
damage to the retina of the eye due to excessive exposure to the sun
Prefix: **photo-** means light.
Combining Form: **retin/o** means retina.
Suffix: **-itis** means inflammation.
To avoid **photoretininitis**, wear sunglasses to protect your eyes from the sun's rays.



retinopexy (n)
(RET-i-no-PEK-see)

fixation of a detached retina; surgical correction of a retinal detachment by forming chorioretinal adhesions around the torn part of the retina
Combining Form: **retin/o** means retina.
Suffix: **-pexy** means surgical fixation.
The patient underwent a **retinopexy** to repair a detached retina and restore his vision.



strabismus (n)
(stra-BIZ-məs)

a condition where each eye focuses on different points; also known as a 'squint' (skwint)
Combining Form: **strabism/o** means squint, cross-eyed.



She had **strabismus** which was corrected by a laser operation.

Wearing glasses for a long time may improve **strabismus**.

strabismal (adj)
(stra-BIZ-məl)

relating to **strabismus**: squinting: squint-eyed

OR

strabismic
(stra-BIZ-mik)

Combining Form: **strabism/o** means squint, cross-eyed.

Suffix: **-al** or **-ic** means pertaining to or referring to.

The **strabismic** patient wears glasses to treat her squinting.

trachoma (n)
(tra-KO-mə)

a contagious inflammation and hypertrophy of the conjunctiva, marked by the formation of minute granules
The patient was diagnosed as suffering from **trachoma**. The infection causes a roughening of the inner surface of the eyelids.
His **trachoma** improved significantly with the drops.



vitrectomy (n)
(vi-TREK-tə-mee)

surgical removal of a vitreous humour from the eyeball

Combining Form: **vitre/o** means glassy or vitreous body.

Suffix: **-ectomy** means surgical removal.

A **vitrectomy** can restore vision in diabetic retinopathy by removing the natural vitreous that has become clouded by leaking blood vessels and replacing it with clear fluid.



Now test how well you have studied the words from aphakia to vitrectomy.

Exercise 1

Write the meaning of each combining form below.

Combining Form	Meaning	Combining Form	Meaning
1. phak/o		6. kerat/o	
2. core/o		7. lacrim/o	
3. blephar/o		8. retin/o	
4. conjunctiv/o		9. vitr/o	
5. lenti/o		10. ocul/o	

Exercise 2

Choose the best word part for each term.

1. surgical removal/excision

a. -itis

b. a-

c. -ectomy

d. -plasty

2. action

a. -plasty

b. -ion

c. -ic

d. -al

3. prolapse, displacement

a. -pexy

b. -ia

c. a-

d. -ptosis

4. surgical incision

a. -stomy

b. -ism

c. -tomy

d. -plasty

5. surgical fixation

a. -pexy

b. cyst/o

c. -opia

d. -osis

6. an abnormal condition/disease

- a. -al b. -ism c. -ia d. -ment

7. no or without/deficient

- a. pre- b. post- c. a- d. dia-

8. condition/disease

- a. -ar b. -ism c. -ion d. -opia

Exercise 3

Choose the term that best matches each meaning below.

1. a condition where the two eyes focus on different points, also known as a 'squint'

- a. aphakia b. cataract c. strabismus d. trachoma

2. a defect in the eye which prevents the eye from focusing correctly

- a. corectopia b. astigmatism c. retinopexy d. detachment

3. a condition in which visual images come to a focus behind the retina of the eye and vision is better for distant than for near objects (hint: farsightedness)

- a. keratoplasty b. conjunctivitis c. vitrectomy d. hypermetropia

4. the drooping of the upper eyelid

- a. blepharoptosis b. photoretinitis c. glaucoma d. cataract

5. the displacement of the eye's pupil from its normal central position

- a. lacrimation b. detachment c. glaucoma d. corectopia

6. an eye disease in which pressure within the eyeball damages the optic nerve

- a. blepharitis b. aphonia c. glaucoma d. dacryocystitis

7. a condition where a patient can see clearly objects which are close, but not ones further away; aka short-sightedness

- a. aphakia b. astigmatism c. myopia d. optician

8. surgical removal of the vitreous humour from one's eyeball

- a. vitrectomy b. retinitis c. lens d. trachoma

9. rapid movement of the eyes up and down or from side to side

- a. conjunctivoplasty b. blepharoptosis c. nystagmus d. apnoea

10. damage to the retina of the eye due to excessive exposure to the sun

- a. hyperopia b. photoretinitis c. conjunctivitis d. blepharitis

Exercise 4

Match each term in the left-hand column with its meaning in the right-hand column. Write the answer on the line provided.

Term		Meaning
1. aphakia	_____	a. a person who specialises in making glasses, testing the eyes and prescribing lenses
2. cataract	_____	b. an inflammation of the eyelid
3. optician	_____	c. opacity of the lens
4. lacrimation	_____	d. a contagious inflammation and hypertrophy of the conjunctiva, marked by the formation of minute granules
5. blepharitis	_____	e. secretion of tears or tearing, especially when abnormal or excessive
6. conjunctivoplasty	_____	f. fixation of the detached retina
7. dacryocystitis	_____	g. relating to the lens of the eye
8. lenticular	_____	h. referring to within the eye
9. detachment	_____	i. separation of a structure from its support
10. trachoma	_____	j. inflammation of the tear sac (lacrimal sac) at the inner corner of the eye
11. retinopexy	_____	k. surgical repair of the conjunctiva
12. intraocular	_____	l. the absence of the lens of the eye

Exercise 5

Circle the letter (a, b, c, or d) of the best answer to each question.

- Mansour Al Amri had a/an _____ performed to fix the retina of the left eye.
a. aphakia b. retinopexy c. trachoma d. astigmatism
- In _____ there is an increasing difficulty in seeing objects clearly from a distance.
a. trachoma b. diplopia c. myopia d. conjunctivitis
- Retinal _____ may begin with a small tear in the retina.
a. detachment b. myopia c. attachment d. keratitis
- Heba's condition required a/an _____ to repair the cornea surgically.
a. keratoplasty b. iridectomy c. detachment d. retinopexy
- _____ can cause difficulty in reading, and inability to see both near and distant objects clearly.
a. Vision b. Astigmatism c. Lacrimation d. Blepharitis

6. In _____, the upper eyelid is drooping or sagging.
a. glaucoma b. keratoplasty c. conjunctivitis d. blepharoptosis
7. He was treated for _____ in order to correct his crossed eyes.
a. myopia b. lacrimation c. strabismus d. astigmatism
8. People with _____ can see distant objects clearly.
a. glaucoma b. hypermetropia c. trachoma d. optician

Exercise 6

Fill in each blank with the best word from the box below. Use each word only once.

Conjunctivitis	strabismus	optician	myopia
detachment	intraocular	trachoma	squint
lacrimal	retinopexy		

1. The elevated _____ pressure in the right eye resulted in damaging the optic nerve.
2. Nassir wants to be an _____, and so he is taking a course in optics.
3. The examination of his left eye showed that the _____ duct was blocked, so tears ran down his cheek.
4. The _____ pain was reduced by the treatment, but since the disease is caused by a virus, one has to wait for it to go away.
5. The patient can't see from her left eye because she has a retinal _____ in it.
6. The ophthalmologist decided to correct her _____ surgically.
7. The patient underwent a _____ in order to fix the detached retina of the right eye.
8. Patients with _____ suffer from symptoms such as blurred vision.
9. _____ is a contagious eye disease that spreads through contact with discharge from the eyes or nose of an infected person.
10. In _____ you can see objects near to you clearly, but objects farther away are blurry.

Exercise 7

Write the correct word or word part on each line, and then combine them to form the new word. These are familiar word parts; however, the resulting term is not necessarily found in this unit.

1. surgical repair of an eyelid

- The combining form _____ means eyelid.
- the suffix _____ means surgical repair.
- The term _____ means surgical repair of an eyelid.

2. inflammation of the retina

- The combining form _____ means retina.
- The suffix _____ means inflammation.
- The term _____ means an inflammation of the retina.

3. an instrument for visual examination of the lens of the eye

- The combining form _____ means lens of the eye.
- The suffix _____ means instrument for visual examination.
- The term _____ means an instrument for visual examination of the lens of the eye.

4. surgical reshaping of the cornea

- The combining form _____ means cornea.
- The suffix _____ means surgical manipulation.
- The term _____ means a surgical reshaping of the cornea.

Exercise 8

Read the passage below and then do the exercises following it.

The light-sensitive retina of the eye is normally attached to the underlying tissue, but in retinal detachment part of the retina peels away from this tissue. The condition usually affects one eye only but, without treatment, can cause partial or total blindness.

Retinal detachment usually begins with a small tear in the retina. Fluid is then able to pass through the hole and separates the retina from the supporting tissues underneath. Tears may be caused by disorders such as severe short-sightedness (myopia) or eye injuries. In some people, tears appear as a result of scarring after a vitreous haemorrhage. Retinal detachment sometimes run in families.

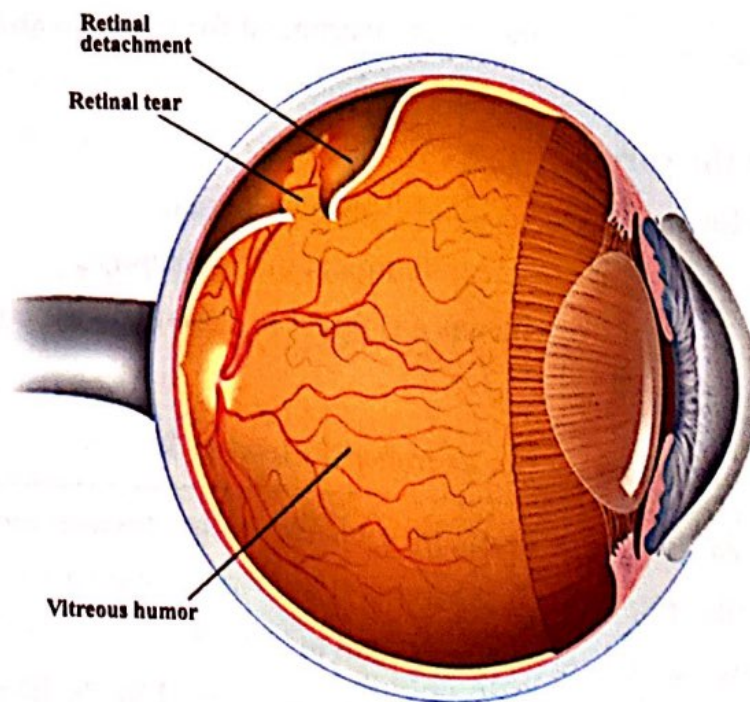
(From Smith, 2000. *Complete Family Health Guide*.)

1. Indicate whether each of the following statements is true (T) or false (F) according to the passage.

- _____ 1. In retinal detachment, the retina remains attached to the underlying tissue.
- _____ 2. Retinal detachment can lead to blindness if it is left untreated.
- _____ 3. Retinal detachment usually begins with a small tear in the retina.
- _____ 4. Eye injuries are the only cause of retinal detachment.
- _____ 5. Retinal detachment may run in families.

2. Write the noun form of each of these words from the passage.

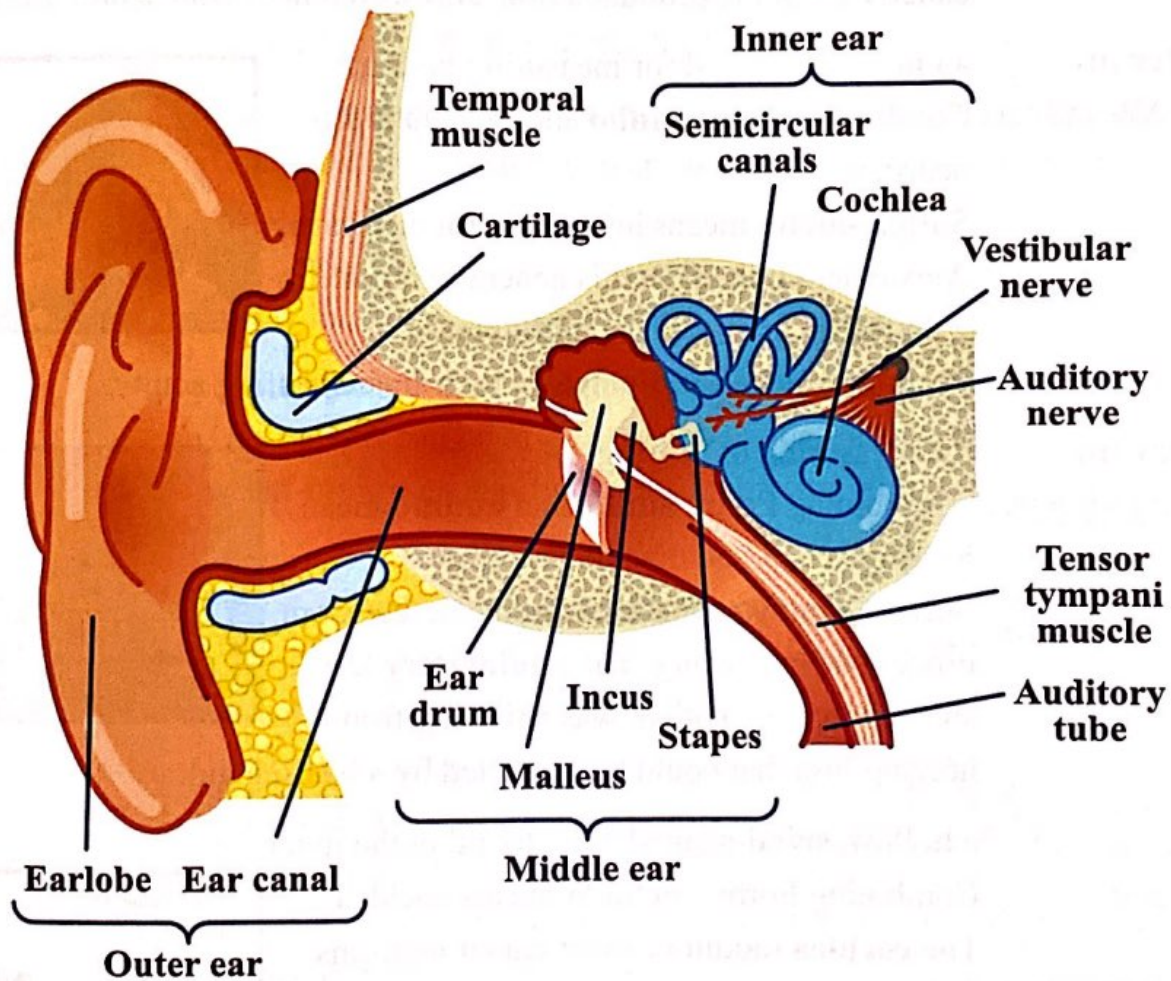
- a) detach: _____
- b) blind: _____
- c) shortsighted: _____
- d) familial: _____



► Online Progress Test (3)

CHAPTER 10

The Ear and Hearing



In this chapter, terms related to the ear and hearing are introduced. Study these terms carefully and then do the exercises following them.

acoustic (adj)
(ə-KU-stik)

relating to sound or hearing

Combining Form: **acous/o** and **acoust/o** both mean hearing.

Suffix: **-ic** means pertaining to or referring to.

The **acoustic** nerve (the 8th cranial nerve) is concerned with hearing and one's sense of balance and head position.

An **acoustic** neuroma is a benign tumour on the **acoustic** nerve.

aural (adj)
(OR-rəl)

referring to the ear or the sense of hearing
Combining Form: **aur/o** means ear.
Suffix: **-al** means pertaining to or referring to.
Aural practice is important to improve the listening skill.

The **aural** surgeon sutured the patient's torn ear.

Note: 'oral', referring to speaking, and 'aural', referring to listening, have exactly the same pronunciation. Just different spellings and meanings.



audiometer (n)
(AW-dee-AW-mə-ter)

an instrument used for measuring hearing
Combining Form: **audi/o** and **audit/o** mean hearing.

Suffix: **-meter** means instrument for measuring.
Alexander Graham Bell is generally credited with the invention of the **audiometer**.

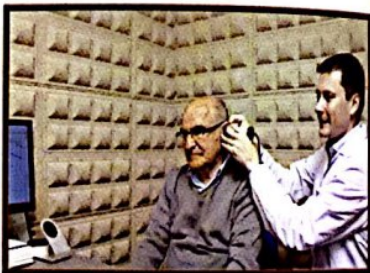
Audiologists use **audiometers** to evaluate hearing acuity.



audiometry (n)
(AW-dee-AW-mə-tree)

the measuring of hearing
Combining Form: **audi/o** and **audit/o** mean hearing.

Suffix: **-metry** means measurement, the act or process of measuring. The **audiometry** test showed that the patient was suffering from hearing loss that could be corrected by a hearing aid.



cochlea (n)
(KAW-klee-ə)

a hollow, spiral-shaped bone found in the inner ear

Combining Form: **cochle/o** means cochlea.
The **cochlea** (auditory inner ear) transforms the sound in neural messages.

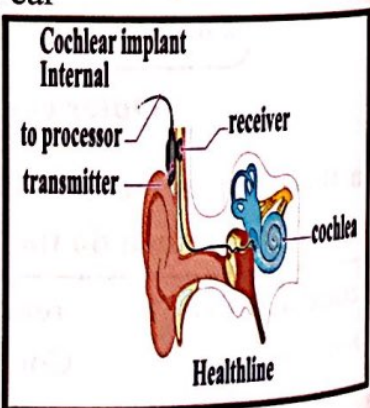
The function of the **cochlea** is to transform the vibrations of the **cochlear** liquids and associated structures into a neural signal.

cochlear (adj)
(KAW-klee-ar)

relating to cochlea

Combining Form: **cochle/o** means cochlea.
Suffix: **-ar** means pertaining to or referring to.

Cochlear implants bypass damaged portions of the ear and directly stimulate the auditory nerve.



deafness (n)
(DEF-nəs)

partial or complete loss of hearing in one or both ears

Deafness can be caused by old age, viruses or exposure to continuous loud noise.

He developed **deafness** after contracting German measles.



deafen (v)
(DE-fən)

to make deaf

He was **deafened** by the explosion.

The head injury **deafened** her for life.

deaf (adj)
(def)

partially or completely lacking in the sense of hearing; unable to hear

You have to shout when you speak to Mr. Al Shuhri because he's quite **deaf**.

He's getting **deaf**er in his old age.

I know lots of oldsters, but he is the **deafest**.

deaf (n)
(def)

people who are **deaf** (usually preceded by **the** and used with a plural verb)

Hearing aids can be of great use to the partially **deaf**.

A **deaf-blind** person suffers from double disabilities: deafness and blindness.

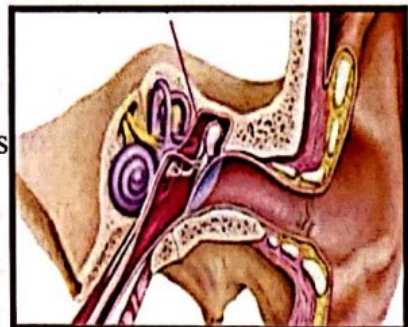
eustachitis (n)
(YU-sta-SHAI-təs)

inflammation of the eustachian tube (also known as auditory tube - a tube that connects the middle ear to the nasopharynx and equalizes pressure on both sides of the eardrum)

Combining Form: **eustach/o** means the eustachian tube.

Suffix: **-itis** means inflammation.

A patient having **eustachitis** may have plugged or full ears, hear muffled sounds, or ringing in the ears.



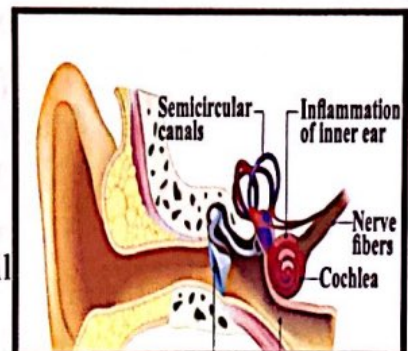
labyrinthitis (n)
(la-bə-rin-THAI-təs)

inflammation of the labyrinth of the inner ear

Combining Form: **labyrinth/o** means the labyrinth of the inner ear.

Suffix: **-itis** means inflammation.

The bony **labyrinth** is the rigid, bony outer wall of the inner ear in the temporal bone. It consists of three parts: the vestibule, semi-circular canals, and cochlea.



The **labyrinth** of the inner ear consists of the vestibular apparatus, which contains the organs of balance.

Labyrinthitis can affect one's balance.

Dizziness and a loss of balance are symptoms of **labyrinthitis**.

macrotia (n)
(mak-RO-shee-ə)
or
(mak-RO-shə)

abnormal enlargement of the pinna (the outer portion of the ear)

Prefix: **macro-** means large.

Combining Form: **ot/o** means ear.

Suffix: **-ia** means an abnormal condition.

The patient has bilateral **macrotia** that requires surgery to reduce the size.

In some cases of **macrotia**, otoplasty is performed to reduce the size.



microtia (n)
(maik-RO-shee-ə)
or
(maik-RO-shə)

abnormal smallness of the pinna (external ear)

Prefix **micro-** means small.

Combining Form: **ot/o** means ear.

Suffix: **-ia** means an abnormal condition.

Microtia is a congenital deformity where the pinna (external ear) is underdeveloped.

Microtia is a deformity of the outer ear that ranges from minor structural problems to there being no external ear at all.



myringotomy (n)

(MIR-rən-GAW-tə-mee)

or **tympanotomy**

(TIM-pə-NAW-tə-mee)

surgical incision of the tympanic membrane: eardrum

The eardrum is a thin membrane that separates the middle ear from the external ear.

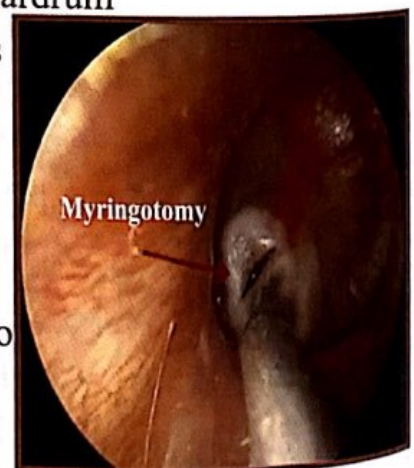
Combining Forms: **myring/o** and **tympan/o** both mean eardrum.

Suffix: **-tomy** means incision.

The patient had a **myringotomy** performed to allow infected fluid to drain from the middle ear.

The **myringotomy** procedure was successful in draining fluids from the ear.

A **Myringotomy** is usually performed to relieve pressure and allow drainage of fluids from the middle ear.



otalgia (n)
(o-TAL-jee-ə)

pain in the ear: earache

Combining Form: **ot/o** means ear.

Suffix: **-algia** means pain.

She is suffering from **otalgia** in the right ear.

Her **otalgia** was relieved with painkillers.

otopyorrhea (n)
(O-to-PAI-ə-REE-ə)

the flow of pus from the ear

Combining Form: **ot/o** means ear.

Combining Form: **py/o** means pus.

The suffix **-rrhea** means flow or discharge.

His main complaint was **otopyorrhea** from the right ear.

She's on a course of antibiotics for **otopyorrhea**.

otorrhea (n)
(O-tor-REE-ə)

any discharge from the ear

Combining Form: **ot/o** means ear.

The suffix **-rrhea** means flow or discharge.

An **otorrhea** specimen was taken for culturing.

The patient had **otorrhea** from the right ear.

otosclerosis (n)
(O-to-skler-RO-sis)

abnormal growth of bone of the middle ear that causes deafness

Combining Form: **ot/o** means ear.

Combining Form: **sclerosis** means hardening.

(**Ankylosis** means fused together.)

Otosclerosis prevents structures within the ear from working properly and causes hearing loss.

For some people with **otosclerosis**, the hearing loss may become severe.

otoscopy (n)
(o-TAW-skə-pee)

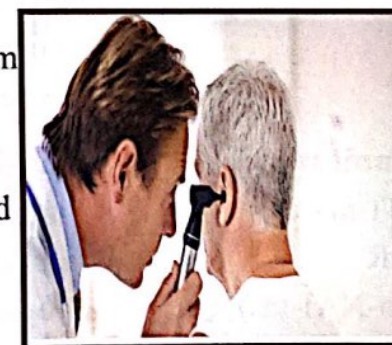
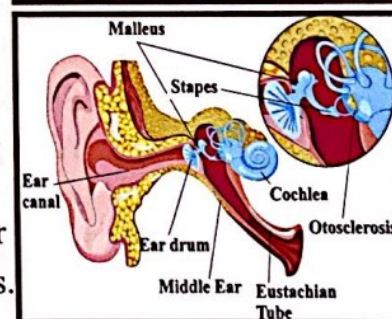
visual examination of the ear canal and eardrum

Combining Form: **ot/o** means ear.

Suffix: **-scopy** means visual examination.

Otoscopy is used to examine the ear canal and eardrum directly by using an otoscope.

Otoscopy is used to diagnose disorders such as otitis media and ruptured eardrums.



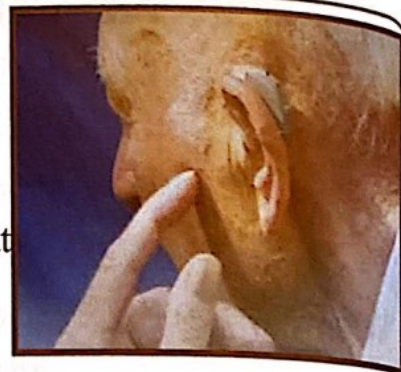
presbycusis (n) bilateral hearing loss occurring with old age
(PREZ-bee-ə-KYU-səs) Combining Form: **presby/o** means old age.

Combining Form: **-acusis** means hearing and the ability to hear.

Presbycusis is the gradual loss of hearing that occurs as people age.

Presbycusis is the most common hearing problem in older people.

Presbycusis is an ongoing loss of hearing linked to changes in the inner ear.



salpingopharyngeal (adj) relating to the auditory tube/eustachian tube and pharynx
(sal-PIN-go-fə-RIN-jee-əl) Combining Form: **salping/o** means auditory tube.

Combining Form: **pharyng/o** means pharynx.

Suffix: **-al** means pertaining to or referring to.

The **salpingopharyngeal** tube aerates the middle-ear system and clears mucus from the middle ear into the nasopharynx.

stapedectomy (n) surgical removal of the stapes

(STAY-pi-DEK-tə-mee) **Stapes** or **stapedes** are the innermost of the three small bones of the middle ear, shaped somewhat like a stirrup.

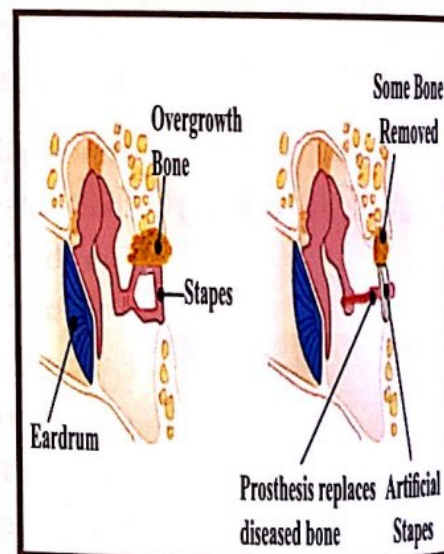
Combining Form: **staped/o** means stapes.

Suffix: **-ectomy** means surgical removal.

A **stapedectomy** is performed to improve one's hearing.

A **stapedectomy** can be done to treat hearing loss caused by a problem called otosclerosis that causes a buildup of stapes bone around the (stirrup bone).

The build-up of bone keeps the **stapes** from moving normally, resulting in a type of hearing loss called conductive hearing loss.



tinnitus (n)

(TI-nə-təs)

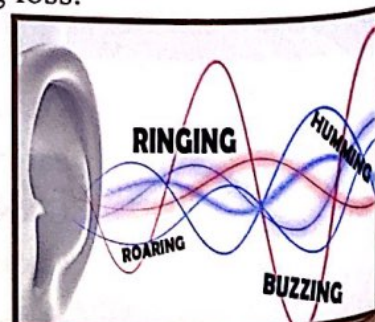
OR

(tə-NAI-təs)

a ringing sound in the ears

The patient complained from **tinnitus** in the right ear.

People with **tinnitus** hear sounds that originate within the ear itself.



The most common cause of **tinnitus** is damage to and/or loss of the tiny sensory hair cells in the cochlea of the inner ear. **Tinnitus** is a symptom of an underlying condition, such as age-related hearing loss, ear injury, or a circulatory system disorder.

a false sensation of rotational movement often combined with nausea and vomiting
His main complaint was **vertigo**. He had a feeling of losing his balance.

vertigo (n)
(VER-ti-go)



Now test how well you have studied the words from acoustic to vertigo.

Exercise 1

Match each term in the left-hand column to its meaning in the right-hand column. Write each answer in the blanks provided.

Term		Meaning
1. myringotomy	_____	a. measurement of hearing
2. otopyorrhea	_____	b. inflammation of the eustachian tube
3. acoustic	_____	c. surgical incision of the eardrum
4. audiometry	_____	d. a ringing sound in the ear
5. tinnitus	_____	e. the flow of pus from the ear
6. otalgia	_____	f. relating to sound or hearing
7. eustachitis	_____	g. pain in the ear
8. vertigo	_____	h. a false sensation of movement often combined with nausea and vomiting

Exercise 2

Choose the option that best matches each meaning below.

1. an instrument used for measuring hearing

a. otoscope b. ophthalmoscope c. audiometer d. optometrist

2. surgical removal of the stapes

a. blepharectomy b. detachment c. otosclerosis d. stapedectomy

3. relating to the auditory tube/eustachian tube and pharynx

- a. salpingopharyngeal b. myringotomy c. audiometry d. labyrinthitis

4. abnormal smallness of the pinna (external ear)

- a. macrotia b. otoscopy c. microtia d. cochlea

5. partial or complete loss of hearing in one or both ears

- a. otalgia b. deafness c. otorrhoea d. eustachitis

6. a hollow, spiral-shaped bone found in the inner ear

- a. labyrinth b. pinna c. vertigo d. cochlea

7. inflammation of the labyrinth of the inner ear

- a. labyrinthitis b. tinnitus c. conjunctivitis d. nystagmus

8. abnormal growth of bone of the middle ear that causes deafness

- a. glaucoma b. otosclerosis c. eustachitis d. tinnitus

9. bilateral hearing loss occurring with old age

- a. presbycusis b. deafness c. aphakia d. cataract

10. the innermost of the three small bones of the middle ear, shaped somewhat like a stirrup

- a. cochlea b. labyrinth c. stapes d. pinna

Exercise 3

Fill in each blank with the best term from the box below. Use each word only once.

eardrum	myringotomy	labyrinthitis	otoscopy	deafness
Macrotia	Vertigo	audiometry	Presbycusis	otopyorrhea
cochlea	Tinnitus			

1. Dizziness and loss of balance are symptoms of _____.
2. Rupture of the _____ most commonly results from an acute bacterial infection of the middle ear.
3. She underwent _____ to drain fluid from the left middle ear.
4. Old people suffer from varying degrees of _____.
5. _____ is more common in adult people and affects approximately 3 in 10 people over the age of 60. They hear a ringing sound in their ears.
6. _____ means abnormally large ears.

7. The _____ test showed that the patient has some hearing loss which can be corrected by hearing aids.
8. She is on antibiotics for _____. The discharge is yellowish and smelly.
9. The _____ shows an inflammation of the tympanic membrane with a purulent fluid that needs to be drained.
10. The _____ converts sound vibrations into nerve impulses.
11. _____ is a common disorder occurring in about 25% of people aged 65-75 and in 50% of those over 75.
12. _____ is the sense of the world spinning, rotating, or rocking that is experienced even when a person is holding perfectly still.

Exercise 4

Write the meaning of each of these word parts.

Word Part	Meaning	Word Part	Meaning
1. a-	_____	6. -rrhea	_____
2. -metry	_____	7. -optosis	_____
3. -itis	_____	8. -sclerosis	_____
4. -plasty	_____	9. -scopy	_____
5. -algia	_____	10. macro-	_____

Exercise 5

Write the combining form of each word below.

Word	Combining Form
1. stapes	_____
2. eustachian tube/auditory tube	_____
3. old age	_____
4. cochlea	_____
5. hearing	_____
6. eardrum	_____
7. labyrinth	_____
8. ear	_____

Exercise 6

Write the correct word or word part on each of the lines below. Then combine them to form the new word. (These are familiar word parts; however, the resulting term is not necessarily found in this unit.)

1. surgical repair of the eardrum.

- The combining form _____ means eardrum.
- The suffix _____ means surgical repair.
- The term _____ means surgical repair of the eardrum.

2. an instrument for visual examination of the ear.

- The combining form _____ or _____ means ear.
- The suffix _____ means instrument for visual examination.
- The term _____ or _____ means an instrument for visual examination of the ear.

3. any discharge from the ear.

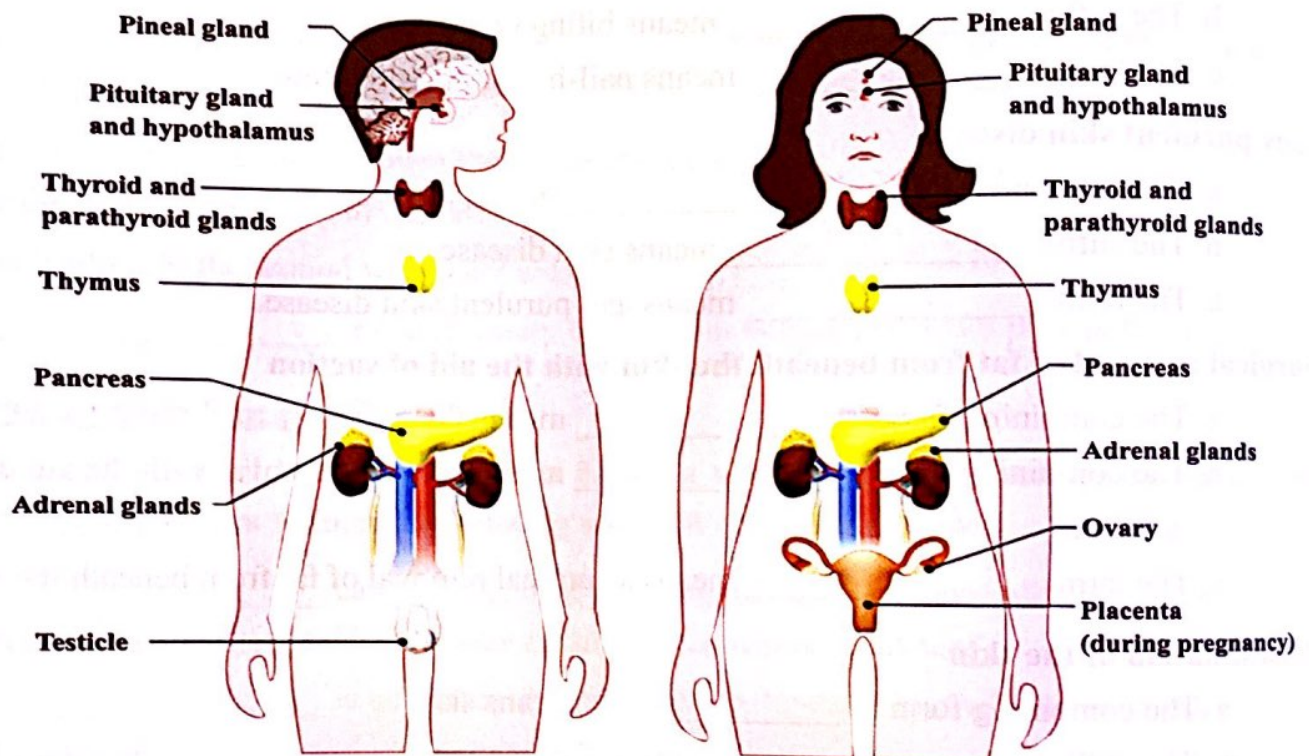
- The combining form _____ means ear.
- The suffix _____ means flow or discharge.
- The term _____ means any discharge from the ear.

4. relating to the auditory tube/eustachian tube and pharynx

- The combining form _____ means auditory tube.
- The combining form _____ means pharynx.
- The suffix _____ means relating to.
- The term _____ means relating to the auditory tube/eustachian tube and pharynx.

CHAPTER 12

The Endocrine System



In this chapter, terms related to the endocrine system are introduced. Study these terms carefully and then do the exercises following them.

1. Pituitary gland

acromegaly (n)
(A-kro-ME-gə-lee)

enlargement of the extremities (hands and feet) and head caused by excessive secretion of growth hormone by the pituitary gland
Combining Form: **acr/o** means extremities.
Suffix: **-megaly** means enlargement.
The opposite is **acromicria** (A-kro-MAI-kree-ə): abnormal smallness of the head and extremities.

Suffixes: **micr/o** and **-ia** both mean small and an abnormal condition.



endocrinologist (n) specialist in the endocrine system
(EN-do-kri-NAW-lə-jist) Prefix: **endo-** means inside or within.

Combining Form: **crin/o** means secrete.

Suffix: **-logist** means specialist.

Last week the patient was seen by the **endocrinologist** in the diabetes clinic.

Endocrinologists treat patients suffering from hormone diseases and disorders.

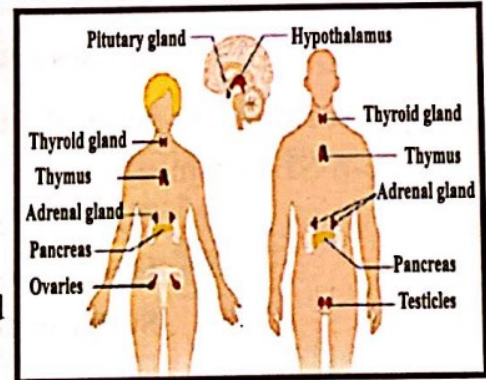


endocrinology (adj) the study of the endocrine system
(EN-do-kri-NAW-lə-jee) Prefix: **endo-** means inside or within.

Combining Form: **crin/o** means secrete.

Suffix: **-logy** means study of.

Patients with gland problems are referred to the **endocrinology** department.



endocrinopathy (n) a disease marked by dysfunction of an endocrine gland
(EN-do-kri-NAW-pə-thee) Prefix: **endo-** means inside or within.

Combining Form: **crin/o** means secrete.

Suffix: **-pathy** means disease.

Common **endocrinopathies** include hyperthyroidism and hypothyroidism.

gigantism (n) excessive growth due to a pituitary gland disorder
(jai-GAN-ti-zəm) Combining Form: **gigant/o** means giant or huge.

Suffix: **-ism** means disease or condition.

Gigantism is a serious condition that is caused by a tumour of the pituitary gland.

Gigantism occurs in patients who had excessive growth hormone in childhood.



hypercrinism (n) a condition caused by excessive secretion of any endocrine gland
(HAI-per-KRAI-ni-zəm) Prefix: **hyper-** means excessive or high.

Combining Form: **crin/o** means secrete.

Suffix: **-ism** means disease or condition.

The opposite is **hypocrinism**: a condition caused by deficient secretion of any endocrine gland.

Prefix: **hypo-** means low or deficient.

The excessive secretion of the thyroid gland is a **hypercrinism** called hyperthyroidism.

hyperpituitarism (n) a condition due excessive activity of the pituitary gland (HAI-per-pi-TYU-ə-TAIR-ri-zəm) Prefix: **hyper-** means excessive or high.

Combining Form: **pituitar/o** means pituitary gland.

Suffix: **-ism** means disease or condition.

The opposite is **hypopituitarism**.

In most cases the cause of **hyperpituitarism** is a pituitary gland tumour.

hypophysectomy (n) surgical removal of the pituitary gland or hypophysis

(HAI-po-fi-SEK-tə-mee) Prefix: **hypo-** means low or deficient.

Combining Form: **hypophys/o** means hypophysis or pituitary gland.

Suffix **-ectomy** means surgical removal or excision.

The patient had a **hypophysectomy** to remove a tumour around the pituitary gland.



hypophysitis (n)

(HAI-po-fi-SAI-təs)

inflammation of the pituitary body

Combining Form: **hypophys/o** means hypophysis or pituitary gland.

Suffix: **-itis** means inflammation.

Hypophysitis is characterized by inflammation of the pituitary gland resulting in hypopituitarism and pituitary enlargement.

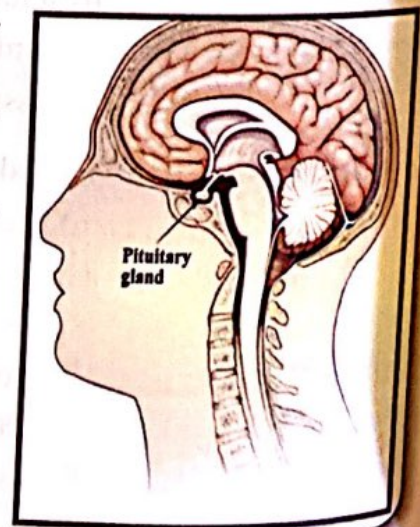


pituitary gland (n) a small gland located at the base of the brain, (pi-TYU-i-tair-ree gland) also known as the hypophysis

The **pituitary gland** is composed of anterior and posterior lobes.

The **pituitary gland** is body's 'master gland' because it controls the activity of most other hormone-secreting glands.

The **pituitary gland's** main function is to secrete hormones into the bloodstream.



2. Thyroid gland

cretinism (n)
(CREE-tin-izm)

poor growth and mental retardation in infants due to lack of thyroid secretion

Combining Form: **cretin/o** means retardation.

Suffix: **-ism** means disease or condition.

Cretinism is caused by the absence of or a deficiency in normal thyroid secretions.

Cretinism is characterized by physical deformity, dwarfism, and mental retardation.



dysthyroidism (n) the imperfect development and functioning of the thyroid gland
(dis-THAI-roi-di-zəm) Prefix: **dys-** means difficult, disordered, or abnormal.

Combining Forms: **thyr/o** and **thyroid/o** both mean thyroid.

Suffix: **-ism** means disease or condition.

The opposite is **euthyroidism** (yu-THAI-roi-di-zəm) - a condition of normal thyroid function.

Prefix: **eu-** means normal, well, or good.

Suffix: **-ism** means disease or condition.

It is the opposite of **dys-**.

The effects of **hypothyroidism** appear on the digestive tract in terms of persistent abdominal pain, intractable vomiting, and weight loss.

goitre (n)
(GOY-ter)

abnormal enlargement of the thyroid gland, also known as **thyromegaly** (thigh-roh-MEG-ah-lee)

The patient presented with a big **goitre** in the neck.

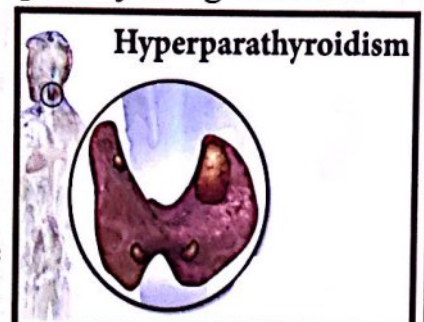
A large **goitre** can cause a cough and make it difficult for one to swallow or breathe.



hyperparathyroidism (n) an abnormal increase of the activity of the parathyroid glands and
(HAI-per-PAIR-rə-THAI-ro-di-zəm) leads to a high level of calcium in the blood

Prefix: **hyper-** means excessive.

Combining Form: **-parathyroid** means small glands of the endocrine system that control the amount of calcium in the blood and bones.



Suffix: **-ism** means disease or condition.

Hyperparathyroidism causes muscular pain and softening of the bones.

Hypercalcaemia (UK; excessive amounts of calcium in the blood

US – **hypercalcemia**; n; Prefix: **hyper-** means excessive or high.

HAI-per-kal-SEE-mee-ə) Combining Form: **calc/o** means calcium.

Suffix: **-aemia** means blood condition.

Hypercalcaemia can weaken the bones, create kidney stones, and interfere with how the heart and brain work.

Hypercalcaemia is caused by the overactivity of the parathyroid glands.

hypoparathyroidism (n) deficient secretion from the parathyroid glands, usually accompanied

(HAI-per-PAIR-rə-THAI-roy-di-zəm) by hypocalcaemia

Prefix: **hypo-** means deficient or insufficient.

Combining Form: **-parathyroid** means small glands of the endocrine system that control the amount of calcium in the blood and bones.

Suffix: **-ism** means disease or condition.

Hypoparathyroidism leads to decreased blood levels of calcium and increased levels of blood phosphorus.

hypocalcaemia (UK; an abnormal decrease of calcium in blood

US – **hypocalcemia**; Prefix: **hypo-** means deficient, insufficient, or low.

HAI-po-kal-SEE-mee-ə; n) Combining Form: **calc/o** means calcium.

Suffix: **-aemia** means blood condition.

Severe symptoms of **hypocalcaemia** include: confusion or memory loss, muscle spasms, numbness, and tingling in the hands, feet, and face.

hypothyroidism (n) deficient functioning of the thyroid gland

(HAI-po-THAI-roy-di-zəm) Prefix: **hypo-** means deficient, insufficient, or low.

Combining Form: **thyroid/o** both mean thyroid.

Suffix: **-ism** means disease or condition.

Hypothyroidism can cause a number of symptoms, such as poor ability to tolerate cold weather, a feeling of tiredness, constipation, depression, and weight gain.

The opposite is **hyperthyroidism** (HAI-per-THAI-roy-di-zəm), excessive secretion of the thyroid gland.

lobectomy (n)
(lo-BEK-tə-mee)

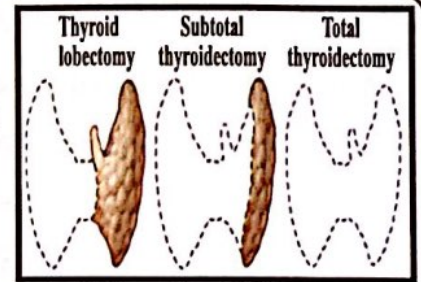
surgical removal of one lobe of the thyroid gland

This term also is used to describe the removal of a lobe of the liver, brain, or a lung.

Combining Form: **lob/o** means lobe.

Suffix: **-ectomy** means surgical removal.

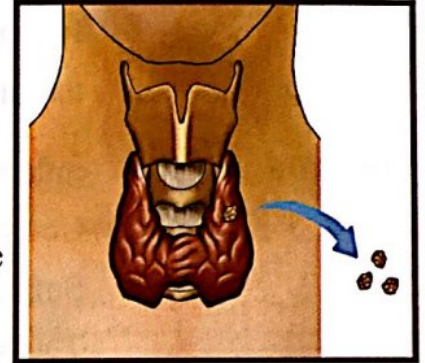
The patient had a **lobectomy** to remove a cancerous lobe from the left lung.



parathyroidectomy (n) surgical removal of a parathyroid gland
(PAIR-rə-THAI-roy-DEK-tə-mee) Combining Form: **parathyroid/o** means parathyroid gland.

Suffix: **-ectomy** means surgical removal.

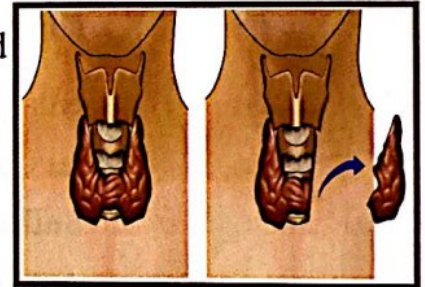
A **parathyroidectomy** is performed to remove parathyroid tumours.



thyroidectomy (n) surgical removal of the thyroid gland
(THAI-roy-DEK-tə-mee) Combining Form: **thyroid/o** means thyroid gland.

Suffix: **-ectomy** means surgical removal.

The patient had **thyroidectomy** because he had thyroid cancer.



thyroiditis (n) inflammation of the thyroid gland
(THAI-roy-DAI-təs) Combining Form: **thyroid/o** means thyroid gland.

Suffix: **-itis** means inflammation.

Thyroiditis can lead to high or low levels of the thyroid hormone.

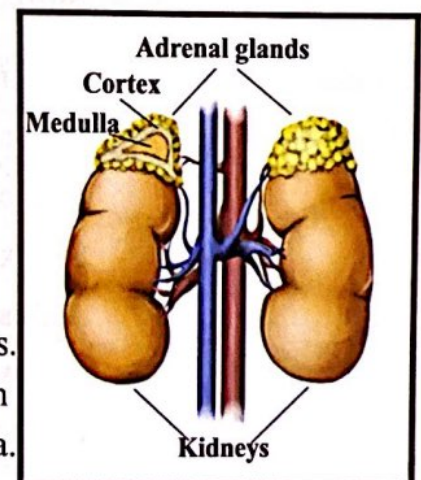
3. Adrenal Glands

adrenal glands (n) two small glands located one on top of each kidney; also known as the **suprarenal glands**
(ə-DREE-nəl glands) Prefix: **ad-** means near or next to.

Combining Form: **ren/o** means kidney.

Together they make up the combining form **adren/o** meaning on the kidneys or adrenal glands. Each **adrenal gland** has an outer cortex which produces steroid hormones and an inner medulla.

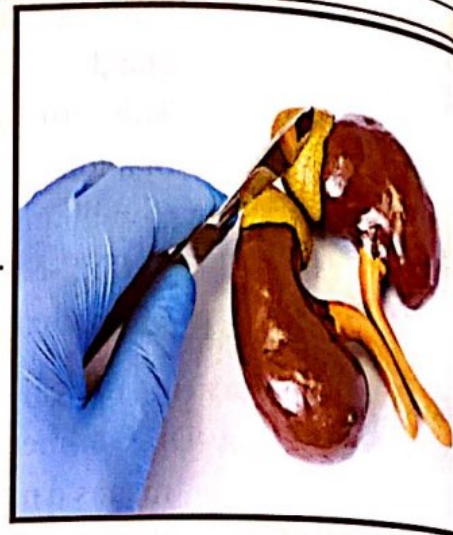
Adrenal glands produce hormones that you can't live without, including sex hormones and cortisol.



adrenalectomy (n) surgical removal of one or both of one's
(ə-DREE-nə-LEK-təl-mee) adrenal glands

Combining Form: **adrenal/o** means an adrenal gland.

Suffix: **-ectomy** means surgical removal.
The patient was admitted to the hospital for an **adrenalectomy** to remove a tumour on the right adrenal gland.



adrenalitis (n) inflammation of the adrenal glands

(ə-DREE-nə-LAI-təs) Combining Form: **adrenal/o** means an adrenal gland.

Suffix: **-itis** means inflammation.

The patient suffers from **adrenalitis** that resulted in an insufficiency of adrenaline or noradrenaline.

adrenomegaly (n) enlargement of the adrenal glands

(ə-DREE-no-ME-gə-lee) Combining Form: **adren/o** means an adrenal gland.

Suffix: **-megaly** means enlargement.

An X-ray examination of the abdomen and pelvis shows marked bilateral adrenal gland enlargement, a condition known as **adrenomegaly**.

adrenopathy (n) any disease of the adrenal glands

(ə-dree-NAW-pə-thee) Combining Form: **adren/o** means an adrenal gland.

Suffix: **-pathy** means disease.

aldosteronism (n) an abnormality of electrolyte balance caused by excessive secretion of
(AWL-do-ster-RO-ni-zəm) aldosterone

Combining Form: **aldosteron/o** means aldosterone.

Suffix: **-ism** means disease or condition.

Aldosteronism is a hormonal disorder that leads to high blood pressure. **Aldosteronism** occurs when one's adrenal glands produce too much of a hormone called aldosterone.

4. Gonads

andropathy (n)
(an-dro-pə-thee)

any disease peculiar to male

Combining form **andr/o** means man/male.

Suffix: **-pathy** means disease.

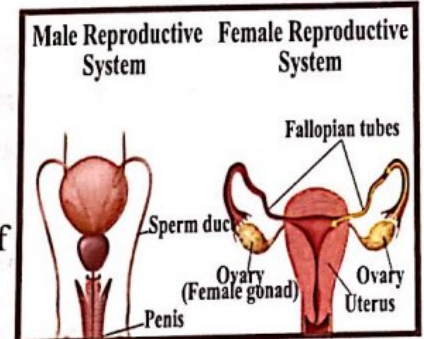
Diseases affecting the prostate and testicles are **andropathies**, i.e. affecting men only.

gonad (n)
(GO-nad)

an ovary in a female and a testis in a male

Combining Form: **gonad/o** means gonad.

A gonad is a reproductive gland (e.g. ovary, testis) that produces gametes. The main role of **gonads** is the production of steroid hormones.



gynecomastia (n)

abnormal enlargement of the breast in a male

(GAI-no-ko-MA-stee-ə) Combining Forms: **gynec/o** and **mast/o** both mean female and breast respectively.

Suffix: **-ia** means an abnormal condition.

Gynecomastia is most commonly caused by levels of the male hormone oestrogen that are too high or out of balance with testosterone levels.



hypergonadism (n)

a condition of excessive secretion of gonadal hormones

(HAI-per-GO-na-di-zəm) Prefix: **hyper-** means excessive or high.

Combining Form: **gonad/o** means the gonads.

Suffix: **-ism** means disease or condition.

Hypergonadism can manifest itself as puberty occurring at an unusually early age, and is caused by abnormally high levels of testosterone or oestrogen, crucial hormones for sexual development.

The opposite is **hypogonadism** (HAI-po-GO-na-di-zəm) - deficient secretion of hormones by the sex glands.

oestrogen (UK – EE-strə-jən) a female sex hormone produced by the ovary

(US – **estrogen** – E-strə-jən; n) **Oestrogen** regulates the development of the female reproductive tract, the menstrual cycle, and secondary sexual characteristics, such as the growth of pubic hair and the female body form.

progesterone (n)
(pro-JE-ster-ron)

a hormone released by the ovaries
Changing progesterone levels can contribute to abnormal menstrual periods and menopausal symptoms.
Progesterone is also necessary for implantation of the fertilized egg in the uterus and for maintaining pregnancy.

5. Pancreas

diabetes mellitus (n) a metabolic disorder that results from inadequate insulin secretion
(DAI-ə-BEE-tez me-LAI-təs) Untreated **diabetes mellitus** can cause many complications for the patient.

diabetic (adj) relating to diabetes
(DAI-ə-BE-tik) **Diabetic** patients should avoid sugar and sweets.

diabetic (n) a person with diabetes
(DAI-ə-BE-tik) **Diabetics** suffer from high and low blood sugar.

gestational diabetes mellitus (je-STAY-shə-nəl DAI-ə-BEE-tez me-LAI-təs; n. phrase) a form of diabetes that occurs during pregnancy
Gestational means pertaining to pregnancy.
Some pregnant women develop **gestational diabetes mellitus** during pregnancy, but it disappears after delivery.

hyperglycaemia (UK; US – **hyperglycemia**; HAI-per-glai-SEE-mee-ə; n) an abnormally high level of glucose in the blood

Prefix: **hyper-** means abnormally increased or excessive.

Combining Form: **glyc/o** means glucose or sugar.

Suffix: **-emia** means blood condition.

Diabetic patients often suffer from **hyperglycaemia** because they don't control their diet.

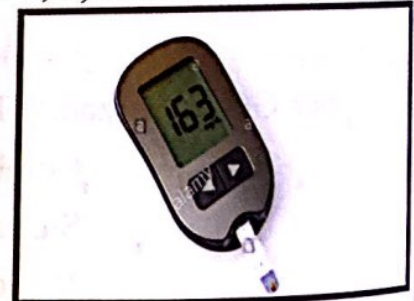
The opposite is **hypoglycaemia** (HAI-po-glai-SEE-mee-ə; n).

She had an attack of **hypoglycaemia** last week. Her blood sugar was very low.

hyperinsulinism (n) excessive insulin in the bloodstream that may result in insulin shock
(HAI-per-IN-sə-lin-i-zəm) Prefix: **hyper-** means abnormally increased or excessive.

Combining Form: **insulin/o** means insulin: a hormone secreted by the pancreas.

Suffix: **-ism** means disease or condition.



insulinoma (n)
(IN-sə-li-NO-mə)

Hyperinsulinism is caused by insulin resistance. As cells become insulin-resistant, however, the level of insulin keeps rising.

a benign tumour of the pancreas insulin-secreting cells

Combining Form: **insulin/o** means insulin - a hormone secreted by the pancreas.

Suffix: **-oma** means tumour.

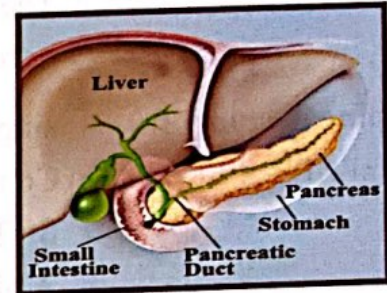
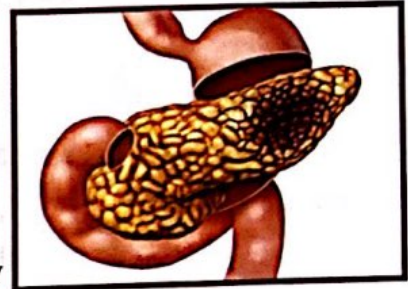
Most **insulinomas** are benign in that they grow exclusively at their origin within the pancreas.

pancreas (n)
(PAN-kree-əs)

an organ located in the abdomen that secretes insulin

Combining Form: **pancreat/o** means pancreas.

The **pancreas** has two main functions: an exocrine function that helps in digestion and an endocrine function that regulates blood sugar.



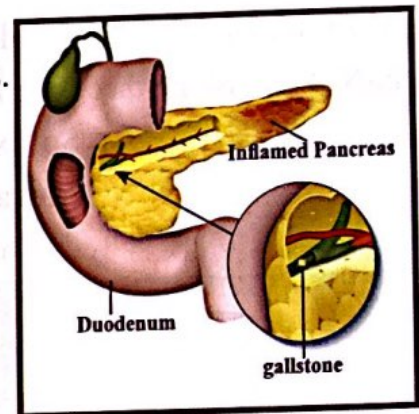
itis (n)

inflammation of the pancreas

Combining Form: **pancreat/o** means pancreas.

Suffix: **-itis** means inflammation.

Acute **pancreatitis** is usually caused by a gallstone blocking the bile duct and/or heavy alcohol use.



6. Thymus (THIGH-mus)

dysthymia
(dis-THAI-mee-ə; n)

a form of depression

Prefix: **dys-** means bad, painful, or difficult.

Combining Form: **thym/o** means thymus.

Dysthymia may make you lose interest in normal daily activities, feel hopeless, lack productivity, and have low self-esteem, and an overall feeling of inadequacy.

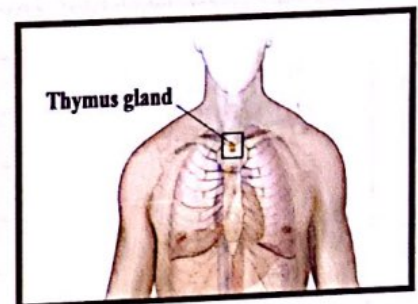
thymectomy
(thai-MEK-tə-mee; n)

surgical removal of the thymus

Combining Form: **thym/o** means thymus.

Suffix: **-ectomy** means surgical removal.

A **thymectomy** is performed to stop the production of autoantibodies that mistakenly attack the muscle-nerve connections in myasthenia gravis patients.



thymitis

(thai-MAI-təs; n)

inflammation of the thymus gland

Combining Form: **thym/o** means thymus.

Suffix: **-itis** means inflammation.

7. Pineal Gland

pineal gland (n)

(PI-nee-əl gland)

a small, cone-shaped gland in the brain; also known as epiphysis, pineal body, or pineal organ

Combining Form: **pineal/o** means pineal gland.

The **pineal gland** produces and regulates the hormone melatonin that regulates sleep patterns.

pinelectomy (n)

(pi-NEE-əl-EK-tə-mee)

surgical removal of the pineal body

Combining Form: **pineal/o** means pineal gland.

Suffix: **-ectomy** means surgical removal.

A **pinelectomy** is performed when a pineal gland cyst has become life-threatening.

pinealopathy (n)

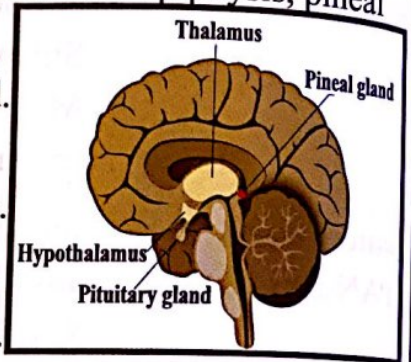
(pi-NEE-əl-AW-pə-thee)

any disorder of the pineal gland

Combining Form: **pineal/o** means pineal gland.

Suffix: **-pathy** means disease.

Pinealpathies are associated with depression, peptic ulcers, and sexual dysfunction. These may be exacerbated by a deficiency of melatonin.



Now test how well you have studied the words from acromegaly to pinealopathy.

Exercise 1

Write the meaning of each of the following word parts.

Word Part	Meaning	Word Part	Meaning
1. crin/o		7. thym/o	
2. hyper-		8. ad-	
3. pituitar/o		9. andr/o	
4. thyr/o		10. gonad/o	
5. -megaly		11. -ism	
6. acr/o		12. gylc/o	

Exercise 2

Circle the letter (a, b, c, or d) of the best answer to each question.

1. any disease
a. gynec/o b. dys- c. hyper- d. -pathy-
2. inside or within
a. -logist b. logy c. endo- d. -itis
3. huge or giant
a. gigant/o b. pancreat/o c. hypophys/o d. pituitar/o
4. pituitary gland
a. thyr/o b. pineal/o c. hypophys/o d. lob/o
5. retardation
a. dys- b. parathyroid/o c. glyc/o d. cretin/o
6. calcium
a. calc/o b. -ectomy c. pancreat/o d. andr/o
7. on the kidney
a. pineal/o b. adren/o c. aldosteron/o d. mast/o
8. breast
a. gynec/o b. -oma c. mast/o d. adrenal/o
9. tumour or swelling
a. -oma b. -emia c. dys- d. ectomy
10. normal or well
a. dys- b. hypo- c. eu- d. ad-

Exercise 3

Circle the letter (a, b, c, or d) of the best terms for each meaning below.

1. inflammation of the thymus gland
a. gynecomastia b. thyroiditis c. thymitis d. diabetes
2. a condition caused by excessive secretion of any gland, especially an endocrine gland.
a. hypercrinism b. hyperglycaemia c. hyperpituitarism d. hypergonadism
3. inflammation of the pituitary body
a. parathyroiditis b. adrenalitis c. thymitis d. hypophysitis
4. Surgical removal of the pineal body is known
a. insulinoma b. pinealectomy c. thymectomy d. hypothyroidism
5. a form of depression
a. gigantism b. dysthyroidism c. dysthymia d. pancreatitis

6. a benign tumour of the insulin-secreting cells of the pancreas
a. acromegaly b. goiter c. insulinoma d. hypocalcaemia
7. a condition of excessive secretion of hormones by the sex glands
a. hypergonadism b. hypoparathyroidism c. aldosteronism d. diabetes mellitus
8. a form of diabetes which occurs during pregnancy
a. hyperglycaemia b. dysthymia c. adrenomegaly d. gestational diabetes mellitus
9. an abnormal decrease of calcium in blood
a. dysthyroidism b. euthyroidism c. hypoglycaemia d. gigantism
10. abnormal enlargement of the breast in a male
a. hypercalcemia b. hyperpituitarism c. acromicria d. gynecomastia

Exercise 4

Match each term on the left with its meaning on the right. Write the answer on the lines provided.

Term		Meaning
1. gigantism		a. a doctor specialized in the endocrine system
2. critinism		b. abnormal smallness of the head and extremities
3. acromicria		c. poor growth and mental retardation in infants
4. endocrinologist		d. excessive insulin in the bloodstream that may result in insulin shock
5. goitre		e. ovaries in females and testes in males
6. gonads		f. an abnormal enlargement of the thyroid gland causing a swelling in the front part of the neck
7. hypophysectomy		g. excessive growth due to a pituitary gland disorder
8. hyperinsulinism		h. surgical removal of the pituitary gland

Exercise 5

Fill in each blank with the best word from the box below. Use each word only once.

aldosteronism dysthyroidism pinealectomy gestational
hypocalcaemia thyroidectomy acromegaly goitre

1. The endocrinologist noticed a swelling on the front part of the patient's neck. He diagnosed this as being _____, which is an abnormal enlargement of the thyroid gland.
2. During her pregnancy, Salma was treated for _____ diabetes, which disappeared after delivery.
3. Marwan Al Shammari suffers from _____ that is characterized by extremely large hands and feet.

4. Mr. Mansour Al Khalid required a/an _____ to remove a thyroid gland tumour.
5. She underwent a/an _____ a diseased pineal gland. This surgical procedure was performed to remove _____.
6. She was treated for _____, which is imperfect functioning of the thyroid gland.
7. Nassir was diagnosed as having _____ blood serum because of low calcium levels in the _____.
8. The test results show that the patient is having _____ of electrolyte balance caused by excessive secretion of aldosterone, which is an abnormality.

Exercise 6

Write the correct word or word part on the line.

1. an abnormal decrease of glucose in the blood

- a. The combining form _____ means glucose.
- b. The prefix _____ means decrease.
- c. The suffix _____ means blood.
- d. The term _____ means an abnormal decrease of glucose in the blood.

2. inflammation of the pancreas

- a. The combining form _____ means pancreas.
- b. The suffix _____ means inflammation.
- c. The term _____ means inflammation of the pancreas.

3. surgical removal of one or both adrenal glands


- a. The combining form _____ means adrenal gland.
- b. The suffix _____ means surgical removal.
- c. The term _____ means surgical removal of one or both adrenal glands.

4. any disease peculiar to males

- a. The combining form _____ means male/man.
- b. The suffix _____ means disease.
- c. The term _____ means any disease peculiar to males.

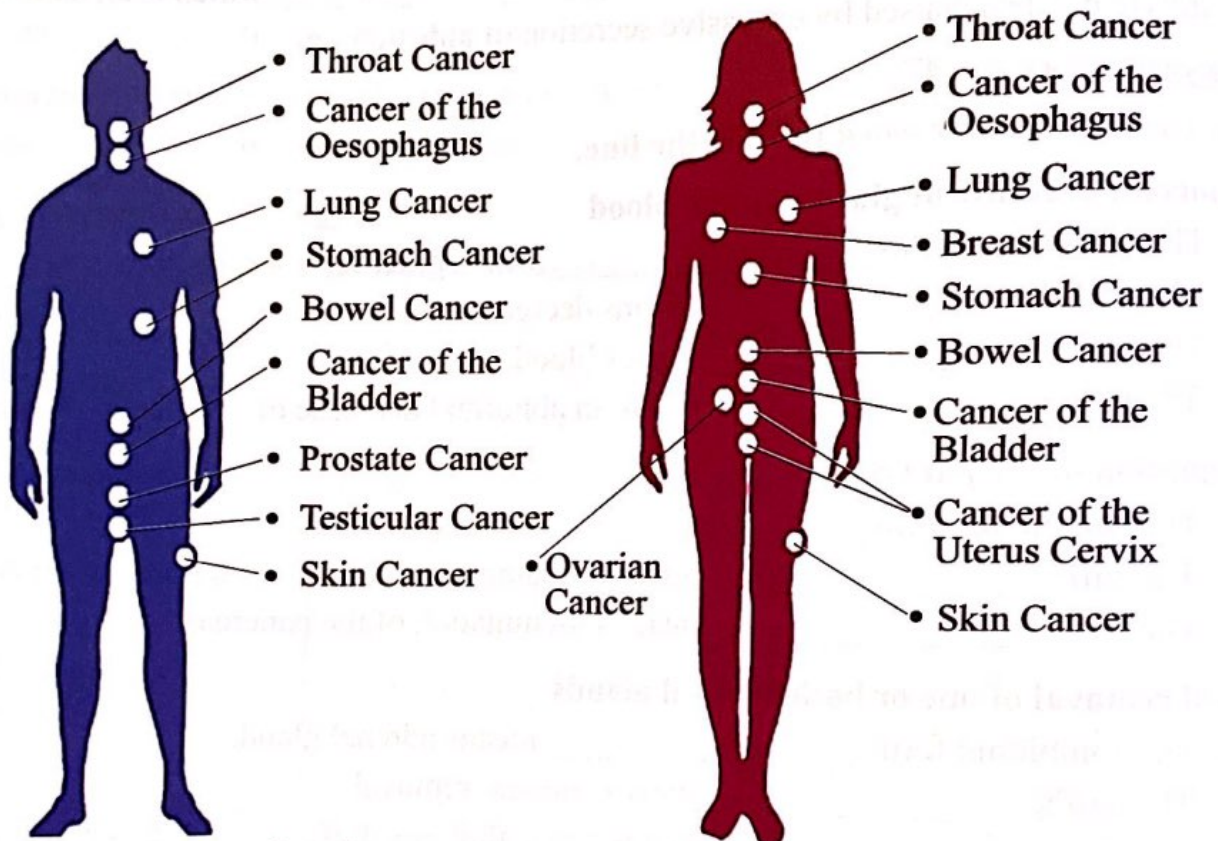
5. enlargement of extremities

- a. The combining form _____ means extremities.
- b. The suffix _____ means enlargement.
- c. The term _____ means enlargement of extremities.

 Online Progress Test (4)

CHAPTER 13

Oncology



In this chapter, terms related to oncology are introduced. Study these terms carefully and then do the exercises following them.

adenocarcinoma (n) a malignant tumour originating in glandular (a-DEE-no-KAR-si-NO-mə) tissue

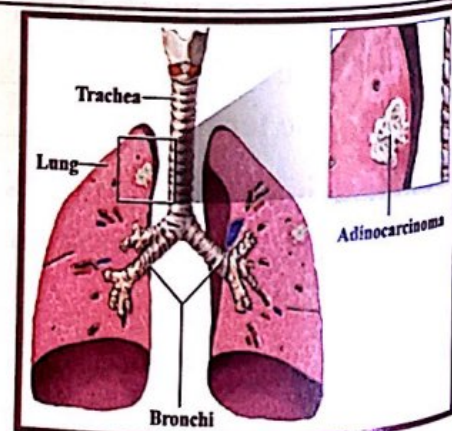
Combining Form: **aden/o** means gland.

Combining Form: **carcin/o** means malignant tumour or cancer.

Suffix: **-oma** means tumour.

Adenocarcinoma is a cancer that forms in the glands and may spread to other areas of the body.

Most colon cancers are **adenocarcinomas**.



carcinolysis (n)
(KAR-si-NOL-i-səs)

destruction of cancer cells
Combining Form: **carcin/o** means malignant tumour or cancer.
Suffix: **-lysis** means breaking down, decomposition, or dissolution.
Radiation therapy is the one form of **carcinolysis** therapies that aims at destroying cancerous cells.

carcinolytic (adj)
(KAR-si-no-LI-tik)

referring to destruction of cancer cells
Combining Form: **carcin/o** means malignant tumour or cancer.
Suffix: **-lytic** means pertaining to breaking down or dissolution.
Chemotherapy is a **carcinolytic** treatment that destroys cancer cells with chemicals.

carcinoma (n)
(KAR-si-NO-mə)

a malignant tumour of epithelial cells
Combining Form: **carcin/o** means malignant tumour or cancer.

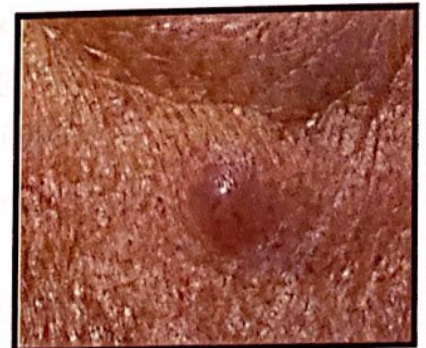
Suffix: **-oma** means tumour.

There are many types of **carcinoma**, such as carcinoma of the bladder.

Squamous (SKWAY-məs OR SKAW-məs) cell

carcinoma of the lung originates in non-glandular epithelium.

Most squamous cell **carcinomas** (SCCs) of the skin can be cured when found and treated early.



carcinogenic (adj)
(KAR-si-no-JE-nik)

producing cancer

Combining Form: **carcin/o** means malignant tumour or cancer.

Suffix: **-genic** means producing or causing.

Carcinogenic foods include alcohol, processed meat, and red meat.

Hodgkin's disease (n) a cancer of the lymphatic system, a malignant
(HAWJ-kinz di-zeez) condition characterized by progressive enlargement of the lymph nodes, spleen, and lymphoid tissue

Hodgkin's lymphoma (HAWJ-kins lim-FO-mə; n) is a malignant lymphoma in which there is progressive enlargement of lymph nodes, spleen, and liver, and progressive anaemia.



Lymphoma

(lim-FO-mə; n)

occurs when the lymph node cells or the lymphocytes begin to multiply uncontrollably, producing malignant cells.

lymphosarcoma (n)

(LIM-fo-sar-KO-mə) lymphocytes

Combining Form: **lymph/o** means lymph.

Combining Form: **sarc/o** means flesh (connective tissue).

Suffix: **-oma** means tumour.

Lymphosarcoma is a cancer of lymphocytes and lymphoid tissues.

melanoma (n)

(ME-lə-NO-mə)

a skin tumour arising from melanocytes

Combining Form: **melan/o** means black, or denoting relationship to melanin.

Suffix: **-oma** means tumour.

Malignant **melanomas** often metastasize to the lungs, liver, and brain.



metastasis (sing. n)

(me-TA-stə-səs)

the newly formed disease location; the transfer of disease from one organ part to another not directly connected with it (plural: metastases)

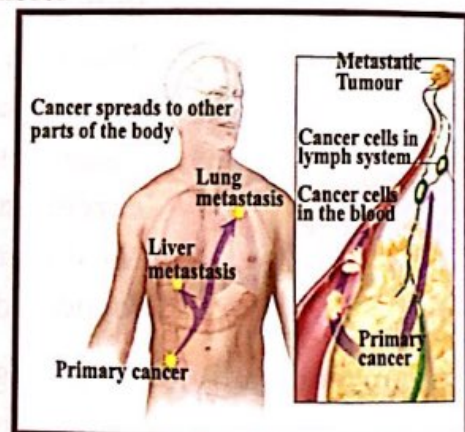
There are **metastases** (me-TA-stə-seez; plural n) of carcinoma in the colon and liver.

metastasize (v)

(me-TA-stə-saiz)

to form new foci of disease in a distant part by metastasis or transfer by metastasis

Untreated cancer often **metastasizes** to other parts of the body.



myeloma (n)

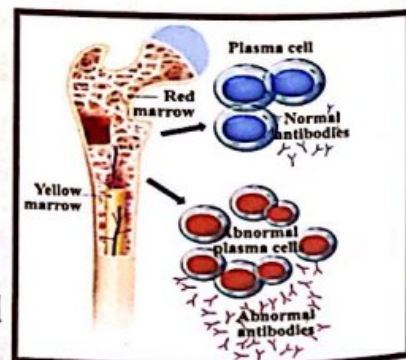
(MAI-ə-LO-mə)

a malignant tumour of the bone marrow

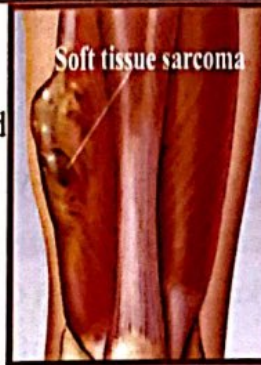
Combining Form: **myel/o** means spinal cord and bone marrow.

Suffix: **-oma** means tumour.

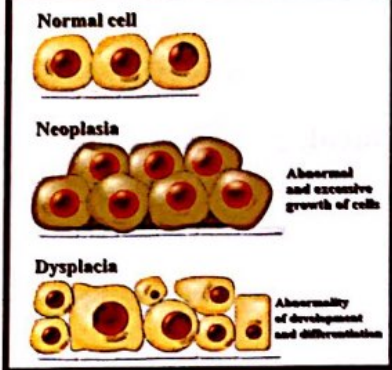
Myeloma arises in bone marrow, and often occurs at multiple sites, as in the vertebrae and flat skull bones.



myosarcoma (n)
(MAI-o-sar-KO-mə) a malignant tumour of muscle
Combining Form: **my/o** means muscle.
Combining Form: **sarc/o** means flesh or striped muscle.
Suffix: **-oma** means tumour.
People with **myosarcoma** often wake up with the feeling as if they had a cramp during their sleep.



neoplasia (n)
(NEE-o-pla-zəm) the process of tumour formation.
(NEE-o-PLAY-zhə) **Neoplasm** is the tumour itself.
Prefix: **neo-** means new.
OR
(NEE-o-PLAY-zhee-ə) Combining Form: **-plasia** means growth or formation of cells.



Neoplasm can refer to benign or malignant (cancerous) growths.

neoplastic (adj)
(NEE-o-PLA-stik) pertaining to **neoplasm** or **neoplasia**: abnormal growth of cells (synonymous with **oncogenic**)

Prefix: **neo-** means new.

Combining Form: **-plasia** means growth or formation of cells.

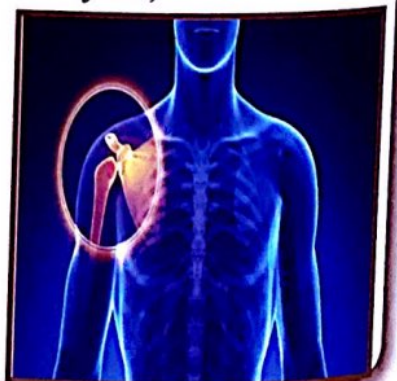
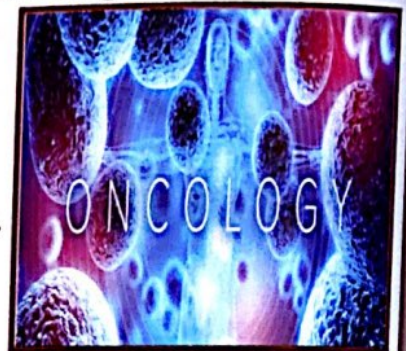
Suffix: **-ic** means pertaining to or referring to.

neuroblastoma (n)
(NUR-ro-bla-STO-mə) cancer that develops from immature nerve cells
Combining form **neur/o** means nerve.
Combining Form: **blast/o** means embryonic, immature cells.
Suffix: **-oma** means tumour.
Neuroblastoma is a cancer that most often affects young children.

oncogenesis (n)
(AWNG-ko-JE-nə-səs) formation of a tumour
Combining Form: **onc/o** means tumour.
Suffix **-genesis** means producing or forming.
Oncogenesis is still not well understood and requires further studies.
Oncogenesis is the formation of a cancer, whereby normal cells are transformed into cancer cells.

oncogenic (adj)
(AWNG-ko-JE-nik) giving rise to tumours or causing tumour formation
Certain chemicals can be **oncogenic** and should be avoided.
Radiation and certain foods, such as processed meats, are **oncogenic**.

- oncologist (n)**
(awng-KAW-lə-jist) specialist in **oncology**: the study and treatment of tumours
Combining Form: **onc/o** means tumour.
Suffix: **-logist** means specialist.
The patient with the neck mass was referred to the **oncologist** for treatment.
- oncological (adj)**
(AWNG-ko-LAW-ji-kəl) referring to **oncology**: the study of tumours
Combining Form: **onc/o** means tumour.
Suffix: **-ical** means referring to or pertaining to.
Oncological treatments are very expensive.
Chemotherapy and radiotherapy are forms of **oncological** treatments.
- oncology (n)**
(awng-KAW-lə-jee) the study of tumours
Combining Form: **onc/o** means tumour.
Suffix: **-logy** means study of.
Dr. Ahmad works in the **oncology** department.
The **oncology** clinic is on Mondays and Wednesdays.
- oncolysis (n)**
(awng-KAW-lə-səs) destruction or disintegration of tumour cells
Combining Form: **onc/o** means tumour.
Suffix: **-lysis** means breaking down or decomposition.
Chemotherapy and radiotherapy lead to **oncolysis**.
- oncolytic (adj)**
(AWNG-kə-LI-tik) pertaining to or causing **oncolysis**: destruction of tumour cells
Combining Form: **onc/o** means tumour.
Suffix: **-lytic** means pertaining to **lysis**: breaking down or separation.
An **oncolytic** virus is one that infects and kills cancer cells.
- oncotropic (adj)**
(AWNG-ko-TRO-pik) having a special affinity or attraction for tumour cells
Combining Form: **onc/o** means tumour.
Suffix: **-tropic** means turning toward, having affinity for, or attracted to.
- sarcoma (sing. n)**
(sar-KO-mə) a malignant tumour of connective tissue such as bone, fat, muscle, bone marrow, and lymphatic tissue
Combining Form: **sarc/o** means flesh. (plural: **sarcomas** or **sarcomata**)
Suffix: **-oma** means tumour.



The word **sarcoma** is preceded by the tissue type; for example, **osteosarcoma** (AW-stee-oh-sar-KO-mə), a malignant bone tumour.

Combining Form: **oste/o** means bone.

Sarcoma is a broad group of cancers that begin in the bones and in the soft (also called connective) tissues (soft-tissue **sarcoma**)

tumour (UK; an abnormal swelling or mass formed by a new growth of cells
US – **tumor**; TU-mer; n) Benign **tumours** remain localized and do not threaten one's life.
Malignant **tumours** spread and may lead to death.

Now test how well you have studied the words from adenocarcinoma to tumour.

Exercise 1

Write the meaning of each of the following word parts.

Word Part	Meaning	Word Part	Meaning
1. onc/o	_____	8. my/o	_____
2. -lysis	_____	9. myel/o	_____
3. blast/o	_____	10. sarc/o	_____
4. carcin/o	_____	11. -tropic	_____
5. meta-	_____	12. -genesis	_____
6. melan/o	_____	13. neur/o	_____
7. -plasia	_____	14. aden/o	_____

Exercise 2

Circle the letter (a, b, c, or d) of the best term for each meaning.

1. referring to destruction of cancer cells

- a. carcinolytic b. neoplastic c. oncogenic d. oncotropic

2. destruction or disintegration of tumour cells.

- a. carcinoma b. lymphosarcoma c. metastasis d. oncolysis

3. a malignant tumour of muscle.

- a. myosarcoma b. adenocarcinoma c. neoplasia d. neuroblastoma

4. a malignant tumour of the bone marrow

- a. lymphoblastoma b. sarcoma c. myeloma d. oncogenesis

5. a specialist in the treatment of tumours
 - a. dermatologist
 - b. oncologist
 - c. endocrinologist
 - d. orthopaedist
6. a malignant tumour of connective tissue such as bone, fat, muscle, bone marrow, and lymphatic tissue
 - a. sarcoma
 - b. lymphosarcoma
 - c. Hodgkin's disease
 - d. oncology
7. having a special affinity or attraction for tumour cells
 - a. carcinogenic
 - b. carcinoma
 - c. oncotropic
 - d. neoplastic
8. formation of a tumour
 - a. carcinolysis
 - b. myeloma
 - c. melanoma
 - d. oncogenesis
9. a malignant tumour in lymphatic tissue, caused by the growth of abnormal lymphocytes
 - a. lymphosarcoma
 - b. adenocarcinoma
 - c. neuroblastoma
 - d. melanoma
10. a malignant tumour of epithelial cells
 - a. metastasis
 - b. neoplasia
 - c. carcinoma
 - d. tumour

Exercise 3

Match each term in the left-hand column to its meaning in the right-hand column. Write the answers on the lines provided.

Term		Meaning
1. oncology	_____	a. remains localized and doesn't threaten life
2. oncogenic	_____	b. destruction of carcinoma cells
3. carcinolysis	_____	c. giving rise to tumours or causing a tumour
4. metastasis	_____	d. the process of tumour formation
5. neoplasia	_____	e. the newly-formed disease location
6. benign tumour	_____	f. the study and treatment of tumours
7. adenocarcinoma	_____	g. a malignant tumour originating in glandular tissue
8. melanoma	_____	h. cancer that develops from immature nerve cells
9. myosarcoma	_____	i. a skin tumour arising from melanocytes
10. neuroblastoma	_____	j. a malignant tumour of muscle

Exercise 4

Write the correct word or word part on the line.

1. formation of a tumour

- a. The combining form _____ means tumour.
- b. The suffix _____ means producing or forming.
- c. The term _____ means formation of a tumour.

2. destruction of cancer cells

- The combining form _____ means cancer.
- The suffix _____ means breaking down or dissolution.
- The term _____ means destruction of cancer cells.

3. cancer that develops from immature nerve cells

- The combining form _____ means nerve or nervous system.
- The combining form _____ means embryonic or immature cells.
- The suffix _____ means tumour.
- The term _____ means cancer that develops from immature nerve cells.

4. pertaining to a special affinity or attraction for tumour cells

- The combining form _____ means tumour.
- Suffix: _____ means turning toward, having affinity for, or attracted to.
- The term _____ means pertaining to a special affinity or attraction for tumour cells.

Exercise 5

Break down each of the following terms into its component parts and write the meanings of each. Then write the meaning of the term.

1. adenocarcinoma: _____

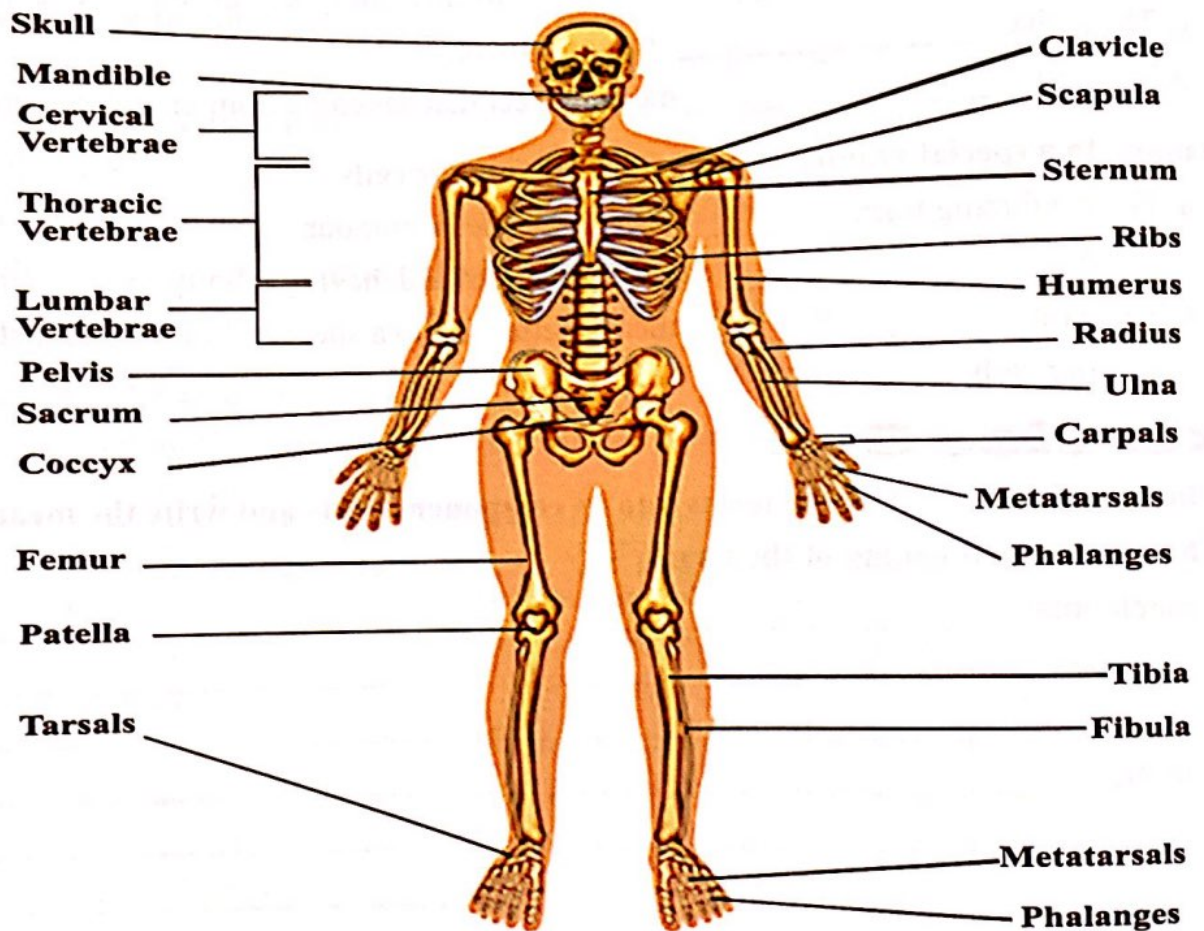
2. carcinolytic: _____

3. melanoma: _____

4. myosarcoma: _____

CHAPTER 14

The Skeletal System



In this chapter, terms related to the skeletal system are introduced. Study these terms carefully and then do the exercises following them.

ankylosis (n)
(anki-loh-sis)

1. fusion of the bones of a joint

Combining Form: **ankyl/o** means joint, bent, and fusion or adhesion.

Suffix: **-osis** means an abnormal condition.

She was admitted to the hospital for left **ankylosis** to fuse the ankle joint to stop the pain.



2. the stiffness and rigidity of a joint as a result of a disease or injury
She was diagnosed as having right knee **ankylosis** due to a chronic inflammation of the joint.

ankylose (v)
(an-kī-lə-ōz)

to join, unite, or grow together

Her right ankle was **ankylosed** to stop the constant pain.

ankylosing (adj)
(an-kī-lə-ō-zīŋ)

when the bones of a joint become fused, stiff, or rigid

In **ankylosing** spondylitis, new bone grows between the vertebrae, which eventually fuse together.

Ankylosing spondylitis can cause pain and stiffness in shoulders, hips, and knees.

arthralgia (n)
(ar-THRA-jə)

pain in a joint

Combining Form: **arthr/o** means joint.

Suffix: **-algia** means pain.

OR
(ar-TRAL-jee)

She suffers from severe **arthralgia** in the right knee.

He was given painkillers for the left knee **arthralgia**.

arthritis (n)
(ar-THRAI-təs)

inflammation of a joint

Combining Form: **arthr/o** means joint.

Suffix: **-itis** means inflammation.

The most common type of **arthritis** is the one which affects the knees, hips, and hands.

Joints may be damaged by **arthritis**.

Two of the most common types of **arthritis** are **osteoarthritis** (OA) and **rheumatoid arthritis** (RA).

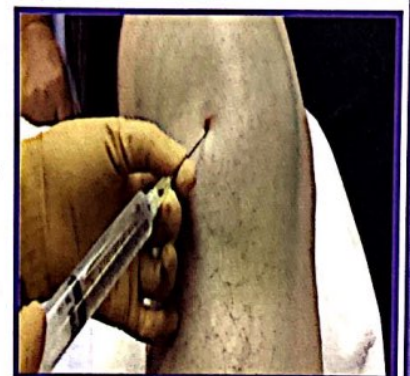
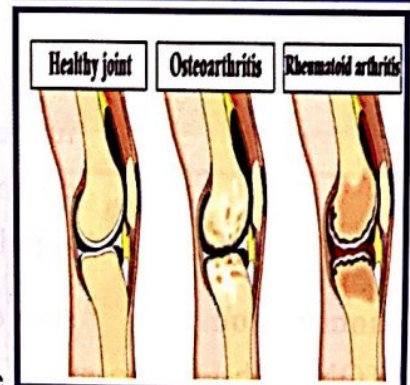
arthrocentesis (n)
(AR-tho-sen-TEE-sis)

surgical puncture of a joint space to removal synovial fluid for analysis

Combining Form: **arthr/o** means joint.

Suffix: **-centesis** means to puncture, usually to remove fluid.

She was admitted to the hospital for **arthrocentesis**, to aspirate the fluid from the right knee joint.



arthrodesis (n)

(AR-thro-DEE-səs)

surgical fusion of a joint

Combining Form: **arthr/o** means joint.

Suffix: **-desis** means to bind or tie together.

To stop the pain, he underwent a left-knee

arthrodesis in order to fuse the joint.

He couldn't bend his knee after the **arthrodesis**.



arthroscopy (n)

(ar-THRAW-skə-pee)

examination of a joint by means of an

arthroscope

Combining Form: **arthr/o** means joint.

Suffix: **-scopy** means visual examination.

The left-knee **arthroscopy** showed that the joint was damaged.



carpal (adj)

(KAR-pəl)

pertaining to the wrist

Combining Form: **carp/o** means wrist (carpus).

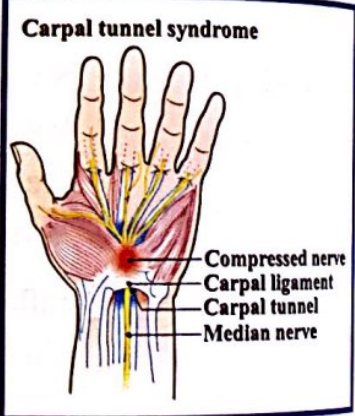
Suffix: **-al** means pertaining to or referring to.

The **carpal** fracture took a long time to heal.

The nurse couldn't feel the **carpal** pulse.

People who type a lot can end up with **carpal** tunnel syndrome, a disorder caused by

compression at the wrist of the median nerve supplying the hand, causing numbness and tingling.



chondrectomy (n)

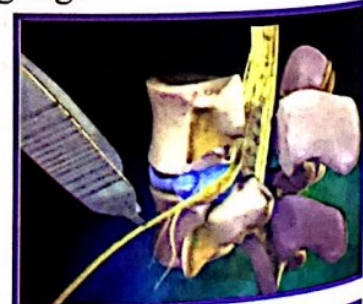
(KON-droh-ECK-to-mee)

surgical removal of a cartilage

Combining Form: **chondr/o** means cartilage.

Suffix: **-ectomy** means surgical removal.

The patient had a **chondrectomy** to remove the torn cartilage in his left knee joint.



chondroplasty (n)

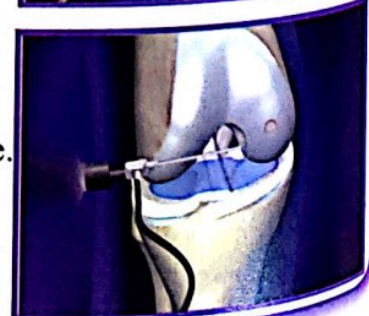
(KAWN-drə-PLA-stee)

surgical repair of cartilage

Combining Form: **chondr/o** means cartilage.

Suffix: **-plasty** means repair.

He underwent a **chondroplasty** to repair the damaged knee cartilage.



crepitation (n)

(KRE-pi-TAY-shən)

a cracking sound (that is felt and heard when ends of a bone move together)

She feels **crepitation** in her knees when she walks.**crepitate (v)**

(KRE-pi-tayt)

to make a crackling sound; to crackle

Her knee **crepitates** when she walks.**discectomy (n)**

(US; dis-KEK-tə-mee)

surgical removal of an intervertebral disk

Combining Form: **disc/o** means disk.OR (UK - **discectomy**)Suffix: **-ectomy** means removal.He had a **discectomy** performed to remove the disk.She didn't have any complications after the **discectomy**.**fracture (n)**

(FRAK-cher)

the breaking of a bone

He sustained a skull **fracture** in the car crash.The most common sites of **fracture** in elderly people are the neck of the femur and the lower end of the forearm radius bone near the wrist.**fracture (v)**

(FRAK-cher)

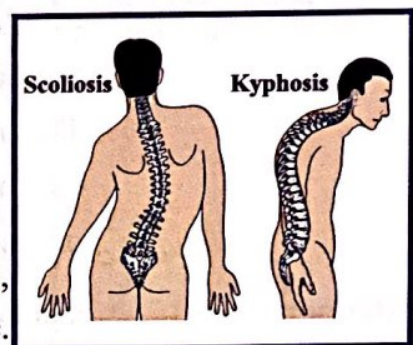
to cause a fracture or to break

The tibia **fractured** in two places.Any bone in the body can be **fractured**.**kyphosis (n)**

(kai-FO-səs)

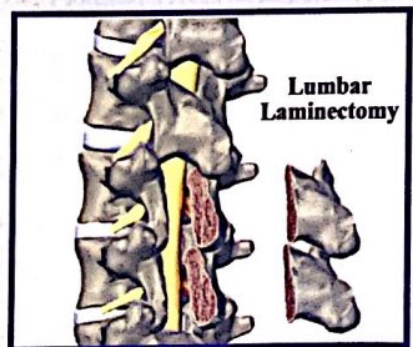
an exaggerated outward curvature of the spinal thoracic region resulting in

a rounded upper; (have/be) a humpback

Prefix: **kyphe** means humped or bent.Suffix: **-osis** means an abnormal condition.The patient was diagnosed as having **kyphosis**, a convex curvature affecting the thoracic spine.**laminectomy (n)**

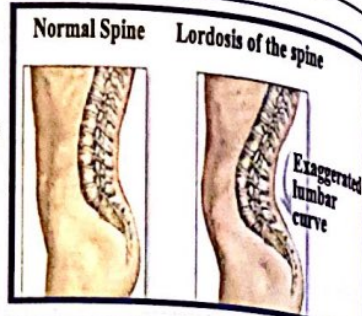
(LA-mi-NEK-tə-mee)

surgical removal of a spinal lamina (the back part of a vertebra that covers the spinal canal); decompression surgery

Combining Form: **lamin/o** means lamina.Suffix: **-ectomy** means surgical removal.A **laminectomy** is usually performed to relieve pressure on the spinal cord or nerves.

lordosis (n)
(lor-DOH-sis)

an abnormal forward curvature of the lumbar and cervical spines
Lordosis is an increased inward curving of the lumbar spine (just above the buttocks).



malacia (n)
(mə-LAY-see-ə)
OR
(mə-LAY-shə)

an abnormal softening of a part, organ, or tissue, such as a bone; often used in combination (as with **osteomalacia** below)
Combining Form: **malac/o** means abnormal softness.

Suffix: **-ia** means an abnormal condition.

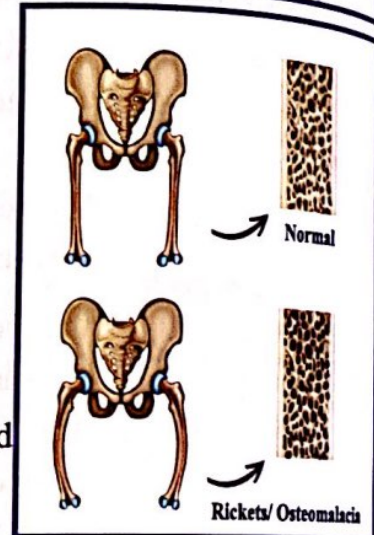
Osteomalacia often results from a vitamin D deficiency.

(Combining Form: **oste/o** means bone.)

This old lady suffers from **osteomalacia** caused by lack of calcium and vitamin D.

Blood tests are usually arranged for

osteomalacia patients to check for low levels of calcium, phosphate, and vitamin D.



myelopathy (n)
(MAI-ə-LAW-pə-thee)

any disease of the spinal cord or bone marrow

Combining Form: **myel/o** means the spinal cord or bone marrow.

Suffix: **-pathy** means disease.

The investigations showed no **myelopathy**.

Examples of **myelopathy** include congenital stenosis, degenerative disease or disc herniation.

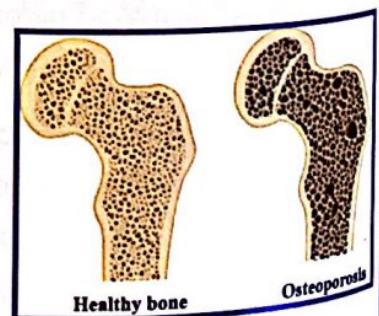
osteoporosis (n)
(AW-stee-o-pə-RO-səs)

a condition where the bones become thin, porous and brittle

Combining Form: **oste/o** means bone.

Suffix: **-porosis** means thin and brittle.

Osteoporosis can be seen in older people whose bones become thinner, lighter, and fracture more easily.



Osteoporosis is the major cause of fractures in people aged 65 or over.

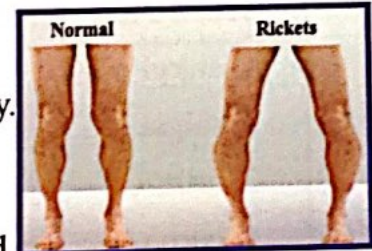
patellectomy (n)
(pat-e-lek-tomi)

surgical removal of the patella
Combining Form: **patell/o** means patella.
Suffix: **-ectomy** means surgical removal.
She underwent a **patellectomy** to excise the patella of the left knee.
He was admitted to get a right **patellectomy** because his right patella was damaged in the car crash.



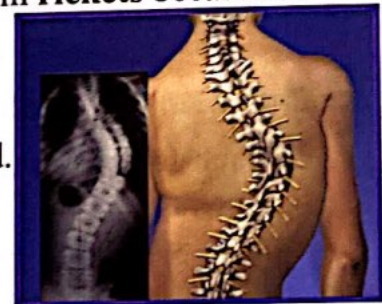
rickets (n)
(ri-kəts)

a childhood disease in which the bones do not grow properly or harden due to a vitamin D deficiency.
The child developed **rickets** at seven months.
The paediatrician diagnosed her condition as **rickets** because the bones of her legs were crooked.
Many children in developing countries suffer from **rickets** because of inadequate milk supplies.



scoliosis (n)
(SKO-lee-O-səs)

an abnormal lateral curvature of the spine
Combining Form: **scoli/o** means twisted or crooked.
Suffix: **-osis** means abnormal condition.
The main feature of **scoliosis** is the visible curving of the spine to one side.
Scoliosis can be diagnosed by a physical examination and X-rays.



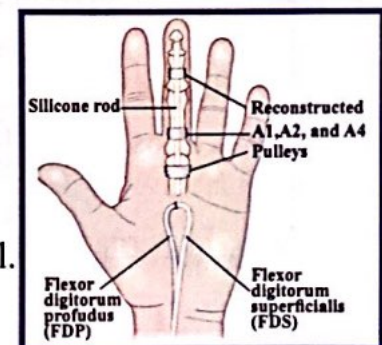
tendinous (n)
(TEN-di-nəs)

pertaining to the tendon ((TEN-dən)
Combining Form: **tendin/o** and **ten/o** both mean tendon.
Suffix: **-ous** means pertaining to.
The **tendinous** problem was surgically repaired.
The **tendinous** inflammation subsided due to use of antibiotics.



tenoplasty (n)
(TE-no-pla-stee)

surgical repair of a torn tendon
Combining Form: **ten/o** means tendon.
Suffix: **-plasty** means surgical repair.
He had a **tenoplasty** performed to repair the tendon of the right middle finger.
The **tenoplasty** of her left big toe was successful.



Now test how well you have studied the words from ankylosis to tenoplasty.

Exercise 1

Write the meaning of each word part.

Word Part	Meaning	Word Part	Meaning
1. ankylo/o		6. kypho-	
2. -algia		7. lamin/o	
3. arthr/o		8. -porosis	
4. carp/o		9. patell/o	
5. chondr/o		10. myel/o	

Exercise 2

Match each term on the left with its meaning on the right. Write the answers on the lines provided.

Term		Meaning
1. arthrocentesis		a. surgical repair of cartilage
2. arthrodesis		b. surgical removal of an intervertebral disk
3. chondroplasty		c. abnormal softening of a part, organ or tissue, such as a bone
4. diskectomy		d. surgical fusion of a joint
5. malacia		e. surgical puncture of a joint space to remove synovial fluid for analysis
6. crepitation		f. a childhood disease in which the bones do not grow properly or harden due to a vitamin D deficiency
7. rickets		g. an abnormal lateral curvature of the spine
8. scoliosis		h. cracking sensation that is felt and heard when ends of a broken bone move together

Exercise 3

Write the best term for each meaning below.

Meaning	Term
1. any disease of the spinal cord or bone marrow	
2. a condition where the bones become thin, porous, and brittle	
3. surgical removal of a patella	
4. fusion of a joint's bones	
5. surgical removal of a spinal lamina	
6. joint pain	
7. an abnormal forward curvature of the lumbar and cervical spines	
8. convex curvature of the upper back (thoracic spine)	
9. tendon surgical repair	
10. pertaining to the wrist	

Exercise 4

Circle the letter (a, b, c, or d) of the best answer to each question.

- In _____, the spine is curved to the left or right.
a. patellectomy b. scoliosis c. osteoporosis d. myelopathy
- The patient underwent a _____ to remove the damaged cartilage.
a. arthrocentesis b. disectomy c. ankylosis d. ondirectomy
- _____ is used to inspect the knee joint and to treat disorders such as damaged cartilage.
a. Arthrocentesis b. Ankylosis c. Arthroscopy d. Malacia
- In _____, the bones of a child become soft and easily deformed or fractured.
a. arthritis b. rickets c. fractures d. ankylosis
- Investigations show that this old lady is suffering from a _____ of bones. The calcium, phosphate and vitamin D levels are very low.
a. chondritis b. malacia c. ankylosis d. arthritis
- Joints that have been severely damaged by a disorder such as _____ or by an injury may be surgically replaced with artificial joints.
a. arthritis b. tenoplasty c. scoliosis d. disectomy
- Most _____ are the result of a direct impact or a twisting movement.
a. arthritis b. fractures c. malacia d. ankylosis
- As a result of the accident, Mahmoud required a _____ to surgically reconstruct his damaged cartilage.
a. ankylosis b. arthrodesis c. patelloplasty d. chondroplasty

Exercise 5

Fill in each blank with the best term from the box below. Use each word only once.

arthrocentesis
rickets

ankylosis
laminectomy

chondroplasty
diskectomy

Ankylosing
patellectomy

Arthritis
Kyphosis

1. He underwent _____ of the right ankle last year. Now although he cannot bend his ankle, he doesn't have any more pain in it.
2. _____ spondylitis is an inflammatory disease that, over time, can cause some of the small bones in your spine (vertebrae) to fuse.
3. _____ can affect one joint or multiple joints, making them painful and swollen.
4. Her condition improved a little after the _____ and aspiration of fluid from the knee.
5. The patient underwent a _____ following his left-knee injury to fix the cartilage.
6. The patient underwent a _____ to remove the damaged portion of a herniated disk in the lumbar spine.
7. _____ occurs when the vertebrae in the upper back become more wedge-shaped.
8. By removing the lamina, a _____ creates space and enlarges the spinal canal to relieve pressure on the spinal cord or nerves.
9. The patient underwent a whole _____ because the patella was completely damaged in the accident.
10. People with _____ may have weak and soft bones, stunted growth, and, in severe cases, skeletal deformities.

Exercise 6

Read the passage below and then answer each question following it in a complete sentence.

Cervical spondylosis is osteoarthritis affecting the upper spine. In this disorder, the vertebrae (bones of the spine) and the discs of cartilage between them begin to show signs of disease. The bones thicken, and bony growths called osteophytes develop on the vertebrae. Inflamed joints and osteophytes may press on spinal nerves or compress blood vessels in the neck. The symptoms of cervical spondylosis include restricted neck movement, pain at the back of the head, aching or

shooting pains travelling from the shoulders to the hands, and numbness, tingling, and muscle weakness in the hands and arms. (From Smith, 2000. *Complete Family Health Guide*.)

1. Which part of the body is affected by cervical spondylosis?

2. What are the signs of this condition?

3. Name four symptoms of cervical spondylosis?

- a) _____;
- b) _____;
- c) _____; and
- d) _____.

4. Find a phrase or expression in the passage which is similar in meaning to each of the following terms:

- a) osteophytes: _____
- b) vertebrae: _____

5. Write the noun form of each of the following:

- a) spinal: _____
- b) vertebral: _____
- c) cervical: _____

6. Write the correct word or word-part from the passage on each line below, and then combine them to form the new word.

1. any disease of the vertebrae

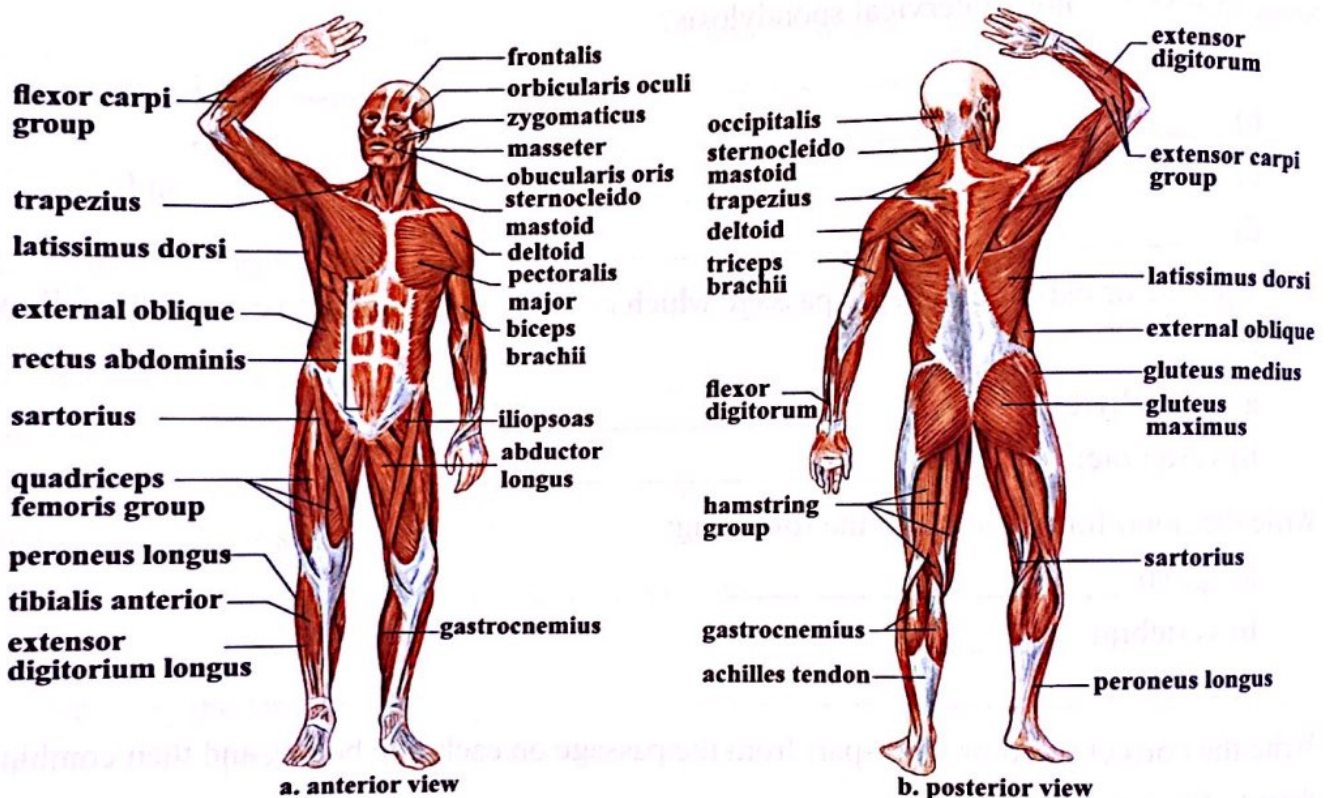
- a. The combining form _____ means vertebra.
- b. The suffix _____ means abnormal condition.
- c. The term _____ means any disease of the vertebrae.

2. inflammation of the joints and bones

- a. The combining form _____ means bones.
- b. The combining form _____ means joint.
- c. The suffix _____ means inflammation.
- d. The term _____ means an inflammation of the joints and bones.

CHAPTER 15

The Muscular System

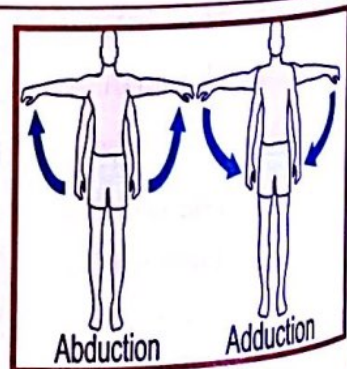


In this chapter, terms related to the muscular system are introduced. Study these terms carefully and then do the exercises following them.

Part 1

abduction (n)
(ab-DəK-shən)

movement away from the midline of the body
Combining Form: **duct/o** means draw or carry.
Prefix: **ab-** means away from.
The opposite is **adduction**: movement toward the median plane of the body.
Prefix: **ad-** means toward or near.
Combining Form: **duct/o** means draw or carry.
The **abduction** of the left leg was normal.



abduct (v)
(ab-DəKT)

adduct (v)
(a-DəKT)

abductor (n)
(ab-DəK-ter)

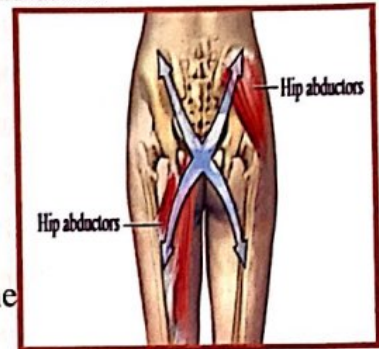
to draw away from the median plane
The patient **abducts** his leg normally.

to draw toward the median plane
She **adducts** her arm freely.

a muscle that moves a body part away from the midline
The opposite, **adductor**, means a muscle that moves toward the midline.

The physiotherapist found the **abductor** quite normal while the **adductor** was weak.

Abductor muscles not only move the leg away from the body; they also help rotate the leg at the hip joint.



The hip **abductors** are necessary for staying stable when walking or standing on one leg.

The **adductors** in the upper thigh pull the legs together when they contract. **Adductors** help stabilize the hip joint.

The **adductors** attach from the pelvis to the femur (thigh bone).

ataxia (n)
(a-TAK-see-ə)

loss of coordination of the muscles, especially of the extremities

Prefix: **a-** means no or without.

Combining Form: **tax/o** means coordination.

Suffix: **-ia** means disease or abnormal condition.

The patient shows signs of hereditary **ataxia**.

She suffers from **ataxia** due to a disease affecting the cerebellum, the part of the brain that controls muscle coordination.

Many conditions can cause **ataxia** such as alcohol misuse, certain medications, strokes, tumours, cerebral palsy, or brain degeneration.



atonia (n)
(a-TO-nee-ə)

a lack of normal muscle tone

Prefix: **a-** means no or without.

Combining Form: **ton/o** means tone or tension.

Suffix: **-ia** means disease or abnormal condition.

The patient shows signs of **atonia** in the right-leg muscles.

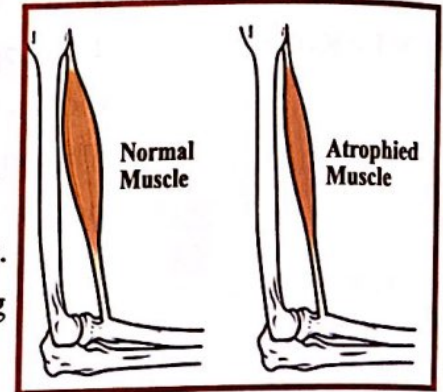
Unfortunately there was **atonia** in both legs.

atonic (adj)
(ay-TAW-nik)
OR
(a-TAW-nik)

relating to lack of normal tone (the normal tension of a muscle at rest)
The opposite is **tonic** (TAW-nik).
The **atonic** patient was referred to the physiotherapy department to help his coordination problem.
The **atonic** problem was improved with physiotherapy.

atrophy (n)
(A-trə-fee)

wasting away
Prefix: **a-** means not or without.
Combining Form: **-trophy** means nutrition, development, or growth.
The injury resulted in **atrophy** of the left leg.
The patient had mild **atrophy** of the right leg muscles.



atrophy (v)
(A-trə-fee)

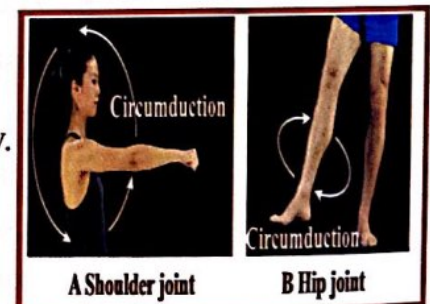
to waste away or decrease in size or strength
The lower limbs were **atrophied**.
The muscles of the right arm **atrophied**.

atrophic (adj)
(a-TRO-fik)

relating to atrophy or wasting
The **atrophic** leg required intensive physiotherapy to strengthen its muscles.
The muscles of the lower leg were **atrophic**.

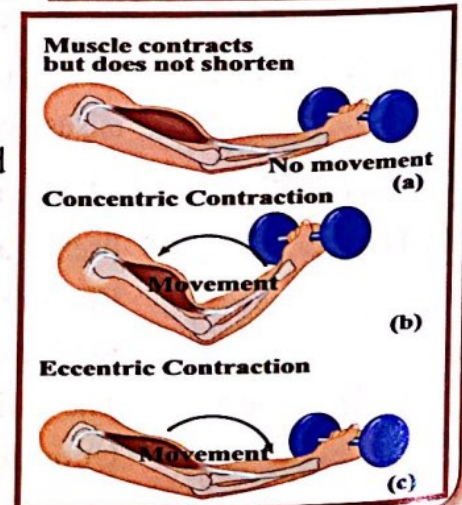
circumduction (n)
(SER-kəm-DəK-shən)

circular movement of a part such as a limb
Prefix **circum-** means around.
Combining form: **duct/o** means draw or carry.
The **circumduction** of the arm is limited.
The **circumduction** of his legs is normal. He can move them freely in a circular direction.



contract (v)
(kən-TRAKT)

1. to make or become smaller and tighter
As the muscle **contracts**, the limb moves.
The heart **contracts** to pump blood out, and relaxes to draw it in.
2. to catch a disease
He **contracted** measles when he was four months old.
She **contracted** hay fever.



contraction (n)
(kən-TRAK-shən)

the process by which a muscle becomes or is made shorter and tighter
The **contraction** of one's muscles results in movement.
The **contraction** of measles gives one later immunity against the disease.

depressor (n)
(dee-PRE-ser)

a muscle that lowers a body part
Prefix: **de-** means down.

Combining Form: **press/o** means press.

The opposite is **elevator**: a muscle that raises a body part.

Combining Forms: **lev/o** and **levat/o** both mean to raise or lift.

Physical examination shows that the **depressors** in the right arm are normal, but the **elevators** are weak. The patient cannot lift his arm to more than 85 degrees.

elevation (n)
(EL-lə-VAY-shən)

the act of raising or lifting a body part, such as the ribs when breathing in

The opposite is **depression**, (but the word has a different meaning in psychiatry).

The **elevation** of the arm is complete.

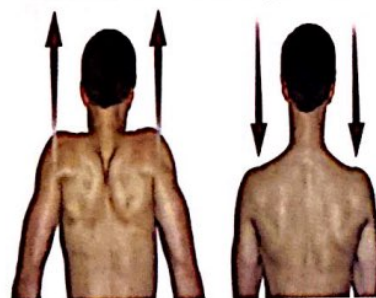
The **elevation** of the right leg is limited.

The verbs are **elevate** and **depress**.

He asked her to **elevate** her arm.

She was able to **depress** her arm freely.

C. Elevation and Depression



extension (n)
(ek-STEN-shən)

the stretching or straightening out of a joint

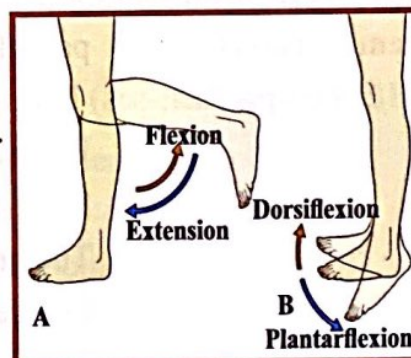
The **extension** of the legs is normal.

The **extension** of the injured arm was painful.

The verb is **extend**.

He cannot **extend** his injured leg.

She **extended** her arms horizontally.



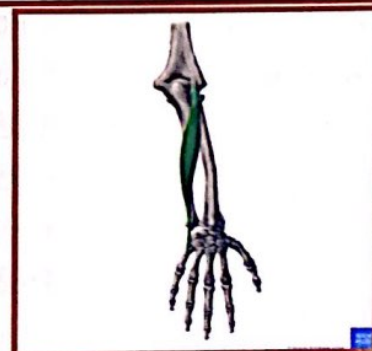
extensor (n)
(ek-STEN-ser)

a muscle that extends or straightens a part of the body

He cannot **extend** his left leg because the

extensors were damaged in the car accident.

The **extensors** of her right leg were not affected by the accident.



fibre (n)

(FAI-ber)

one of the elongated contractile cells of muscle tissue or fiber

Combining Form: **fibr/o** means fibre.

Dietary **fibre** is found in cereals, nuts, fruit and some green vegetables.

Fibre helps digestion and helps avoid constipation.

fibrous (adj)

(FAI-brəs)

relating to fibre

Combining Form: **fibr/o** means fibre.

Suffix: **-ous** means pertaining to or relating to.

Muscles are attached to bones by bands of strong **fibrous** tissue called tendons.

Tendons and ligaments are made up of **fibrous** tissue.

flexion (n)

(FLEK-shən)

bending a joint or a limb

The **flexion** of his knee is limited.

flex (v)

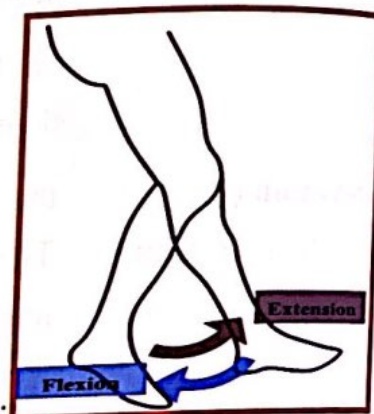
(fleks)

to bend

She **flexes** her left knee freely.

At the swimming pool he loves to **flex** his muscles to impress the girls.

He was not able to **flex** his neck after the operation.



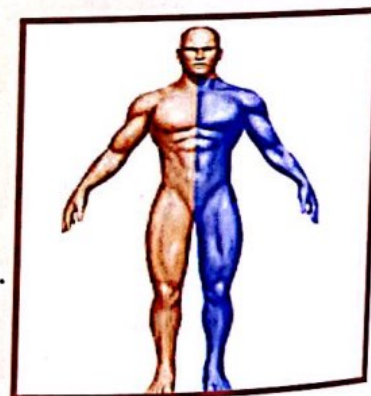
flexor (n)

(FLEK-ser)

a muscle that serves to flex or bend a joint or a part of the body

Combining Form: **flex/o** means to bend.

The **flexors** of the right leg are normal. The leg bends perfectly well.



hemiparesis (sing. n) partial paralysis of one side of the body

(HE-mee-pə-REE-səs) **hemipareses** (HE-mee-pə-REE-seez; plural n)

Prefix: **hemi-** means half.

Suffix: **-paresis** means slight or partial paralysis.

The patient has a left-sided **hemiparesis**.

She developed a right-sided **hemiparesis**.

muscle (n)

(Mə-səl)

an organ in the body, which contracts to make part of the body move

Combining Forms: **my/o** and **muscul/o** both mean muscle.

There are three types of **muscle**: skeletal **muscle**, cardiac **muscle**, and smooth **muscle**.

If you do a lot of exercise, you develop strong **muscles**.

He had a **muscle** cramp after going into the cold water.

muscular (adj)
(Mə-skyu-ler)

referring to muscle

Combining Form: **muscul/o** means muscle.

Suffix: **-ar** means referring to or relating to.

He was given a painkiller to relieve the **muscular** pain.

The **muscular** system plays a central role in movement.

She had an injection for **muscular** pain.

Now test how well you have studied the terms from abduction to muscular.

Exercise 1

Write the meaning of each of following word parts.

Word Part	Meaning	Word Part	Meaning
1. ad-		7. muscul/o	
2. ton/o		8. my/o	
3. lev/o, levat/o		9. duct/o	
4. circum-		10. tax/o	
5. hemi-		11. fibr/o	
6. -trophy		12. -paresis	

Exercise 2

Match each item in the left-hand column to its meaning in the right-hand column. Write the answers in the blanks provided.

Term		Meaning
1. flexion		a. movement away from the midline of the body
2. circumduction		b. a muscle that raises a body part
3. atrophy		c. bending of a joint so that the bones forming it are brought towards each other
4. hemiparesis		d. a circular movement of a limb
5. abduction		e. wasting away
6. adduction		f. movement towards the midline of the body
7. ataxia		g. a lack of muscular coordination
8. extensor		h. a slight paralysis of one side of the body
9. elevator		i. a muscle which makes a joint become straight
10. atonic		j. lacking normal muscle tone

Exercise 3

Fill in each blank with the best term from the box below. Use each word only once.

fibre	extension	abduction	contract	spasms
elevation	muscular	extend	atrophy	ataxia

- The _____ of the left leg was very limited. The patient couldn't raise his leg more than 30°.
- She was suffering from muscle _____ in her right leg.
- The diaphragm acts to _____ the chest.
- The _____ of his right arm was limited. He couldn't move it away from the midline of his body.
- The _____ of her injured knee was very limited. She couldn't extend her lower leg more than 90°.
- Foods with the highest _____ content are bread, beans, and dried apricots.
- The neurologists were trying to control his _____ so that he could walk better.
- The physical examination showed that the child had good _____ tone.
- The leg-muscle _____ was so severe that she couldn't walk.
- Children _____ the common cold more in winter than adults do.

Part 2

Study these words carefully and then do the exercises following them.

myalgia (n)
(mai-AL-jee-ə)

pain in the muscles

Combining Form: **my/o** means muscle.

Suffix: **-algia** means pain.

He suffered **myalgia** in the left leg.

She complained of cervical **myalgia**.



myalgic (adj)
(mai-AL-jik)

referring to pain in a muscle

Combining Form: **my/o** means muscle.

Suffix: **-algic** means pertaining to pain.

He had **myalgic** pains in his left leg.

She received a course of physiotherapy for her **myalgic** problem.

myasthenia (n) weakness of the muscles

(MAI-əs-THEE-nee-ə) Combining Form: **my/o** means muscle.

Suffix: **-asthenia** means weakness or lack of strength.

The examination of the upper limbs shows right-arm **myasthenia**.



myonecrosis (n) death of muscle fibres

(MAI-o-ne-KRO-səs) Combining Form: **my/o** means muscle.

Suffix: **-necrosis** means death of a tissue.

She developed **myonecrosis** in her right leg.

The **myonecrosis** in her legs disabled her completely.

myoparesis (n) slight paralysis of muscle

(MAI-o-par-RE-səs) Combining Form: **my/o** means muscle.

Suffix: **-paresis** means slight or partial paralysis.

He sustained **myoparesis** in the right arm from the car crash.

paralysis (n) loss of voluntary muscle movements

(pə-RA-li-sis) He developed **paralysis** of the right side of the body.

The **paralysis** affects his right leg and he can walk only with difficulty.



paralyse (UK; to affect with paralysis

(US: **paralyze**) He is **paralysed** in both legs.

(PAIR-rə-laiz; v) The accident left him **paralysed** from the waist down.

The drug **paralyses** the nerves so that there is no feeling or movement in the legs.

paralytic (adj) referring to paralysis

(PAIR-rə-LI-tik) **Paralytic** patients need special care.

The **paralytic** patient was admitted to the rehabilitation unit.

paraplegia (n)

(PAIR-rə-PLĒE-jee-ə)

paralysis of the lower limbs

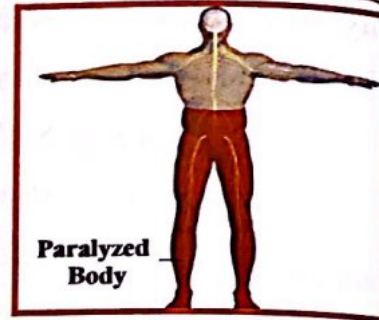
Prefix: **para-** means beside, apart from, or against.

Suffix: **-plegia** means paralysis.

He sustained **paraplegia** after the car accident.

His lower limbs are now paralysed.

The injury to the spine left the patient with **paraplegia**.



paraplegic (adj)

(PAIR-rə-PLĒE-jik)

relating to the paralysis of the lower limbs

Paraplegic patients depend on a wheelchair to move from one place to another.

Paraplegic patients are usually trained how to use a wheelchair.

pronation (n)

(pro-NAY-shən)

rotation of the hand so that the palm is downwards or backwards

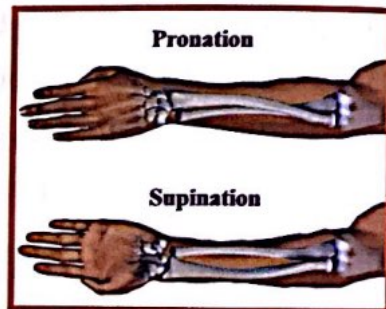
Excessive **pronation** can cause lower leg pain.

The opposite is **supination** (SU-pi-NAY-shən):

rotation of the hand so that the hand is upwards or forwards.

Alternating **supination** and **pronation** is a test of cerebellar function.

His hand was placed in a **pronation** position to have the X-ray taken.



pronate (v)

(pro-NAYT)

to turn or rotate (the hand or forearm) so that the palm faces down or back

He was asked to **pronate** the hand so that blood could be extracted from the veins on its dorsum.

supinate (v)

(SU-pi-nayt)

to turn or rotate (the hand or forearm) so that the palm faces up or forward.

She was asked to **supinate** her hand so that sensations could be tested on her palm.

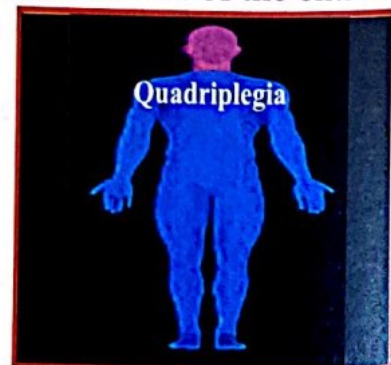
quadriplegia = tetraplegia (TET-trə-PLĒE-jee-ə) (n) paralysis of all four limbs or of the entire (KWAW-drə-PLĒE-jee-ə) body below the neck

Prefixes: **quadri-** and **tetra-** both mean four.

Combining Form: **-plegia** means paralysis.

The cervical fracture resulted in **quadriplegia**.

His **tetraplegia** made him unable to breathe, and so he was reliant on a respirator.



quadriplegic (KWAU-drə-PLĒE-jik; adj OR n) relating to the paralysis of all four

= **tetraplegic** (TET-trə-PLĒE-jik) limbs OR one who is paralyzed in all four limbs

Prefixes: **quadri-** and **tetra-** both mean four.

Combining Form: **-plegia** means paralysis.

Suffix: **-ic** means pertaining to or referring to.

Quadriplegic patients are totally dependent on others to do their daily living activities.

The **tetraplegic** patient was admitted to the rehabilitation unit.

relax (v)

(ree-LAKS)

to become less tense or less strained

He was given a drug to **relax** the muscle.

The muscles should be fully **relaxed**.

The noun is **relaxation**.

The **relaxation** of one's muscles helps relieve pain.

Her **relaxation** helped the nurse to give her the injection.

relaxant (adj)

(ree-LAK-sənt)

relating to or causing relaxation

The patient was given a **relaxant** to relax the muscles.

He was given a **relaxant** drug after the operation.

relaxant (n)

(ree-LAK-sənt)

a drug that relaxes muscle

The patient was given a relaxant for his sore muscles.

Muscle relaxants help one relax.

She was given a relaxant before the procedure.

rotation (n)

(ro-TAY-shən)

a circular movement around an axis

The **rotation** of the arm is limited.

rotate (US – RO-tayt;

UK – ro-TAYT)

to turn around an axis

She **rotates** her arm freely.

He couldn't **rotate** his left arm.

spasm (n)

(SPA-zəm)

a sudden, violent, or involuntary contraction of a muscle or group of muscles

Combining Form: **spasm/o** means spasm.

The muscles in the athlete's leg went into **spasm**.

She had painful **spasms** in her stomach.

spastic (adj)
(SPA-stik)

relating to spasm

Combining Form: **spasm/o** means spasm.

Suffix: **-tic** means pertaining to or referring to.

He suffered from **spastic** pains in the right leg.

Her **spastic** pains were relieved by painkillers.

Note: The suffix **-tic** is equivalent in meaning to **-ic**, occurring in adjectives of Greek origin (e.g. **analytic**) and used especially in the formation of adjectives from nouns with **-sis** stems: **haematitic**; **neurotic**.

Now test how well you have studied the terms from myalgia to spastic.

Exercise 4

Write the meaning of each of the following word parts.

Word Part	Meaning	Word Part	Meaning
1. -algia		6. my/o	
2. para-		7. -asthenia	
3. -necrosis:		8. -paresis	
4. -plegia		9. -tic	
5. quadri-, tetra-		10. spasm/o	

Exercise 5

Circle the letter (a, b, c, or d) of the best answer to each question.

- Immediately after his stroke, Mansour suffered from a left _____, which is a slight paralysis of the left side of the body.
 - quadriplegia
 - paraplegia
 - hemiparesis
 - abduction
- A _____ was performed to suture the muscles of the right foot.
 - myorrhaphy
 - myoparesis
 - rotation
 - myasthenia
- The paralytic patient developed _____ muscles due to lack of exercise and movement.
 - relaxation
 - atrophied
 - pronation
 - myonecrosis

4. Munera Saad was diagnosed as suffering from _____, which is a lack of normal muscle tone.
 a. spasm b. supination c. tenoplasty d. atonia
5. Ahmad underwent a _____ to surgically repair his muscle.
 a. tetraplegia b. flexion c. myoplasty d. myoparesis
6. A _____ was required to suture Khalid Al Shuhri's tendon injury.
 a. myorrhaphy b. tenorrhaphy c. myalgia d. myasthenia
7. The spinal cord injury left Omar Al Amri with _____. He has to use a wheelchair to move around.
 a. paraplegia b. pronation c. pronation d. myonecrosis
8. Saud Al Nassir suffered from _____, which is characterised by the death of individual muscle fibres.
 a. myotonia b. myalgia c. myasthenia d. myonecrosis

Exercise 6

Write the term that best matches each meaning below.

1. weakness of muscle	
2. paralysis of the four limbs	
3. rotation of the hand so that the palm is downwards or backwards	
4. paralysis of the lower limbs	
5. death of individual muscle fibres	
6. rotation of the hand so that the hand is upwards or forwards	
7. a circular movement around an axis	
8. lack of muscular coordination or orderly placement	
9. a sudden, violent or involuntary contraction of a muscle or muscle group	
10. a drug that relaxes muscle	
11. weakness or a slight paralysis of a muscle	
12. a muscle that serves to flex or bend a joint or a part of the body	

Exercise 7

Read the passage below and then do the exercises following it.

Fibromyalgia is a disorder that causes tenderness and widespread bodily muscle pain. The condition has no particular cause, and no visible abnormality has ever been identified in the muscle tissue. However, fibromyalgia commonly develops during periods of stress.

The symptoms of fibromyalgia develop slowly over weeks and occur in a distinct pattern around the body. They include the following:

- muscle pain in the upper back, head, thighs, abdomen, and hips;
- particularly tender areas of muscle, typically at the skull and near the shoulder blades.

Fibromyalgia is commonly associated with headaches, tiredness, depression, anxiety disorders, and disturbed sleep patterns. Some people have irregular bowel movements. All of these symptoms usually become worse when levels of stress increase. (From Sanders, 2000. Mosby's Paramedic Textbook.)

1. Indicate whether each of the following statements is true (T) or false (F) according to the passage.

- _____ a. Fibromyalgia causes localized muscle pains.
- _____ b. The exact causes of this condition are unknown.
- _____ c. The symptoms of fibromyalgia develop rapidly in and spread randomly around the body.
- _____ d. Fibromyalgia is associated with anxiety disorders and depression.
- _____ e. The symptoms of fibromyalgia do not get worse when stress levels increase.
- _____ f. Muscle tenderness is located particularly at the base of the skull and near the shoulder blades.

2. Find a term in the passage which is similar in meaning to each of the following:

a) irregularity: _____

b) noticeable: _____

c) a mental state when the patient feels very sad and hopeless: _____

3. Break down the word **fibromyalgia** into its component parts and give their meanings:

Online Progress Test (5)