

MID-LEVEL
HEALTH WORKER
TRAINING MODULES

BASIC CLINICAL
KNOWLEDGE
AND SKILLS

Module 1

1. ANATOMY AND PHYSIOLOGY



ANATOMY AND PHYSIOLOGY



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The MEDEX Primary Health Care Series

ANATOMY AND PHYSIOLOGY

Student Text

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SCHEDULE ANATOMY AND PHYSIOLOGY

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Introduction to the Anatomy and Physiology module	Muscle system Respiratory system	Digestive system Urinary system	Nervous system Eyes Ears, nose, sinuses, and mouth	Group A - Observing an autopsy Group B - Reviewing anatomy and physiology
Skeletal system				Group A - Reviewing anatomy and physiology Group B - Observing an autopsy Posttest

Introduction

In the Anatomy and Physiology module, you will study the structure and functions of the human body. What you learn in this module will prepare you for the study of all of the clinical modules that are a part of this training program.

Activities in the Anatomy and Physiology module will help you learn how the body is organized and how it functions. There are many parts to the body. To help you learn the important parts of the body and how they function, the body has been divided into areas and systems. Each unit of this module discusses a different body area or system.

Your schedule shows you when the learning activities will occur. Student Guides in front of each unit tell you more about what you will be expected to do. The units will be taught in order from Unit 1 to Unit 14.

The training program can succeed only if you take an active part. Prepare for each session. Before each session:

Read the Student Text and answer the review questions that go with it

Write down questions to ask your instructor about any part of the lesson you do not understand

In class the instructor will discuss the review questions and answer any other questions you have.

EVALUATION Level I

After five days of classroom experiences related to anatomy and physiology, you must pass a written test of knowledge with a score of 80% or higher.

Previous Page Blank

Unit 1

Organization of the Body

STUDENT GUIDE

OBJECTIVES

1. Define anatomy and physiology.
2. Describe the four basic levels of organization within the body.
3. Describe the organ systems of the body.
4. Identify and locate the areas of the body and the organ systems contained in each area.
5. Define and demonstrate these terms that describe direction in the body:

External	Lateral
Internal	Medial
Anterior	Distal
Posterior	Proximal
6. Explain internal regulation and describe the internal regulation of temperature, water, minerals, pulse, blood pressure, and respiration.

LEARNING ACTIVITIES

1. Read the Student Text on the organization of the body and answer the review questions.
2. Take part in a discussion of the organization of the body.
3. On another student, identify and locate the areas of the body and the organ systems contained in each area.
4. Define the terms used to describe direction in the body. Demonstrate the directions.
5. Take part in a discussion of the review questions for Unit 1.

1.1 ANATOMY AND PHYSIOLOGY

Anatomy is the study of the structure of the body. Physiology is the study of the functions of the body. The structure and the functions of the various parts of the body relate closely to each other.

1.2 CELLS, TISSUES, ORGANS, AND ORGAN SYSTEMS

The four basic levels of organization within the body are: cells, tissues, organs, and organ systems. The body is composed of millions of cells. The cell is the smallest functioning unit in the body. All of the body's activities occur within the cells.

Cells are organized into larger structures in order to perform specific functions. Groups of similar cells are organized into tissues. For example, muscle tissue, skin tissue, and nerve tissue are each groups of cells organized to carry out a particular function.

Groups of tissues are organized into organs. Organs are responsible for more complex tasks than are tissues. For example, the stomach is an organ of the digestive system. The stomach performs several functions related to digestion.

Groups of organs are organized into organ systems. An organ system is a group of organs that act together to perform a particular function.

Skeletal and Muscle Systems

The skeletal and muscle systems give structure and support to the body. They also help the body to move.

Respiratory System

The respiratory system brings oxygen into the body. It also rids the body of carbon dioxide.

Circulatory System

The circulatory system carries blood to and from all parts of the body.

Digestive System

The digestive system brings food into the body. It breaks down the food into small particles. Then it absorbs the food into the body.

Urinary System

The urinary system clears the body of waste materials. It helps regulate the water and minerals in the body.

Reproductive System

The reproductive system produces the male and female cells which join together and develop inside the female to form a baby.

Nervous System

The nervous system receives messages from outside and within the body. It sorts the messages and regulates the body processes according to the messages that it receives.

Hormone System

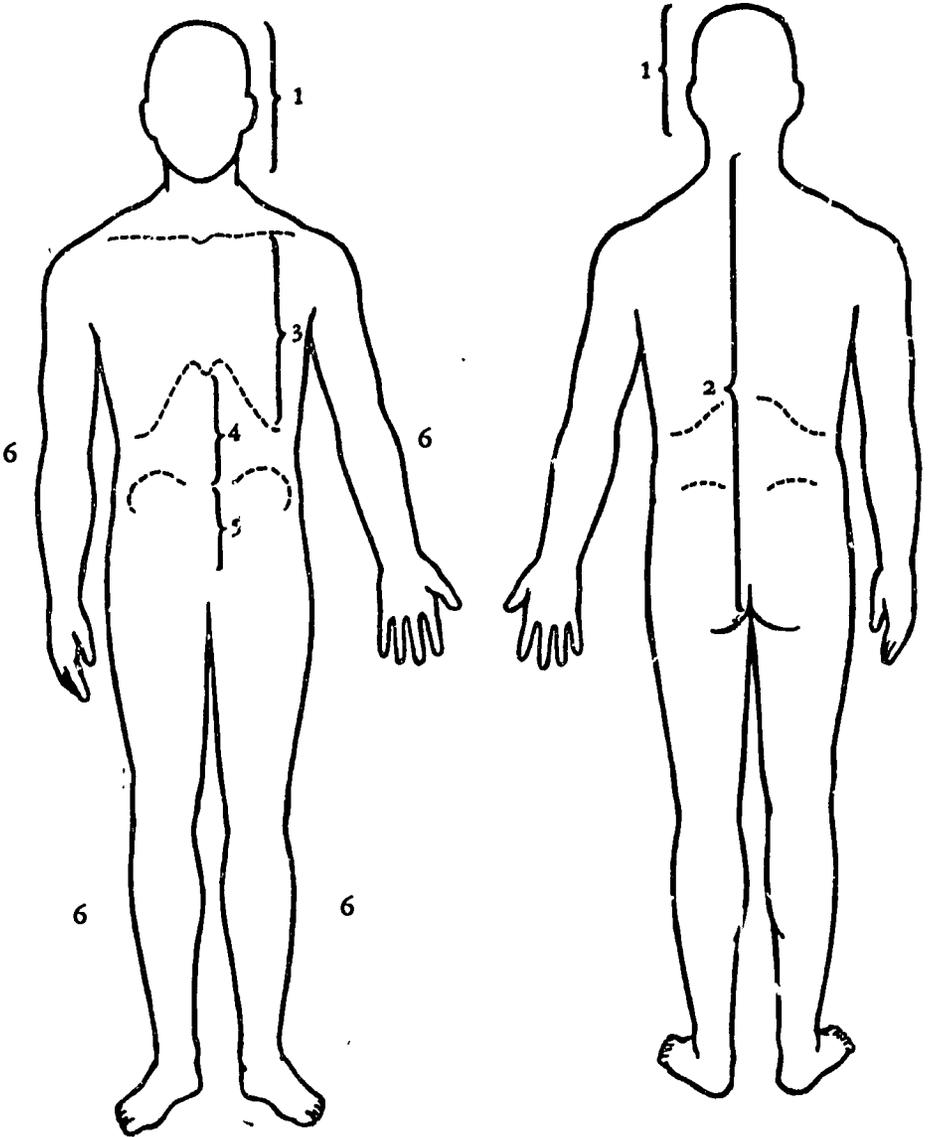
The hormone system is a group of glands located throughout the body. The glands produce substances that help regulate the body's activities.

1.3 AREAS OF THE BODY

The organ systems are located in particular body areas. For the purpose of further study, learn these body areas.

Head

Part of the nervous system and the sensory organs such as the eyes, ears, nose, and mouth are located in the head.



**AREAS OF THE BODY: 1) HEAD; 2) NECK AND SPINAL COLUMN;
3) CHEST; 4) ABDOMEN; 5) PELVIS; 6) ARMS AND LEGS**

Neck and Spinal Column

The neck and the spinal column contain the backbone and the spinal cord.

Chest

The respiratory system and parts of the circulatory and digestive systems are found in the chest.

Abdomen

The abdomen contains most of the digestive system and the urinary system.

Pelvis

The pelvis is an extension of the abdomen. The female reproductive system, and parts of the male reproductive system and the digestive system are located in the pelvis.

Arms and Legs

The arms and legs do not contain any particular system. Bones, muscles, blood vessels, nerves, and lymph glands are found in the arms and legs.

Also learn these terms that describe direction in the body.

- External - outside
- Internal - inside
- Anterior - front
- Posterior - back
- Lateral - toward the side
- Medial - toward the middle
- Distal - away from the center
- Proximal - toward the center

1.4 INTERNAL REGULATION

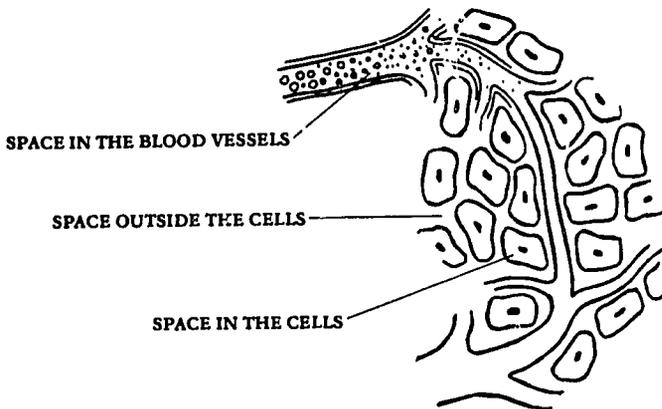
The organ systems work closely together to help the body survive. Survival depends on maintaining a stable environment within the body so that the cells can live and function. The ability of the body to maintain a relatively unchanging internal environment is called internal regulation. Internal regulation includes the following:

Regulation of Temperature

The body is constantly producing heat. The body needs to rid itself of heat so that the temperature does not rise too high for cells to live. The brain and the skin regulate the temperature of the body.

Regulation of Water

The spaces inside the cells, just outside the cells, and inside the blood vessels contain and regulate water. When the body loses fluid rapidly, the blood vessels quickly draw water from the spaces outside the cells. The internal environment is upset, and the body becomes very dry, or dehydrated. In the opposite condition, fluid moves from the blood vessels into the spaces outside the cells. This causes a buildup of fluid called edema.



Regulation of Minerals

Minerals are substances that the body needs to grow. The intestines regulate the amount of minerals that the body absorbs. The kidneys regulate the elimination of excess minerals.

Regulation of the Pulse

The pulse measures the heart beat. A regular heart beat ensures that the blood flow through the body provides enough nutrients and oxygen to the cells. The pulse rate increases whenever enough oxygen is not getting to the cells.

Regulation of the Blood Pressure

A normal blood pressure helps keep enough blood flowing through the small blood vessels. Parts of the body may not get enough oxygen if the blood pressure drops.

Regulation of Respiration

The brain helps regulate the rate and depth of breathing so that the cells receive enough oxygen and eliminate enough carbon dioxide.

Diseases upset the stable environment within the body. You will learn to recognize the signs of an upset internal environment when you study the other modules. The goal of health care is to keep the internal environment stable and to reestablish it when it is upset.

REVIEW QUESTIONS

Organization of the Body

1. Anatomy is the study of the _____ of the body. Physiology is the study of the _____ of the body.
2. List the four basic levels of organization within the body.
3. TRUE(T) or FALSE(F)
 - ___ A tissue is the smallest functioning unit in the body.
 - ___ Cells are organized into larger structures in order to perform specific functions.
 - ___ Organs are made of groups of tissues.
 - ___ Tissues are responsible for more complex tasks than are organs.
 - ___ Organ systems are groups of organs that act together to perform particular functions.
4. List eight organ systems.
5. Organ systems are located in particular body areas. List five body areas that contain organ systems.
6. Match the terms in column A with the definitions in column B. Write the letter of your answer in the space provided.

 A

___ Anterior

___ Posterior

 B

a. Back

b. Outside

- | | |
|--------------|-------------------------|
| ___ Lateral | c. Away from the center |
| ___ Medial | d. Toward the side |
| ___ Distal | e. Inside |
| ___ Proximal | f. Front |
| ___ External | g. Toward the middle |
| ___ Internal | h. Toward the center |

7. The ability of the body to maintain a relatively unchanging internal environment is called_____.
8. What two organs regulate the temperature of the body?
9. When the body loses fluid rapidly, the blood vessels quickly draw water from the spaces_____ the cells. The body can then become_____.
10. When fluid moves from the blood vessels into the spaces outside the cells, a build up of fluid occurs. This is called_____.
11. Minerals are substances that the body needs to grow. The intestines regulate the amount of minerals that the body_____. The kidneys regulate the_____ of excess minerals.
12. TRUE(T) or FALSE(F)
- ___ The pulse rate increases whenever enough oxygen is not getting to the cells.
- ___ A normal blood pressure helps keep enough blood flowing through the small blood vessels.
- ___ The brain helps to regulate the rate and depth of breathing so the cells receive enough carbon dioxide and eliminate enough oxygen.
13. Diseases upset the stable environment within the body. What is the goal of health care in this regard?

Unit 2

Blood and the Lymph System

STUDENT GUIDE

OBJECTIVES

1. Describe the composition of blood.
2. Describe the structure, function, and production of red blood cells.
3. Explain the function of white blood cells.
4. Describe the four parts of plasma.
5. Explain the function of plasma proteins.
6. Describe the structure and functions of the lymph system.
7. Identify and locate the spleen.
8. Identify and locate these lymph glands: in front of the ears, behind the ears, front part of the neck, back part of the neck, under the lower jaw, above the clavicles, under the arms, and at the groin.

LEARNING ACTIVITIES

1. Read the Student Text on the blood and the lymph system and answer the review questions.
2. Take part in a discussion of the blood and the lymph system.
3. Locate the spleen on another student.
4. Locate the lymph glands on another student.
5. Take part in a discussion of the review questions for Unit 2.

2.1 STRUCTURE AND FUNCTIONS OF BLOOD

Blood flows through the body in the circulatory system. Blood brings oxygen and nutrients to the cells and carries away waste products, including carbon dioxide. Blood consists of red blood cells, white blood cells, platelets, and plasma.

Red Blood Cells

Red blood cells are round and very small. They can pass easily through the smallest blood vessel. They are constantly made and destroyed. The average red blood cell lives for about four months.

Red blood cells contain a substance called hemoglobin that carries oxygen from the lungs to the cells and tissues of the body. Hemoglobin makes the blood red. Carbon dioxide combines with water in the red blood cells and is carried from the body to the lungs.

A lack of a normal number of red blood cells or of hemoglobin in the blood results in a disease called anemia. One cause of anemia is a lack of iron in the diet. The body needs iron to produce hemoglobin.

Sometimes a person cannot make normal hemoglobin. A person with sickle cell disease cannot make normal hemoglobin. His red blood cells become shaped like sickles, or crescents. These sickle-shaped cells break down faster than normal cells, causing severe anemia.

White Blood Cells

White blood cells are the disease-fighting cells. White blood cells help protect the body against disease-causing organisms such as bacteria, viruses, and parasites. Some white blood cells surround and digest disease-causing organisms in the body. Other white blood cells make substances called antibodies that kill or destroy the organisms.

Platelets

Platelets help the blood to clot. The blood clots to stop the bleeding when a blood vessel is cut.

Plasma

Plasma, or serum, is the liquid part of the blood. Plasma consists of water, proteins, nutrients, and waste products. Plasma helps fight infection and clot the blood. The proteins in the plasma keep water from leaking out of the blood vessels. A lack of proteins in the plasma causes water to leak out of the blood vessels and into the tissues of the body, resulting in swelling of the tissues. This swelling is called edema.

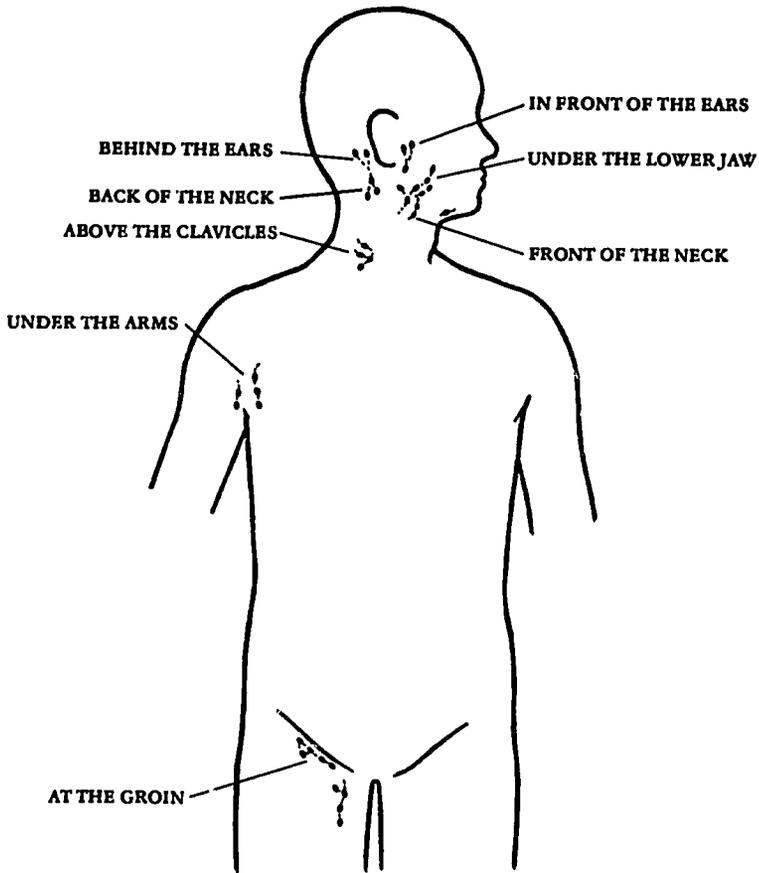
2.2 STRUCTURE AND FUNCTIONS OF THE LYMPH SYSTEM

The lymph system consists of lymph tubes, lymph fluid, lymph glands, and the spleen. The lymph tubes carry lymph fluid throughout the body. Lymph fluid picks up dead cells, bacteria, and proteins that have been removed from the blood. Lymph fluid returns the proteins to the blood. The lymph glands remove the dead cells and bacteria from the lymph fluid.

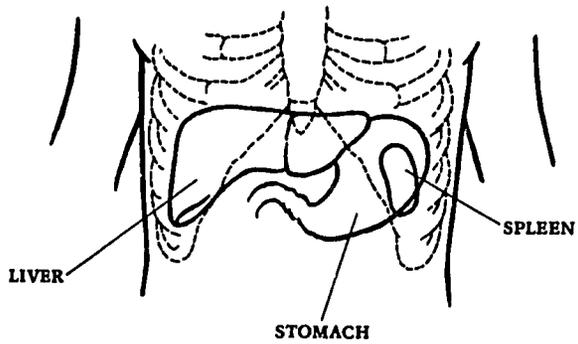
The lymph glands that you can see or feel are shown in the following diagram. The tonsils are also lymph glands.

Each lymph gland removes dead cells and bacteria from a particular area of the body. For example, the lymph glands in the groin drain the leg and groin areas. An infection in the body produces many dead cells and bacteria. The lymph glands in the area of the infection become swollen and tender when they remove large numbers of dead cells and bacteria. Swollen, tender lymph glands are a sign of infection in the body.

The spleen helps clean dead cells and bacteria from the blood. The spleen is located in the upper left abdomen under the lower ribs.



LOCATION OF THE SPLEEN



REVIEW QUESTIONS

Blood and the Lymph System

1. Name the four parts of the blood.

2. The red blood cell is _____ in shape.

3. The red color of red blood cells comes from the _____.

4. The red blood cells contain hemoglobin that carries _____ from the lungs to the body.

5. The red blood cells are made in the _____.

6. Anemia can be caused by a decrease in the number of _____, or by a lack of _____.

7. _____ is important in the formation of hemoglobin.

8. Sickle cell anemia occurs when the hemoglobin is _____.
The red blood cells become _____ shaped.

9. Name four parts of the plasma.

10. List at least two functions of plasma.

11. What is the function of the white blood cells?

12. Name the four parts of the lymph system.

13. List the three functions of the lymph system.

14. Dead cells and bacteria are taken out of the lymph fluid by the _____ .

15. The spleen is located _____ .

16. The spleen helps _____ .

Unit 3

Skeletal System

STUDENT GUIDE

OBJECTIVES

1. Describe the structure and functions of the skeletal system.
2. Identify and locate the major bones of the body.
3. Describe the function and location of cartilage.
4. Describe the structure, function, and movement of joints.
5. Identify and locate three types of joints.
6. Identify and locate the two fontanelles and discuss their value in finding disease in infants.

LEARNING ACTIVITIES

1. Read the Student Text on the skeletal system and answer the review questions.
2. Take part in a discussion of the skeletal system.
3. Observe the instructor locate the major bones and joints on a skeletal model.
4. Locate the major bones and joints on another student.
5. Demonstrate the movements of the different types of joints.
6. Take part in a discussion of the review questions for Unit 3.

3.1 FUNCTIONS OF THE SKELETAL SYSTEM

The bones in the body are joined in a framework called the skeletal system. The skeletal system has five major functions:

Support

The skeletal system holds up the body and gives the body shape.

Movement

The bones provide attachments for the skeletal muscles. The attachments allow movement of the body.

Protection

The skeletal system protects the delicate organs of the body such as the brain, the heart, and the lungs.

Storage

The bones store minerals and release them into the blood as needed.

Cell Production

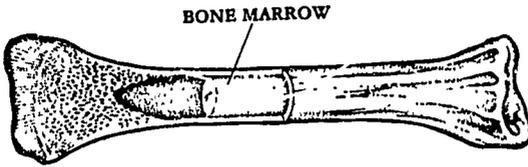
The soft centers of some bones produce red blood cells and some white blood cells.

3.2 BONES

Bones are classified into four types according to their shape.

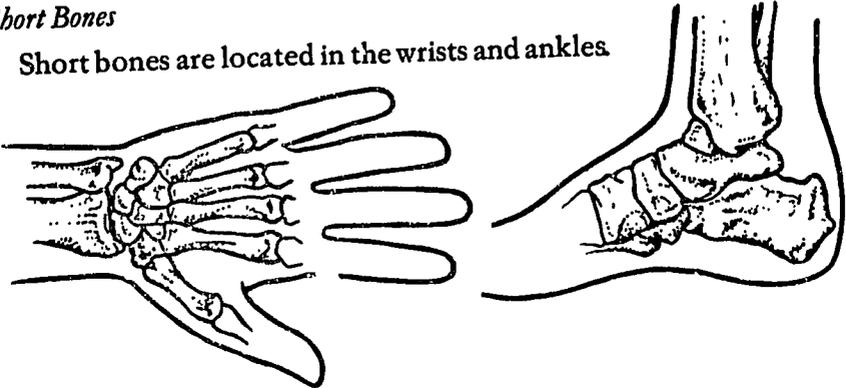
Long Bones

Long bones are located in the upper and lower arms and legs. A long bone consists of a shaft and two knob-like ends. The shaft contains the soft center of the bone, called the bone marrow. The bone marrow produces red blood cells and some white blood cells.



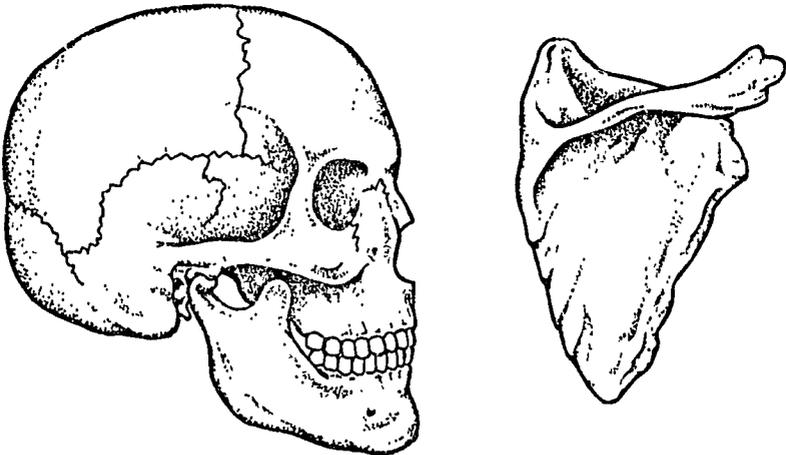
Short Bones

Short bones are located in the wrists and ankles.



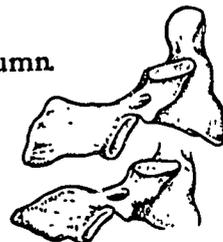
Flat Bones

The skull and scapula, or shoulder blade, are flat bones.

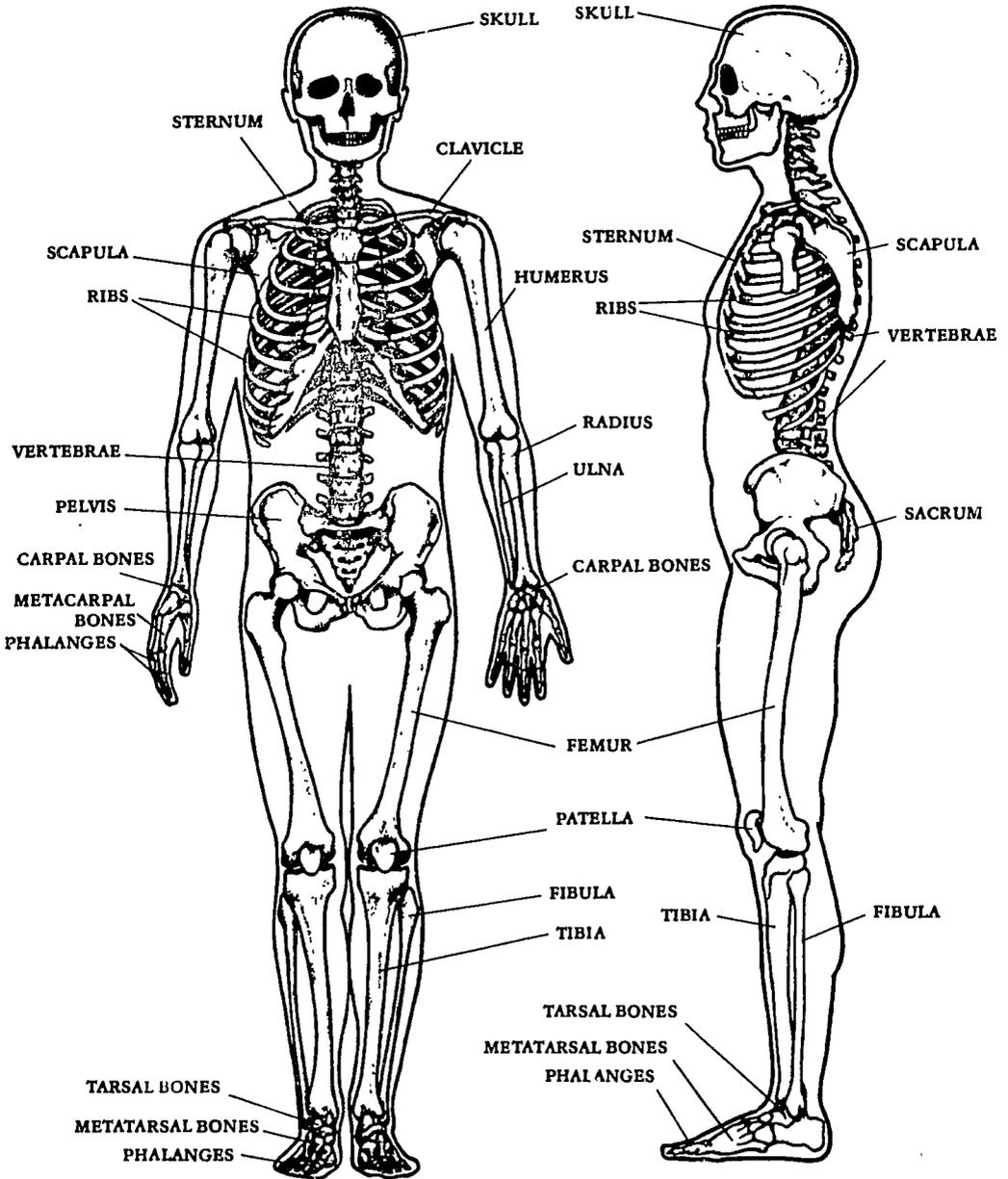


Irregular Bones

Irregular bones make up the spinal column.



Bone cells form bones. Bone cells are located at the ends of the bones and under the outside layer. Bone cells take minerals, such as calcium, out of the blood. The cells deposit the minerals in an orderly way to make bones. When a bone breaks, the outside layer tears. The tear causes severe pain. The bone cells under the outside layer form a new layer. The healing process takes a long time. The bone must be kept still so that the broken ends can join. Movement delays healing.



3.3 STRUCTURE OF THE SKELETAL SYSTEM

The skeletal system is divided into five parts.

Skull

The skull is made up of the flat bones that protect the brain, and the bones of the face and jaw. The structure of the facial bones gives each person his unique facial appearance.

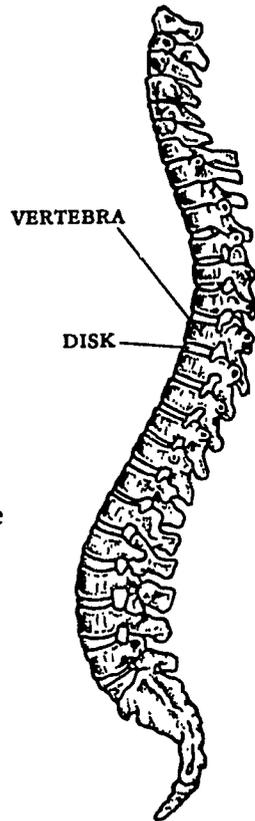


Spine

The spinal column, or the back bone, is made up of small irregular bones called vertebrae. Strong fibers, or ligaments, join the vertebrae. The vertebrae protect the spinal cord and support the back.

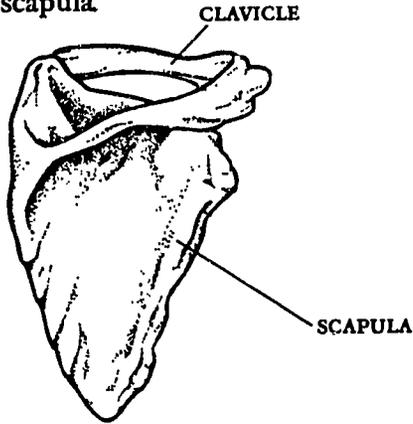
Each space between the vertebrae is filled with tissue that is softer than bone. This tissue is called a disk. The disks cushion the vertebrae and absorb shock.

Sometimes a disk deteriorates and breaks down. A damaged disk may protrude from between the vertebrae and press on the spinal nerves. This pressure causes severe pain.

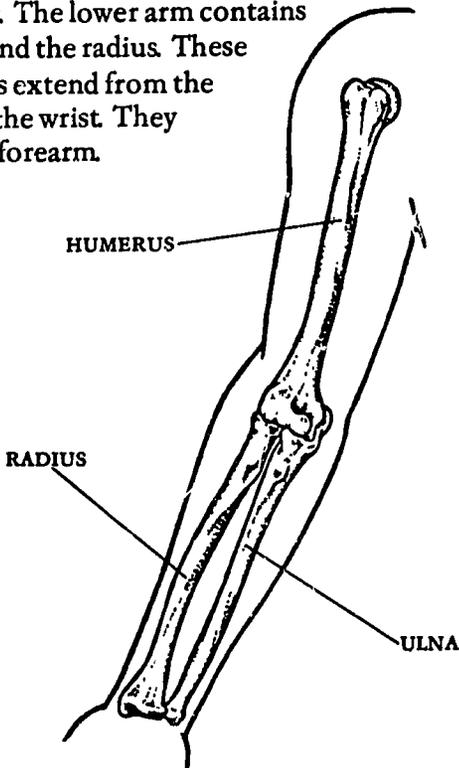


Shoulder, Arm, and Hand

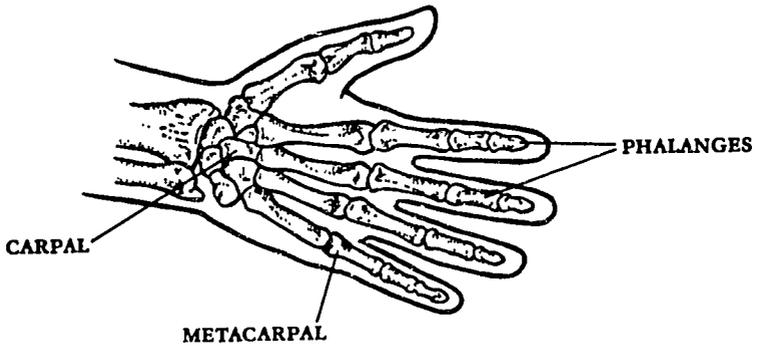
The shoulder is made up of the scapula and the clavicle. The scapula, or shoulder blade, is located behind the ribs. The clavicle, or collar bone, extends from the breast bone out toward the shoulder to meet the scapula.



The arm has two parts. The upper arm contains one large bone called the humerus. The humerus extends from the shoulder to the elbow. The lower arm contains the ulna and the radius. These two bones extend from the elbow to the wrist. They form the forearm.

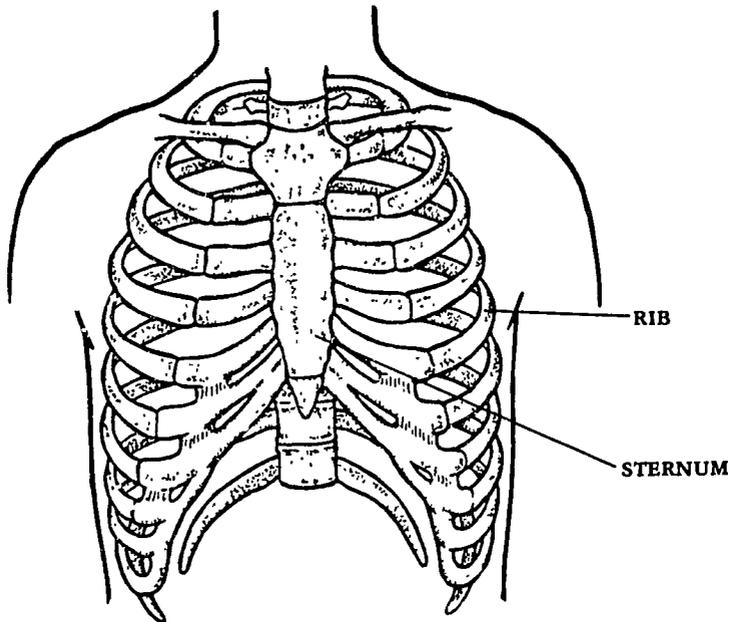


The wrist has eight carpal bones. Attached to the carpal bones are the metacarpal bones that form the hands. The thumb is made up of two small bones called phalanges. The other fingers have three phalanges each.



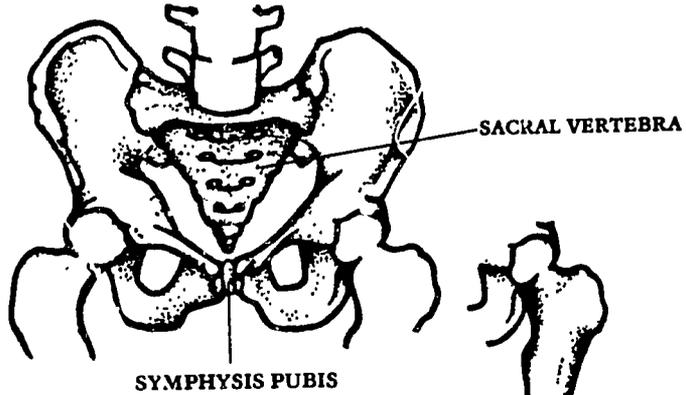
Ribs and Sternum

The ribs are twelve pairs of narrow curved bones in the chest. The twelve ribs on each side are attached to the spine in the back. The ten upper ribs on each side are attached to the sternum, or breast bone, in the front. The two lower ribs on each side are free, or floating, in the front.



Pelvis, Leg, and Foot

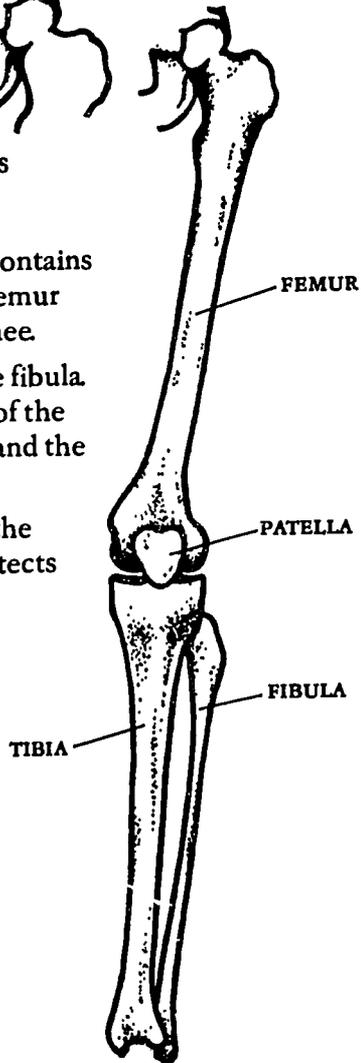
The pelvis is a ring of bones in the lower trunk that supports the spinal column and rests on the legs. The pelvis consists of two pelvic bones joined by the sacral vertebra in the back and by the symphysis pubis in the front.



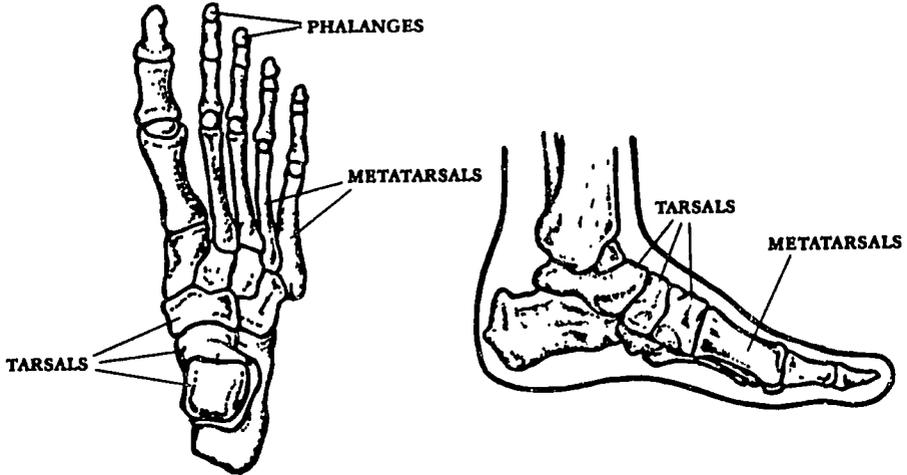
The leg has three parts. The upper leg contains one large bone called the femur. The femur extends from the pelvic bone to the knee.

The lower leg contains the tibia and the fibula. At the upper end, the tibia forms part of the knee. At the lower end, both the tibia and the fibula extend to the ankle.

The patella is a small bone that forms the front part of the knee. The patella protects the knee joint.



Seven tarsal bones make up the ankle. Attached to the tarsal bones are the metatarsals that make up the foot. Attached to the metatarsals are the phalanges of the toes. Two phalanges form the big toe. The other four toes have three phalanges each.



3.4 CARTILAGE

Cartilage is thick tissue that is similar to but softer than bone. Cartilage is strong and flexible. It does not break easily. The trachea, larynx, outer ear, and tip of the nose are made of cartilage. Cartilage at the ends of the bones that form joints cushions and protects the joints.

3.5 JOINTS

A joint is the place where two bones join together. Strong fibers called ligaments connect bones to other bones. Joints are classified according to the way they move. Joints can be moveable, partly moveable, or not moveable.

These are the special terms that define movement for the joints that move:

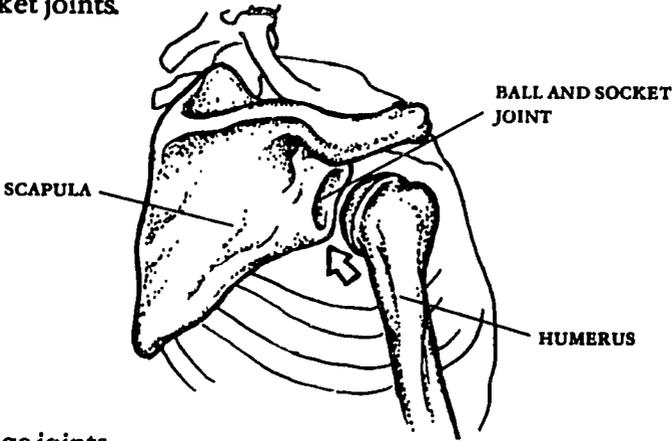
- FLEXION** - bending and shortening
- EXTENSION** - straightening and lengthening
- ABDUCTION** - moving a part of the body away from the body
- ADDUCTION** - moving a part of the body toward the body
- ROTATION** - moving in a circle

Moveable Joints

There are five types of moveable joints.

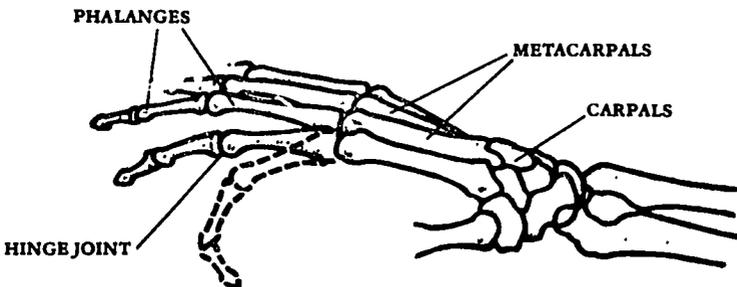
a. Ball and socket joints

Ball and socket joints allow the greatest range of motion. Ball and socket joints move up, down, and in a circle. That is, a ball and socket joint allows for flexion, extension, abduction, adduction, and rotation. The shoulders and hips are ball and socket joints.



b. Hinge joints

Hinge joints move like the hinge of a door. A hinge joint allows for extension and flexion. The elbows, knees, fingers, and toes are hinge joints.



c. Pivot joints

Pivot joints allow one bone to rotate on another. The neck and elbows are pivot joints.

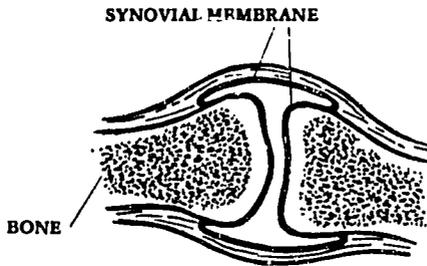
d. Gliding joints

Gliding joints allow the bones to glide in several directions. The wrists and ankles are gliding joints.

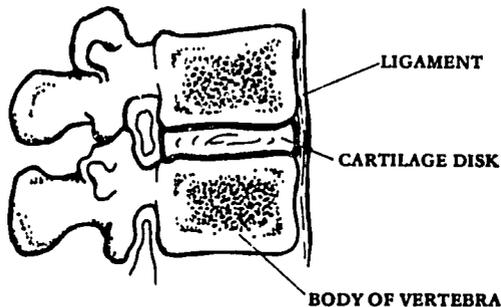
e. Rotating joints

Rotating joints allow for circular motion. The wrists, the thumbs, the joints between the metacarpals and the phalanges of the hand, and the joints between the metatarsals and the phalanges of the feet are rotating joints.

Moveable joints are normally lined with a membrane called the synovial membrane. The synovial membrane secretes a fluid which helps the joint move smoothly.

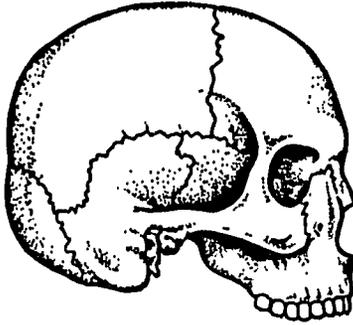
***Joints That Are Partly Moveable***

Partly moveable joints have limited movement. The space between the bones is filled with cartilage. The joint between the pelvic bones and the joints between the vertebrae are partly moveable joints. The joints between the ribs and the spinal column and between the ribs and the breast bone are also partly moveable joints. They move during breathing.



Joints that Are Not Moveable

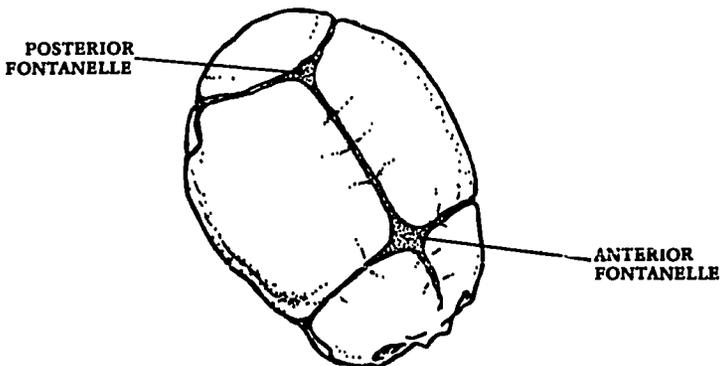
Some joints, such as the joints that hold the skull together, do not move at all. These joints are stronger than either moveable or partly moveable joints.



The more a joint is able to move, the greater the chance of injury or damage. Moveable joints have the greatest range of movement but are at the greatest risk of injury, damage, and disease.

3.6 FONTANELLE

The bones of an infant's skull are joined by narrow joints called fontanelles. The fontanelles allow the bones of an infant's skull to move. Movement of the bones allows the infant's head to pass more easily through the narrow birth canal during delivery. Movement also allows the skull to expand as the child's brain grows. The two main fontanelles are the anterior and the posterior fontanelles.



The fontanelles are soft for the first few months of life. They gradually close. The posterior fontanelle closes at about two to eight months. The anterior fontanelle closes at about nine to eighteen months.

The fontanelles provide a useful sign of disease in infants. For example, meningitis or bleeding into the brain increases the pressure in the skull. Increased pressure in the skull makes the fontanelles bulge out. Dehydration causes the fontanelles to sink in.

REVIEW QUESTIONS

Skeletal System

1. Name the five functions of the skeletal system.

2. Name the four basic types of bones.

3. Listed below are different bones in the body. Identify the shape of each bone.

Wrist:

Scapula:

Femur:

Spine:

Ankle:

Humerus:

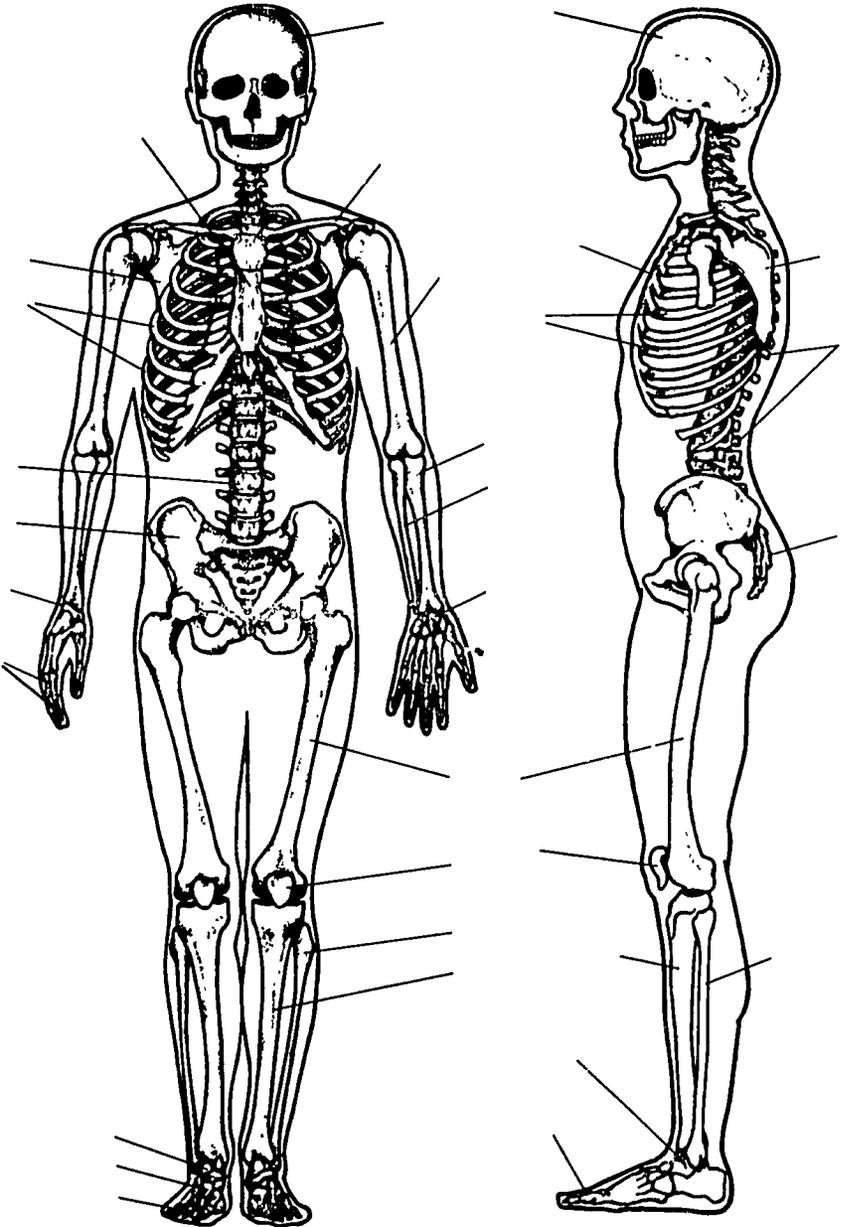
Skull:

Tibia:

4. TRUE(T) or FALSE(F)
 - ___ Bone cells form bones.
 - ___ Bone marrow is found within the shaft of a long bone.
 - ___ Bone cells are found under the outside layer of long bones.
 - ___ The bone marrow is responsible for healing a broken bone.
 - ___ Broken bones usually heal very quickly.

- Movement of a broken bone delays healing.
- Bone cells take minerals out of the blood and use them to form bones.

5. Label the bones on the diagram below.



6. Name the two fontanelles

7. Discuss how you can use the fontanelles to detect disease in an infant.

8. Name five locations where cartilage can be found.

9. Describe one function of cartilage.

10. A _____ is the place where two bones join together.

11. Match the terms in column A with the definitions in column B. Write the letter of your answer in the space provided.

<u>A</u>	<u>B</u>
___ Flexion	a. Moving a part of the body away from the body
___ Extension	b. Moving in a circle
___ Abduction	c. Bending and shortening
___ Adduction	d. Moving a part of the body toward the body
___ Rotation	e. Straightening and lengthening

12. Name the three major categories of joints.

13. Listed below are examples of the way that joints can move. For each description, give two examples of joints that move in that way.

- a. Joints that allow for flexion, extension, abduction, adduction, and rotation:
 - b. Joints that allow one bone to rotate on another joint:
 - c. Joints that allow for circular motion:
 - d. Joints that allow for extension and flexion:
 - e. Joints that allow bones to glide in several directions:
14. Partly moveable joints have limited movement. Name at least three partly moveable joints.
15. Give an example of a joint that is not moveable.
16. TRUE(T) or FALSE(F)
- ___ Moveable joints are stronger than immovable joints.
 - ___ The more a joint is able to move, the greater the chance of injury or damage.
 - ___ Joints that are not moveable have the greatest range of movement.
 - ___ Moveable joints are at greater risk of injury or damage than joints that are not moveable.

Unit 4
Muscle System

STUDENT GUIDE

OBJECTIVES

1. List the three types of muscles.
2. Describe the structure and functions of skeletal muscles.
3. Explain what happens to the movement of a muscle if its normal structure or function is changed.

LEARNING ACTIVITIES

1. Read the Student Text on the muscle system and answer the review questions.
2. Take part in a discussion of the muscle system.
3. Observe the instructor demonstrate normal muscle movements.
4. Practice observing normal muscle movements.
5. Take part in a discussion of the review questions for Unit 4.

4.1 STRUCTURE OF THE MUSCLE SYSTEM

A muscle is tissue made up of cells or fibers that can cause movement. There are three types of muscles.

Smooth Muscles

Smooth muscles form the walls of many body organs, such as the stomach and the intestines. Smooth muscles are called involuntary muscles because they cannot be moved at will. For example, when the stomach fills with food, the smooth muscles begin to move and break down the food. Smooth muscles are discussed in the unit on the digestive system.

Heart Muscles

Heart muscles are found only in the heart. Heart muscles are also involuntary since they move at their own rate. Heart muscles are discussed in the unit on the circulatory system.

Skeletal Muscles

Bones and joints do not move by themselves. They depend on skeletal muscles for movement. Skeletal muscles are called voluntary muscles because the person controls their movement. Skeletal muscles control the movement of the arms, legs, spine, and head.

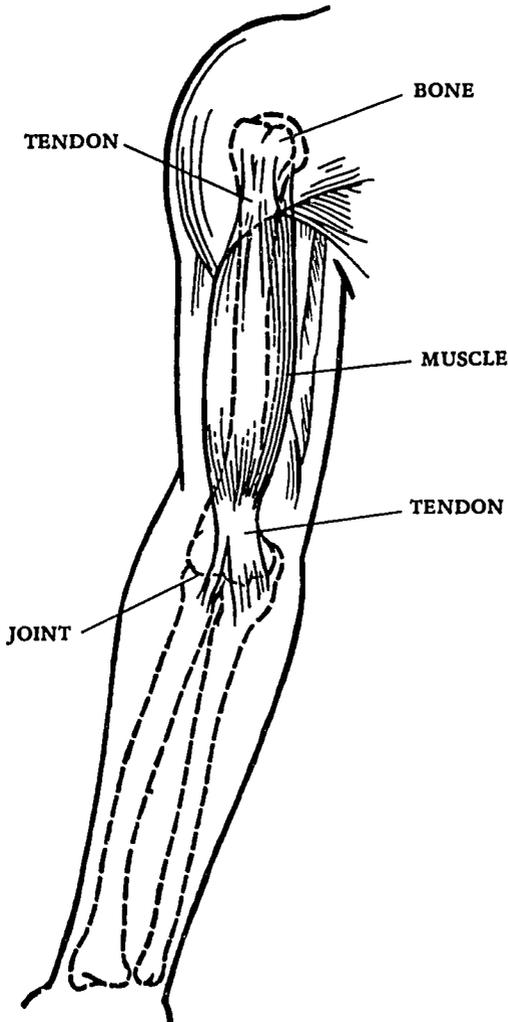
4.2 FUNCTIONS OF THE MUSCLE SYSTEM

Skeletal muscles are made up of bundles of muscle tissue. The muscle tissue at both ends of a bundle forms strong cords called tendons. Tendons attach muscles to bones. Nerves in each bundle give the messages that direct the muscle to move.

Movement occurs when muscles draw together and shorten. This shortening of a muscle is called contraction. The opposite of contraction is relaxation. Movements, such as walking, eating, lifting, and sitting,

require the actions of many different muscles. Some muscles are contracting, while others are relaxing. Other muscles hold parts of the body firmly in place.

In order to cause movement, a muscle must be attached at both ends to a bone. The bones to which the muscle is attached must be strong and healthy. The nerves in the muscle must be working well so that the muscle receives the correct messages. When the nerves are working well and the muscle is healthy, the muscle has good strength or tone. When the nerves are not working well and the muscle is not healthy, the muscle has decreased strength or tone. Paralysis occurs when the nerves are not working at all. The muscles have no strength or tone. Paralyzed muscles cannot grow. They will waste away.



REVIEW QUESTIONS

Muscle System

1. List the three types of muscles.
2. Describe the function of the skeletal muscles.
3. Skeletal muscles are made up of _____ .
4. _____ in each bundle of muscles direct the muscle to move.
5. _____ attach muscles to bones.
6. Movement occurs when muscles _____ .
7. TRUE(T) or FALSE(F)
 - ___ Movement would not occur if muscles all relaxed or contracted at the same time.
 - ___ The opposite of contraction is relaxation.
 - ___ Nerves attach muscles to bones.
 - ___ Involuntary muscles can be moved when desired.
 - ___ Heart muscle is found only in the heart.
 - ___ Heart muscle is an example of a voluntary muscle.
8. In order for a muscle to move well, two conditions must be met. Describe these two conditions.

Unit 5

Respiratory System

STUDENT GUIDE

OBJECTIVES

1. Describe the structure and functions of the respiratory system.
2. Identify and locate the structures of the respiratory system.
3. Describe inspiration and expiration.
4. Locate these structures and landmarks of the chest:

Breast bone

Suprasternal notch

Ribs

Sternal angle

Intercostal spaces

Xiphoid process

Scapula

Rib margins

Mid-clavicular lines

LEARNING ACTIVITIES

1. Read the Student Text on the respiratory system and answer the review questions.
2. Take part in a discussion of the respiratory system.
3. Identify and locate on a diagram the structures of the respiratory system.
4. Identify and locate on another student the structures and landmarks of the chest that are discussed in Unit 5.
5. Draw the following structures on the skin surface of another student:

Trachea

Bronchi

Lungs

Diaphragm

6. Take part in a discussion of the review questions for Unit 5.

5.1 STRUCTURE AND FUNCTIONS OF THE RESPIRATORY SYSTEM

The cells of the body need a constant supply of oxygen to live and grow. As the cells use oxygen, they produce a harmful waste product called carbon dioxide. The respiratory system obtains oxygen from the outside air. It brings oxygen to the blood and rids the blood of carbon dioxide.

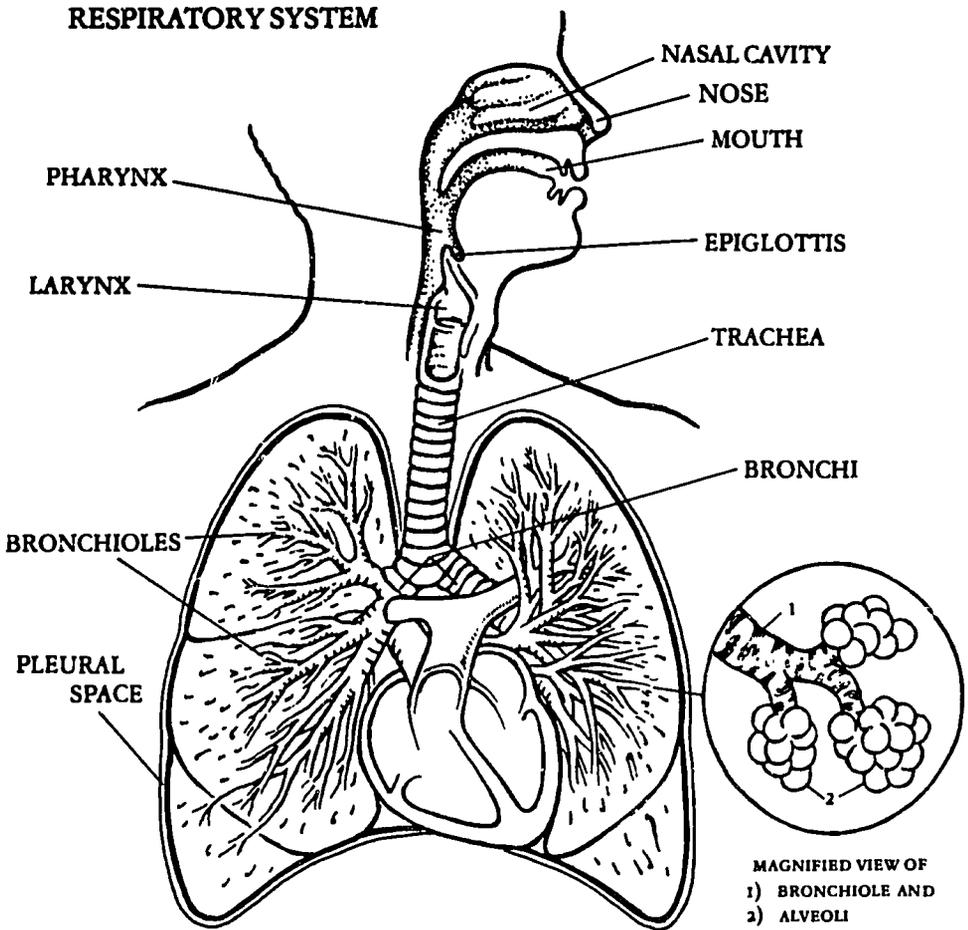
The respiratory system begins at the nose and the mouth. Air filled with oxygen enters the nose or mouth with each breath. The air flows to the back of the throat and down the windpipe, or trachea. Past the larynx, or voice box, the trachea branches into two large tubes called the bronchi. The bronchi carry the air into the left and right lungs. In the lungs, the bronchi branch into small tubes called bronchioles.

The bronchioles carry air to the thousands of tiny sacs, called alveoli, which make up the lungs. Small blood vessels, called capillaries, surround each group of alveoli. Oxygen passes through the walls of the alveoli into the capillaries to the blood. Oxygen attaches to hemoglobin in the red blood cells. Red blood cells carry the oxygen to the cells of the body.

The cells use the oxygen and release carbon dioxide. Red blood cells pick up the carbon dioxide and travel back to the lungs. The red blood cells release the carbon dioxide through the capillaries to the alveoli. Breathing out rids the blood of the carbon dioxide. Breathing in brings fresh air filled with oxygen into the body.

The diagram shows the structures through which the air passes from the nose to the alveoli.

These structures of the respiratory system provide a pathway for air to enter and leave the body. They also ensure that the air that reaches the lungs is warm, clean, and moist. The nose and mouth warm the air. The mucous membranes of the nose, mouth, and throat clean and moisten the air. The trachea, bronchi, and bronchioles are lined with tiny, hair-like structures that push mucus and dirt particles out of the airways toward the nose and mouth. Coughing or blowing the nose forces out the mucus and dirt particles. When a respiratory system infection



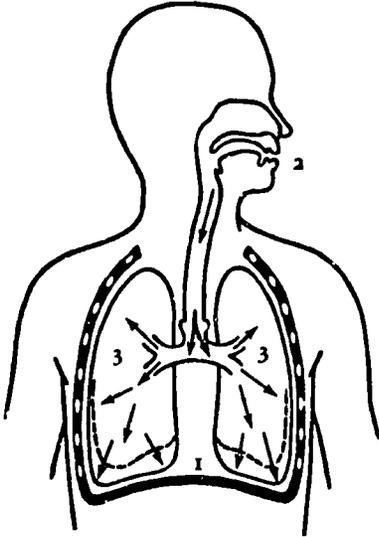
develops, the trachea, bronchi, and bronchioles produce more mucus to fight the infection. The mucus may become thick and cloudy. It may contain blood. This thick mucus is called sputum.

5.2 INSPIRATION AND EXPIRATION

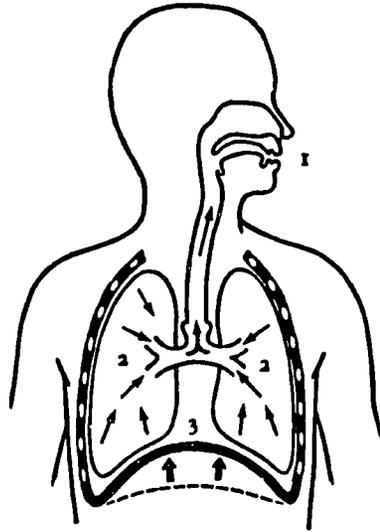
Breathing in is called inspiration. Air is drawn in when the lungs expand. The diaphragm and the muscles between the ribs expand the lungs. The diaphragm is a thick muscle that lies just below the lungs. The lungs expand when the diaphragm pulls down. The ribs pull up when the

muscles between the ribs contract. The chest grows larger, causing the lungs to pull in air.

Blowing air out is called expiration. Air is forced out of the lungs when the diaphragm lifts up and the muscles between the ribs relax. The chest shrinks, causing the lungs to force air out.



INSPIRATION: WHEN THE DIAPHRAGM MOVES DOWN (1), AIR IS SUCKED IN (2) AND THE LUNGS EXPAND (3).

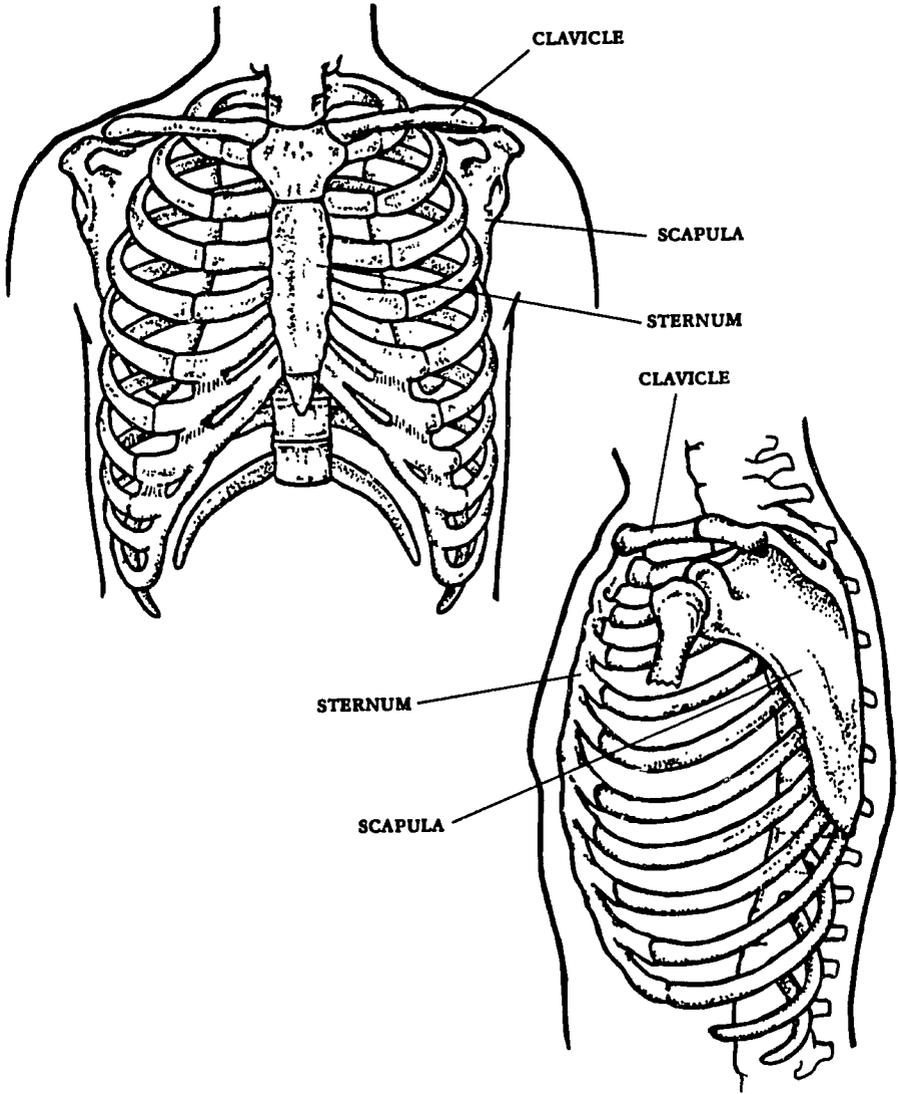


EXPIRATION: WHEN THE DIAPHRAGM LIFTS UP (3), AIR IS FORCED OUT OF THE LUNGS (2) THROUGH THE MOUTH AND NOSE (1).

The space between the lungs and the wall of the chest is called the pleural space. The pleural space gives the lungs enough room to get bigger and then smaller during inspiration and expiration. The pleural space is lined with a membrane called the pleura. Inflammation can cause the pleural space to fill up with fluid making breathing painful and difficult.

5.3 STRUCTURE OF THE CHEST

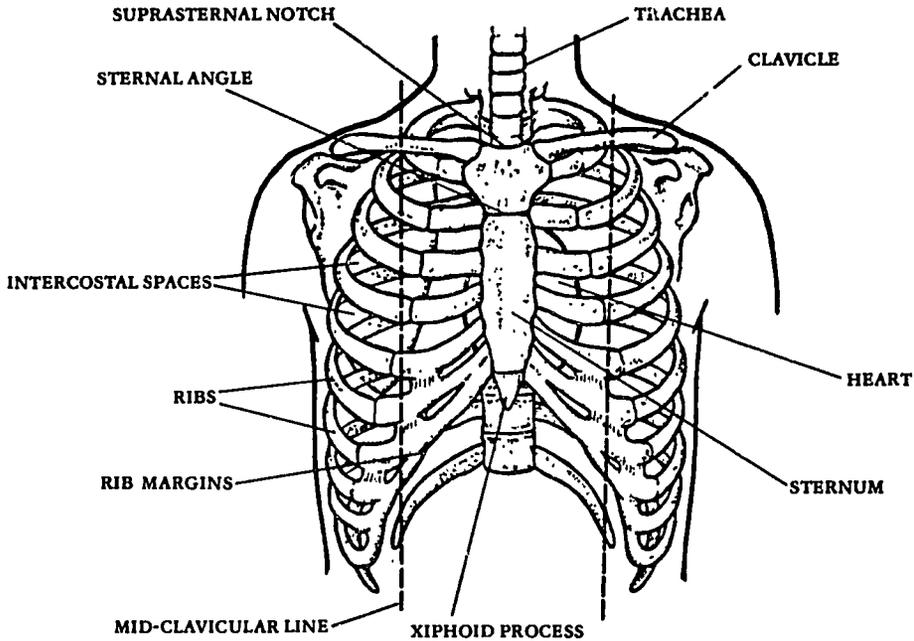
Most of the respiratory system is enclosed in a bony structure called the chest. The chest extends from the bottom of the neck to the lower edge of the ribs.



The sternum, or breast bone, is in the center of the front of the chest. The twelve pairs of ribs form most of the front, sides, and back of the chest. The spaces between the ribs are the intercostal spaces. You can hear the heart and breath sounds in these spaces.

The scapulae, or shoulder blades, are on the upper back part of the chest. They cover the outer parts of the upper ribs. The clavicles, or collar bones, extend from the upper breast bone to the scapulae at either side. The clavicles lie over the first ribs on either side.

Some landmarks on the chest will help you locate the structures and organs that are located within the chest.



The mid-clavicular lines are two imaginary lines drawn straight down from the middle of each clavicle. The heart is on the inner side of the left mid-clavicular line.

The upper end of the sternum is a depression called the suprasternal notch. The trachea lies behind the suprasternal notch. About 2.5 cm below the suprasternal notch is a raised, bony area called the sternal angle.

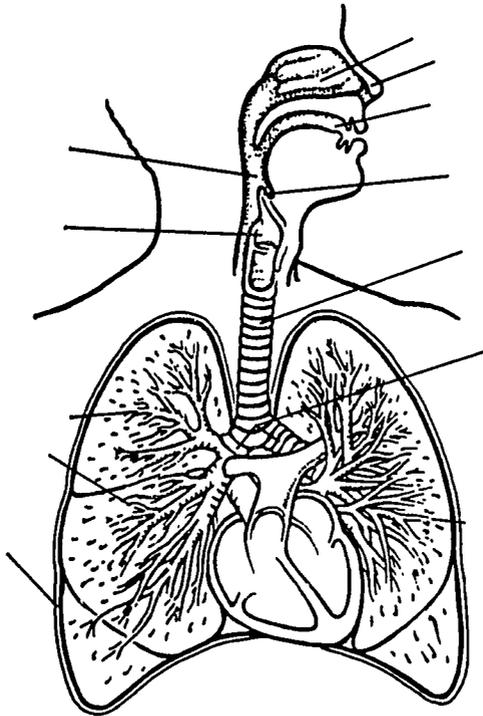
The sternal angle marks the level of the second rib. Below the second rib is the second intercostal space. You can count the other intercostal spaces by counting from the second intercostal space. The bronchus separates into two branches just below the sternal angle.

At the lower end of the sternum is the xiphoid process. The xiphoid process marks the last part of the breast bone where the ribs attach. To either side of the xiphoid process and extending down are the edges of the ribs, called the rib margin. The lower edges of the lungs extend to the sixth rib in the front and then curve down to about the tenth rib in the back.

REVIEW QUESTIONS

Respiratory System

1. The cells of the body use _____ to live and grow.
2. The cells produce a harmful waste product called _____.
3. Label the structures of the respiratory system on the diagram.



4. When a person breathes in air, the air passes through many structures. List the structures that the air passes through. Start with the nose and end with the red blood cells

5. Describe the two functions of the respiratory system.

6. Breathing in air is called _____ . Blowing out air is called _____ .

7. The diaphragm and the muscles between the ribs cause the lungs to expand and to shrink. Answer these questions about the diaphragm and the muscles between the ribs.
 - a. What is the diaphragm? Where is it located?

 - b. What causes the lungs to expand?

 - c. What happens to the ribs when the muscles between the ribs contract?

 - d. What do the lungs do when the chest grows larger?

 - e. How does the diaphragm force air out of the lungs?

 - f. How do the muscles between the ribs help force air out of the lungs?

Unit 6

Circulatory System

STUDENT GUIDE

OBJECTIVES

1. Describe the structure and functions of the circulatory system.
2. Describe the systemic and pulmonary circulation of the blood.
3. Define and discuss these ways of measuring the function of the circulatory system:
 - Heart sounds
 - Blood pressure
 - Pulse
4. Define edema and explain how it occurs.
5. Identify and locate the heart and the pulse points.

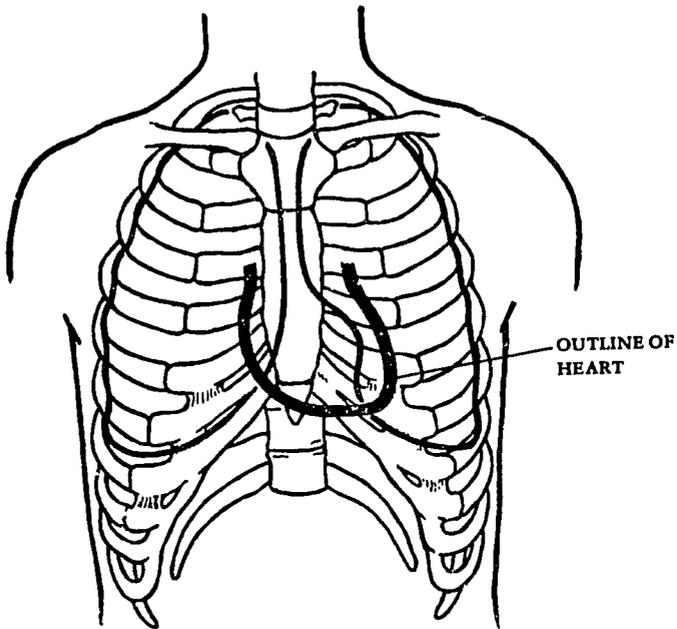
LEARNING ACTIVITIES

1. Read the Student Text on the circulatory system and answer the review questions.
2. Take part in a discussion of the circulatory system.
3. Observe the instructor demonstrate the location of the heart and the pulse points.
4. Locate the heart and the pulse points on another student.
5. Take part in a discussion of the review questions for Unit 6.

6.1 STRUCTURE OF THE CIRCULATORY SYSTEM

The circulatory system moves the blood to and from the cells. The circulatory system includes the heart and a series of tubes called blood vessels.

The heart is a pump that is made of heart muscles. The muscles of the heart pump blood through the body. The heart is located in the chest between the lungs and behind the breast bone. The lower part of the heart reaches into the left side of the chest under the third, fourth, and fifth ribs.



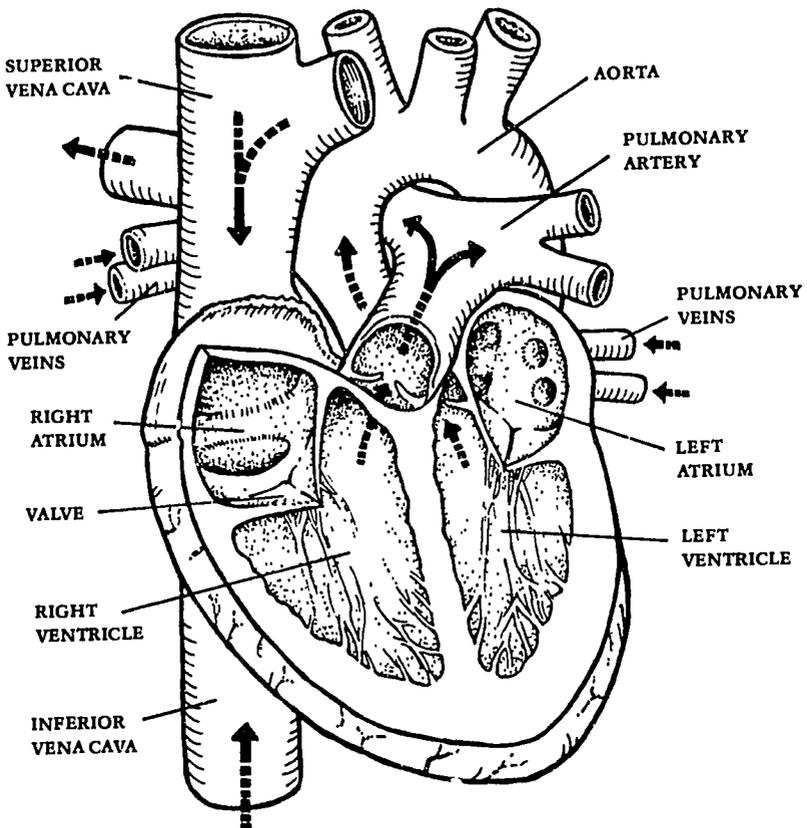
A muscular wall divides the heart into a right and left half. Each half is divided into two areas, or chambers. The lower chambers are the ventricles. The upper chambers are the atria.

The blood flows through tubes called blood vessels. The three kinds of blood vessels are arteries, veins, and capillaries.

Arteries carry blood away from the heart. The pressure inside the arteries is high. The walls of the arteries are thick and muscular to withstand the high pressure. Blood spurts out when an artery is cut.

Veins return blood to the heart. Veins are thin walled blood vessels. The pressure inside the veins is low. Blood does not spurt out when a vein is cut.

Capillaries are very small blood vessels that connect arteries to veins. Capillaries have very thin walls. The pressure inside the capillaries is low. The capillary wall is the barrier between the blood in the vessels and the rest of the body. Red blood cells, plasma proteins, and other large substances stay in the capillaries. Water, oxygen, carbon dioxide, and nutrients can pass freely through the thin walls. Normally, the proteins in the plasma keep water inside the capillaries. Water leaks out when capillaries are injured or when plasma proteins are low. The water builds up in the tissues, causing edema.



6.2 FUNCTIONS OF THE CIRCULATORY SYSTEM

The blood in the capillaries picks up the waste product carbon dioxide from the cells and tissues. Veins return blood to the heart. Blood filled with carbon dioxide enters the upper right chamber of the heart, the right atrium. The right atrium contracts, sending the blood into the lower right chamber, the right ventricle. Contraction of the right ventricle forces the blood into the pulmonary artery. The pulmonary artery carries the blood to the capillaries of the lungs. In the lungs the blood gives up carbon dioxide and picks up oxygen.

The pulmonary veins bring blood filled with oxygen back from the lungs to the upper left chamber of the heart, the left atrium. The left atrium contracts and forces the blood into the left ventricle. Contraction of the left ventricle forces the blood into the arteries. The arteries carry the blood to capillaries in all the body tissues. The blood brings oxygen and nutrients to the tissues and carries away carbon dioxide.

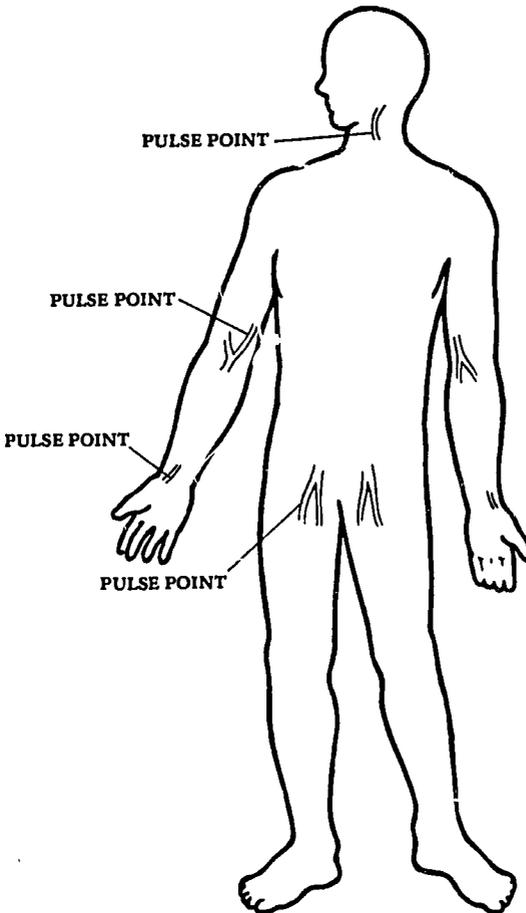
In this way, all of the blood that is returned to the right side of the heart from the body tissues is sent to the lungs, where it picks up oxygen and eliminates carbon dioxide, before being pumped back to the body tissues by the left side of the heart. The flow of blood from the right side of the heart through the lungs to the left side of the heart is the pulmonary circulation. The flow of blood from the left side of the heart through the body tissues to the right side of the heart is the systemic circulation.

6.3 HEART SOUNDS

Heart sounds result from the closing of the four valves between the chambers of the heart. You hear the heart sounds with a stethoscope. The first heart sound is the closing of the valves between the atria and the ventricles as the ventricles contract. The second heart sound is the closing of the valves between the atria and the ventricles as the ventricles relax. Together the two create a "lub-dub" sound.

6.4 PULSE

Blood in the systemic circulation is under high pressure when it leaves the heart. Waves of pressure spread along all the arteries each time the heart contracts. These waves of pressure along the arteries are called the pulse. The pulse depends on the rate of the heart beat and on the volume of blood that the heart pumps out with each contraction. The pause between pulses occurs when the ventricles relax. You can feel the pulse at these different points on the body.



6.5 BLOOD PRESSURE

Blood pressure is the force of the heart's contractions. The systolic pressure is the pressure in the arteries when the ventricles contract and pump blood out of the heart. The pressure is at its peak force. The diastolic pressure is the pressure in the arteries when the ventricles relax. The pressure is at its lowest point. Normal blood pressure is 120 systolic and 80 diastolic, or 120/80.

Very high and very low blood pressure are both signs of disease. Several factors affect blood pressure. These factors act together. Each influences the other.

Heart Rate

If the heart beats very fast, the heart muscles cannot work effectively. The blood pressure drops.

Volume of Blood

The blood pressure drops when the volume of blood in the body decreases. The blood pressure rises when the volume of blood increases.

Volume of the Circulatory System

If the blood vessels swell, or dilate, the space in the vessels increases. The blood pressure drops. If the blood vessels narrow, or constrict, the space in the vessels decreases. The blood pressure rises.

Salt

Salt increases the body's need for water. Increased intake of water increases the volume of blood in the body. The blood pressure rises.

REVIEW QUESTIONS

Circulatory System

1. Name the two structures of the circulatory system.

2. TRUE(T) or FALSE(F)

___ The heart is a pump.

___ The heart is located between the lungs and behind the breast bone.

___ The lower chambers of the heart are called the atria.

___ Capillaries connect arteries and veins.

___ The pressure inside the capillaries is very high.

___ Blood spurts out when a vein is cut.

3. Name the three kinds of blood vessels.

4. Match the definitions in Column A with the terms in column B. Write the letter of your answer in the space provided. You may use the terms more than once.

A

B

___ Blood vessel that returns blood to the heart

a. Artery

___ Blood vessel that takes blood away from the heart

b. Vein

___ Blood vessel that connects arteries to veins

c. Capillary

___ Blood vessel that carries the blood to pick up waste products

___ Blood vessel felt when taking the pulse

5. What is edema?

6. List two causes of edema.

7. Describe the flow of blood from the left side of the heart to the right side of the heart.

8. Describe the flow of blood from the right side of the heart to the left side of the heart.

9. What causes the heart sounds?

10. What is the pulse?

11. The pulse depends on the _____ of the heart beat and on the _____ of blood that the heart pumps.

12. Name at least three areas where you can feel the pulse.

13. The blood pressure is the force of the heart's contractions. It is usually measured in the arteries. Answer these questions about the blood pressure.
 - a. What is the systolic pressure?

b. What is the diastolic pressure?

c. Normal blood pressure is 120/80.

Which number is the systolic pressure? _____

Which number is the diastolic pressure? _____

14. Name four factors that affect the blood pressure.

Unit 7

Digestive System

STUDENT GUIDE

OBJECTIVES

1. Describe the structure and functions of the digestive system.
2. Identify and locate the structures of the digestive system.
3. Identify and locate the boundaries and areas of the abdomen using these terms:

Upper right and left quadrant

Lower right and left quadrant

Epigastric area

Umbilical area

Suprapubic area

LEARNING ACTIVITIES

1. Read the Student Text on the digestive system and answer the review questions.
2. Take part in a discussion of the digestive system.
3. Observe the instructor locate the structures of the digestive system and the areas of the abdomen on a torso model and on a student.
4. Practice identifying and locating the structures of the digestive system and the areas of the abdomen.
5. Take part in a discussion of the review questions for Unit 7.

7.1 FUNCTIONS OF THE DIGESTIVE SYSTEM

The digestive system has three main functions.

Digestion

The cells of the body need food to live and grow. But the cells cannot use the food until it is broken down into substances called nutrients. The breaking down of food is called digestion. The digestive system changes food into substances the cells can use.

Absorption

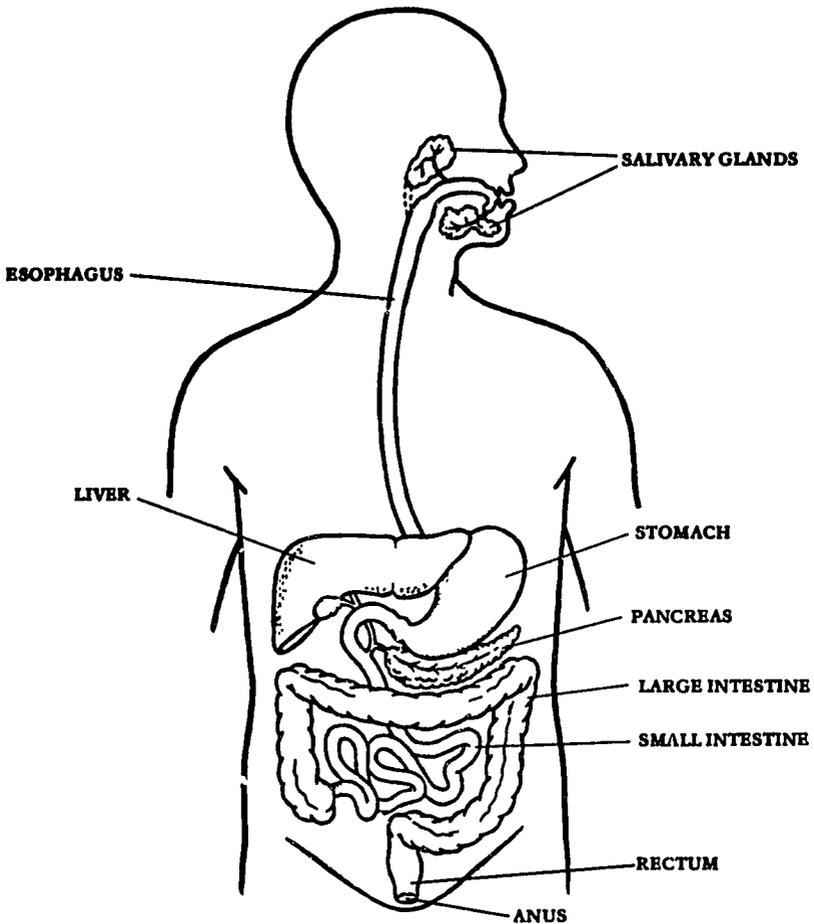
The digestive system moves digested food from the digestive tract to the blood. This is called absorption.

Elimination

The digestive system rids the body of undigested food. This is called elimination.

7.2 STRUCTURE OF THE DIGESTIVE SYSTEM

The digestive system consists of a long tube that begins at the mouth and ends at the anus. This tube is the digestive tract. The digestive system also includes the organs that help the digestive tract work.



Mouth

The digestive system begins at the mouth. In the mouth, food is broken down into smaller pieces and mixed with fluids. The teeth cut, tear, and grind the food. The bones of the jaw and the muscles of the mouth help chew the food and break it down. The tongue moves the food during chewing and aids in swallowing.

Three pairs of salivary glands secrete fluid called saliva into the mouth. Saliva moistens and softens the food. The salivary glands also produce chemical substances that begin digestion by changing foods into simpler forms.

Stomach

After the food has been chewed and moistened with saliva, it is swallowed. Food moves from the back of the mouth to the stomach through the esophagus. A ring of muscles at the lower end of the esophagus prevents the food from passing back up again.

The stomach is a large, pear-shaped sac with strong, muscular walls. The stomach churns and mixes food. The lining of the stomach secretes a strong acid and other chemical substances that help digest food. The acid is strong enough to burn the stomach tissue. This usually does not happen. Mucous membranes protect the stomach lining. Sometimes, however, the stomach secretes more acid than usual. The acid burns through the protective mucus and damages the stomach lining.

Small Intestine

After the food has been mixed and broken down in the stomach, it is a thick liquid. Contractions of the stomach push the liquid through a muscular opening in the lower part of the stomach and into the small intestine. The small intestine is a long, thin tube that connects the stomach with the large intestine. Most of the digestion and absorption of food takes place in the small intestine.

Like the lining of the stomach, the lining of the small intestine secretes chemical substances that aid in digestion. Digestive fluids from the pancreas and the liver are added in the small intestine. The muscles of the small intestine mix the food with the fluids and move the contents down the intestine. The lining of the small intestine absorbs water and nutrients into the blood.

Liver

Nutrients absorbed into the blood are carried to the liver. The liver changes the nutrients into the chemical substances that the body cells need to live and grow. The liver also removes harmful waste products from the blood. When the liver is diseased, the body cells do not get the nutrients that they need. Harmful waste products remain in the blood and affect the entire body.

Large Intestine

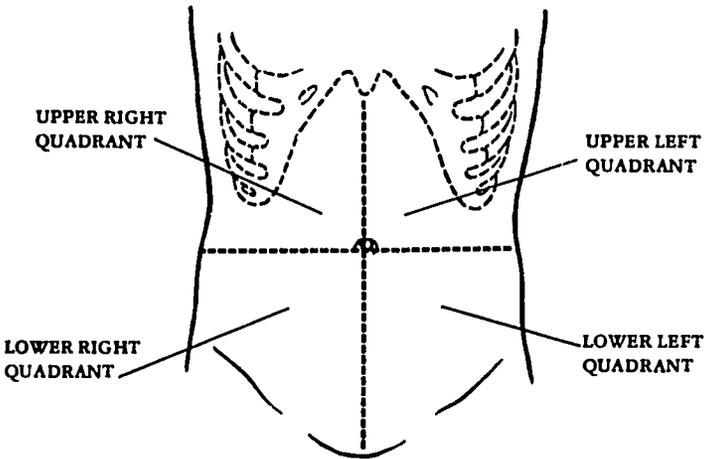
Food which cannot be digested or absorbed passes from the small intestine to the large intestine. The large intestine is a long tube

that extends from the small intestine to the rectum. The large intestine collects the waste products and moves them toward the anus to be eliminated from the body. The waste products that are eliminated from the body through the anus are called stool.

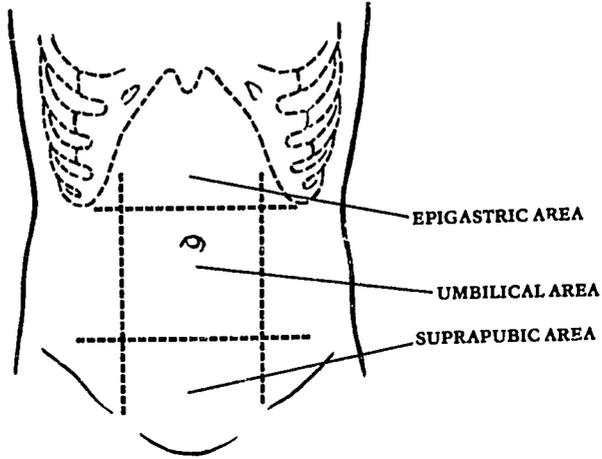
The stomach and intestines normally secrete several liters of fluid each day. Most of this fluid is reabsorbed into the blood by the large intestine. Stool therefore normally contains very little water. Irritated or inflamed intestines, however, move their contents rapidly through the body. The body does not have time to reabsorb the fluid from the stool. The person passes loose, watery stool. This is called diarrhea. When the stool remains in the rectum for too long, it becomes dry and hard. Passing dry, hard stool is difficult. Difficulty passing stool is called constipation.

7.3 STRUCTURE OF THE ABDOMEN

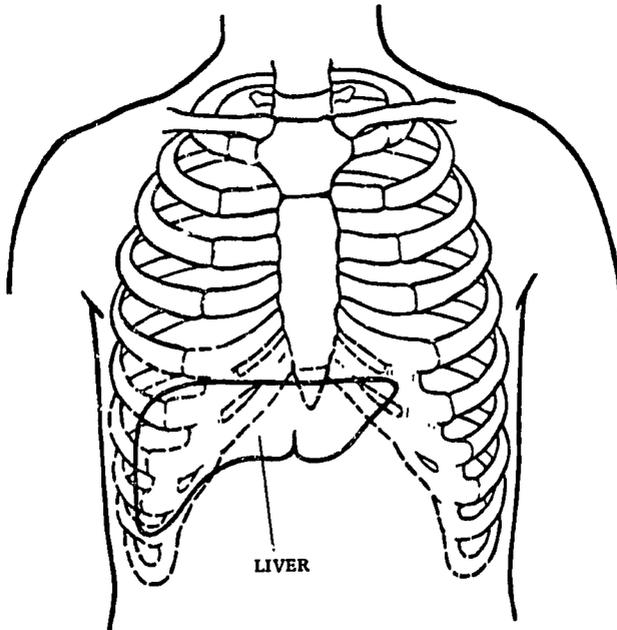
Most of the organs of the digestive system are located in the abdomen. The abdomen extends from the diaphragm to the pelvic bones. The abdomen can be divided into four areas, called quadrants, by drawing two imaginary lines that cross at the navel. The areas are the right and left upper quadrants and the right and left lower quadrants.



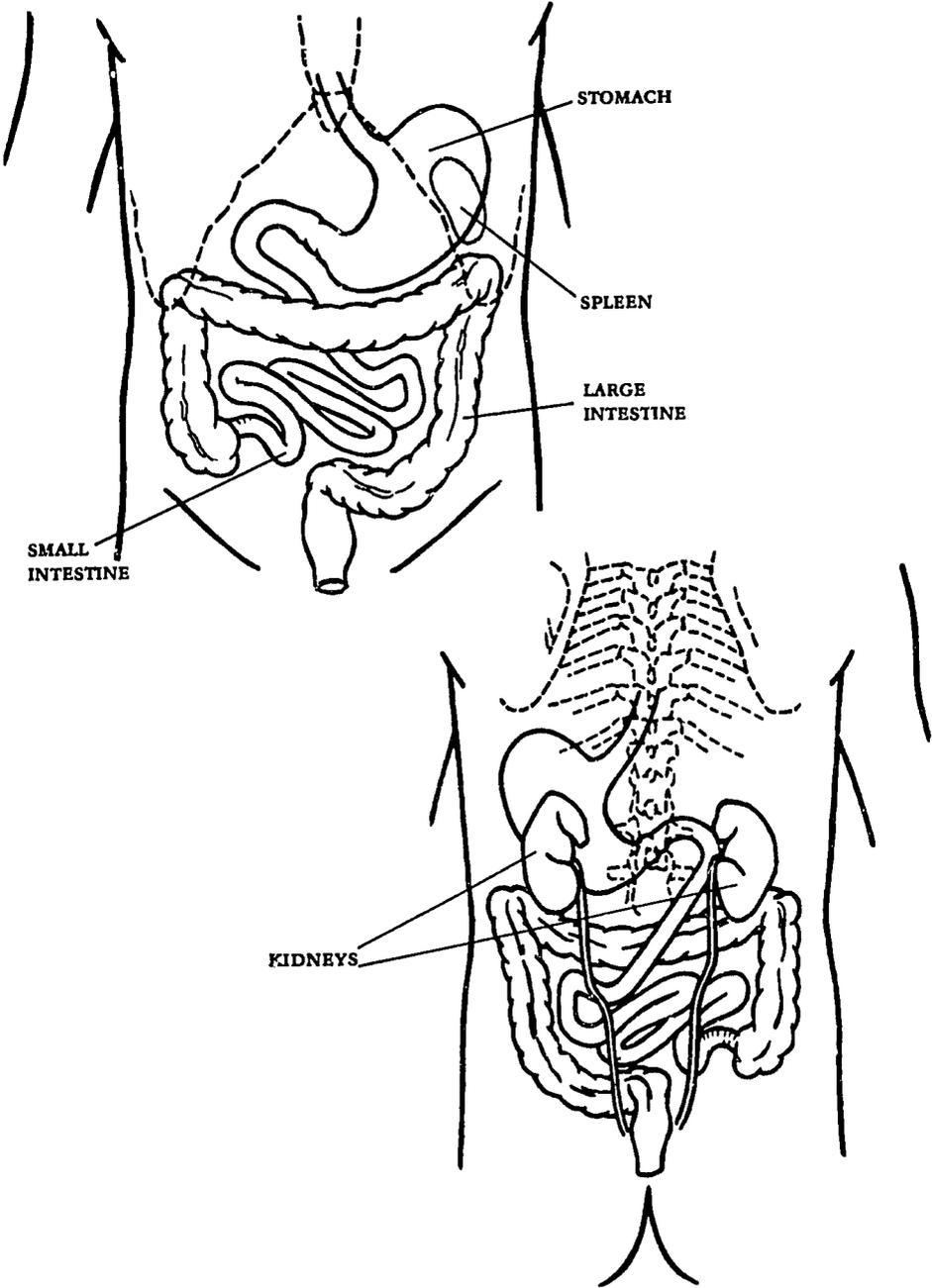
Other terms are also used to describe parts of the abdomen. The epigastric area is below the sternum in the middle of the abdomen. Below the epigastric area is the area around the navel, the umbilical area. The area below the umbilical area and above the pubic bones is the suprapubic area.



The liver lies behind the lower ribs on the right side. The upper edge of the liver is in the space between the sixth and seventh ribs. The lower edge is at the lower end of the ribs. The liver extends slightly beyond the lowest part of the breast bone in the epigastric area.



The stomach is located under the left ribs. The large intestine runs up the right side of the abdomen and then across to the left and down to the rectum. The spleen is behind the stomach under the left ribs. The kidneys are located in the back part of the abdomen next to the ribs.

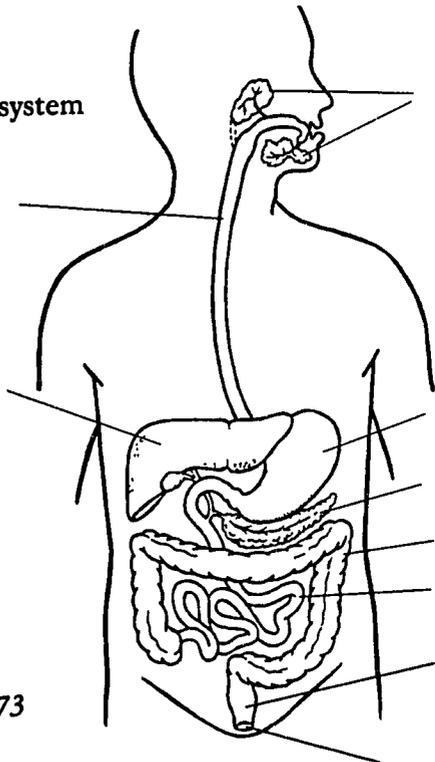


REVIEW QUESTIONS

Digestive System

1. Name the three main functions of the digestive system.
2. The breaking down of food is called _____.
3. Moving digested food from the digestive tract to the blood is called _____.
4. Ridding the body of undigested food is called _____.
5. What is the digestive tract?

6. Label the parts of the digestive system on the diagram.



7. Briefly describe the functions of these structures or organs in the digestive system.

a. Mouth:

b. Stomach:

c. Small intestine:

d. Liver:

e. Large intestine:

8. TRUE (T) or FALSE (F)

___ The abdomen extends from the diaphragm to the pelvic bones.

___ The abdomen can be divided into three areas called quadrants.

___ The epigastric area is just above the pubic bone.

___ The area around the navel is called the umbilical area.

___ The liver is located in the lower part of the abdomen.

Unit 8
Urinary System

STUDENT GUIDE

OBJECTIVES

1. Describe the structure and functions of the urinary system.
2. Identify and locate the parts of the urinary system.

LEARNING ACTIVITIES

1. Read the Student Text on the urinary system and answer the review questions.
2. Take part in a discussion of the urinary system.
3. Locate the parts of the urinary system on another student.
4. Take part in a discussion of the review questions for Unit 8.

8.1 FUNCTIONS OF THE URINARY SYSTEM

The cells of the body need oxygen and food to live and grow. As the cells use oxygen and food, they release many harmful waste products into the blood. The lungs remove one of these waste products, carbon dioxide. The urinary system removes other waste products that are released into the blood by the cells of the body.

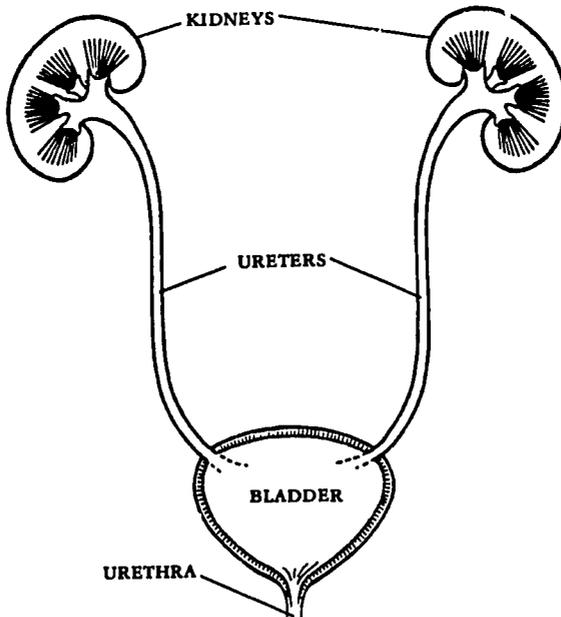
The urinary system also regulates the amount of water and minerals that are carried in the blood. The urinary system can rid the body of excess water or minerals from the blood. Or, it can keep the body from losing needed water and minerals.

8.2 STRUCTURE OF THE URINARY SYSTEM

The urinary system includes the kidneys, the ureters, the bladder, and the urethra. The kidneys are two fist-sized organs located on either side of the spine behind the abdomen. The kidneys produce urine. The other structures in the urinary system transport and store urine.

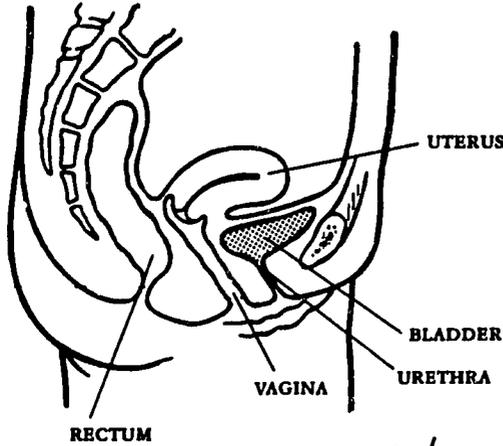
8.3 PRODUCTION AND TRANSPORT OF URINE

The kidneys contain thousands of tiny blood vessels, or capillaries. All of the fluid in the blood passes through the capillaries of the kidneys and collects in small sacs. Connected to each sac is a tiny kidney tube, or tubule. Most of the important minerals and water pass through the tubules into the veins of the kidneys and back to the heart. But harmful waste products from the blood remain in the kidney tubules. In this way, a large volume of blood is cleaned of waste products and poisons.

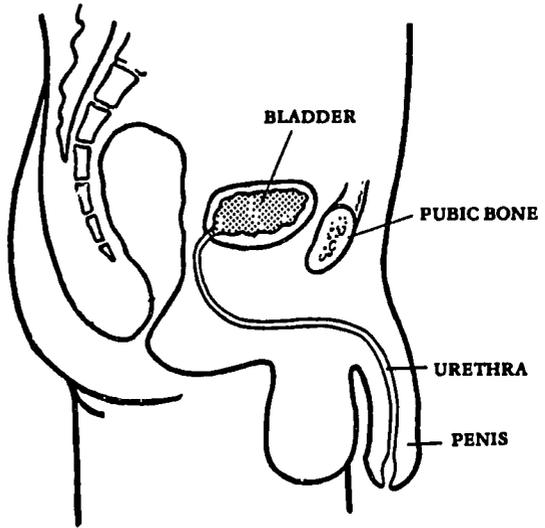


Just before leaving the kidney, all of the kidney tubules join and empty their waste minerals. This fluid, called urine, passes through narrow tubes, or ureters, into the bladder. The bladder is a sac with thick, muscular walls. Urine made in the kidneys flows down the ureters and

gradually fills up the bladder. When the walls of the bladder are stretched by the urine, the nerves in the bladder wall send a signal to the brain. Then the person empties his bladder through a tube-like structure, the urethra, which leads to the outside of the body.



FEMALE

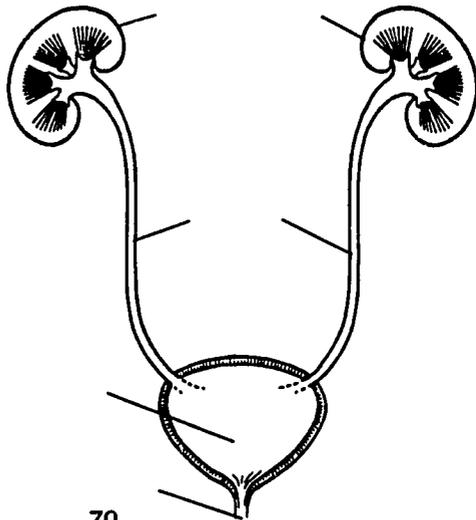


MALE

REVIEW QUESTIONS

Urinary System

1. Name the two functions of the urinary system.
2. Name the four parts of the urinary system.
3. The kidneys produce urine. The other structures in the urinary system _____ and _____ urine.
4. The fluid and waste material that is made in the kidneys is called _____.
5. Describe the production and transport of urine.
6. Label the diagram of the urinary system.



7. TRUE(T) or FALSE(F)

- ___ As the cells use oxygen and food, they release many harmful waste products into the blood
- ___ The urinary system removes waste products from the blood
- ___ The bladder produces urine
- ___ The kidneys clean the blood of waste products and poisons
- ___ The bladder is a sac to store urine

Unit 9
Reproductive System

STUDENT GUIDE

OBJECTIVES

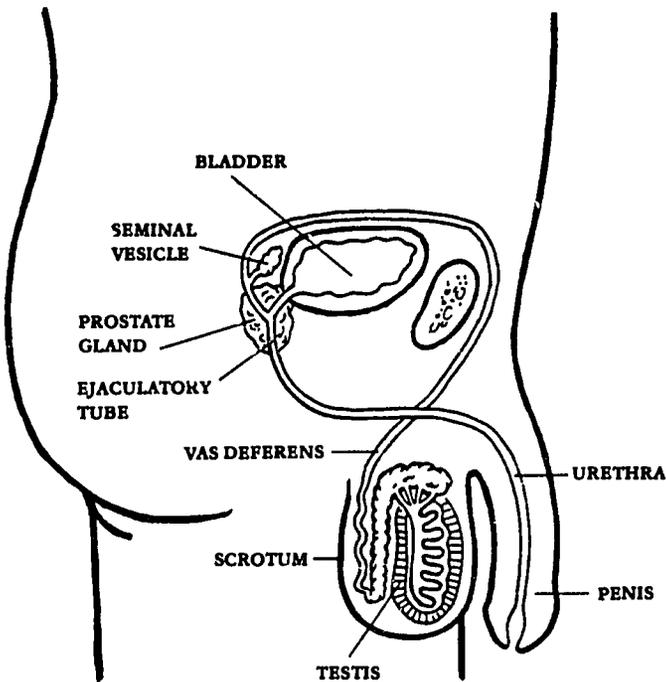
1. Describe the structure and functions of the male reproductive system.
2. Describe the structure and functions of the female reproductive system and the breasts.
3. Identify and locate the structures of the male reproductive system.
4. Identify and locate the structures of the female reproductive system.

LEARNING ACTIVITIES

1. Read the Student Text on the male and female reproductive systems and answer the review questions.
2. Take part in discussions of the male and female reproductive systems.
3. Identify and locate the structures of the male and female reproductive systems on a diagram and on a torso model.
4. Take part in a discussion of the review questions for Unit 9.

9.1 STRUCTURE OF THE MALE REPRODUCTIVE SYSTEM

The male reproductive system includes the testes, vas deferens, seminal vesicles, prostate gland, ejaculatory tube, urethra, and penis.



The testes are two oval structures that produce the male reproductive cells called sperm. The testes lie in a sac of skin called the scrotum. The scrotum hangs behind and below the penis in the groin.

A coiled tube called the vas deferens runs up from the testes and into the pelvis. The vas deferens enters the abdomen as part of the spermatic cord, which also includes blood vessels, lymph tubes, and nerves. The vas deferens passes over the bladder to enter the prostate gland.

The two seminal vesicles lie near the prostate gland and the bladder. Inside the prostate gland, the tube from the seminal vesicles joins the vas deferens to form the ejaculatory tube. The ejaculatory tube joins the urethra just below the bladder. In the male the urethra is part of both the urinary system and the reproductive system. The urethra opens at the tip of the penis.

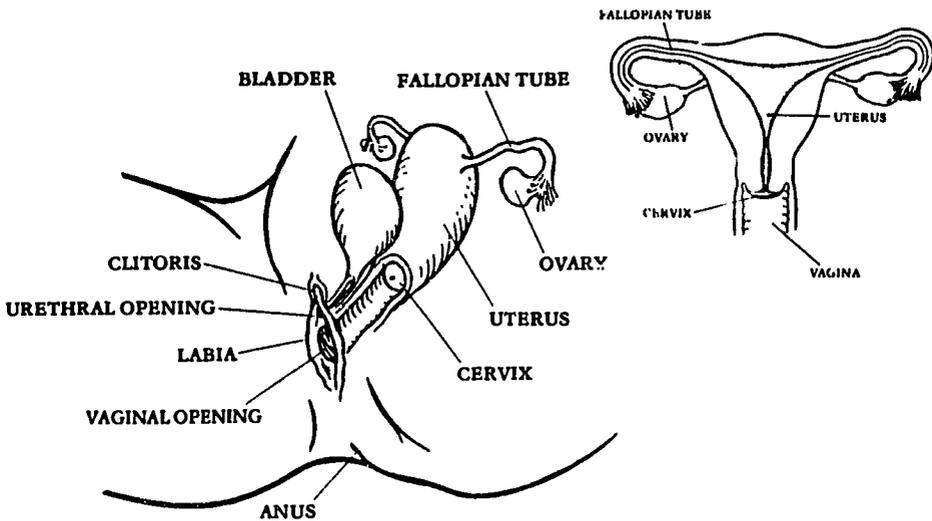
The penis is a long shaft of spongy tissue through which the urethra runs. The shaft of the penis contains many blood vessels. A piece of skin called the foreskin covers the end of the penis. The foreskin is often removed by circumcision.

9.2 FUNCTIONS OF THE MALE REPRODUCTIVE SYSTEM

An adult male produces millions of sperm cells in small tubes in the testes. The sperm are stored in these tubes. When a male becomes sexually excited, the blood vessels in his reproductive organs swell. More blood enters the tissues of the penis. The penis enlarges and hardens. Sperm pass through the vas deferens and into the ejaculatory tube. Mucus from the seminal vesicles and milky fluid from the prostate gland mix with the sperm. This combination of mucus, milky fluid, and sperm is semen. When the man ejaculates, the semen is suddenly released from the penis through the urethra.

9.3 STRUCTURE OF THE FEMALE REPRODUCTIVE SYSTEM

The female reproductive system includes the vagina, uterus, fallopian tubes, and ovaries.



The vagina is a tube that lies between the urethra and the rectum. A man inserts his penis into a woman's vagina during sexual intercourse. The vagina also forms part of the birth canal. The walls of the vagina are lined with mucous membranes. These membranes are normally pink and moist. The vagina produces increased amounts of mucus when a woman becomes sexually excited.

Folds of skin, called labia, surround the vaginal opening. At the front of the vagina is a small organ called the clitoris. Like the penis, the clitoris is made of spongy tissue that fills with blood when a woman becomes sexually excited.

The uterus is located in the pelvis above and behind the bladder. The uterus lies just above the vagina. The cervix is the lower end of the uterus that opens into the vagina. Normally the uterus is about the size

of a woman's fist. The uterus is lined with mucous membranes that change according to the menstrual cycle. Strong muscles allow the uterus to expand during pregnancy and to contract during delivery.

One fallopian tube extends from each side of the uterus out toward the ovaries. The two ovaries are located in the pelvis on either side of the uterus. The ovaries produce the female reproductive cells called ova, or egg cells. Egg cells released from the ovaries are picked up by the fallopian tubes.

9.4 FUNCTIONS OF THE FEMALE REPRODUCTIVE SYSTEM

Tiny egg cells, or ova, are produced in and released from the ovaries. The two ovaries alternate in releasing an ovum about once a month. Long finger-like projections at the ends of the fallopian tubes pull the ovum into the fallopian tube. The ovum then moves down the tube to the uterus.

Sperm, which have been released into the vagina during sexual intercourse, swim up the uterus and into the fallopian tubes. The joining of an ovum and a sperm cell in the fallopian tube is called fertilization. A fertilized ovum continues down the fallopian tube to the uterus and attaches to the uterine wall. The uterus supports the fertilized ovum for approximately nine months as it grows and develops into a fetus. The developing fetus receives nutrients through an organ called the placenta. The placenta forms from the lining of the uterus and part of the developing ovum.

The uterus builds up its lining each month to receive a fertilized ovum. If fertilization does not occur, the uterus sheds its lining. Bleeding from the vagina lasts for three to five days. This monthly bleeding is called menstruation.

Menstruation usually starts fourteen days after ovulation, which is the release of an ovum from an ovary. The period from the start of menstruation in one month until the start of menstruation the next month is called the menstrual cycle. The menstrual cycle averages about twenty-eight days, but can vary from about twenty-five to thirty-one days. As long as a woman menstruates, she can become pregnant.

9.5 HORMONES OF THE REPRODUCTIVE SYSTEM

Testosterone is the main hormone of the male reproductive system. Estrogen and progesterone are the main hormones of the female reproductive system.

Testosterone

The testes produce testosterone. Testosterone is responsible for the production and development of sperm. Testosterone is also responsible for the development of male sex characteristics.

When a boy reaches the age of ten to fifteen, his testes begin to produce increased amounts of testosterone. His reproductive system starts to function and his body begins to change. This period of development is called puberty. During puberty a boy's body begins to grow rapidly. Hair develops on his face, under his arms, and around his penis. His testes grow and begin to produce sperm.

Estrogen and Progesterone

The ovaries produce estrogen. Estrogen controls the development of an ovum each month and the changes that occur during the menstrual cycle. Estrogen is also responsible for the development of female sex characteristics.

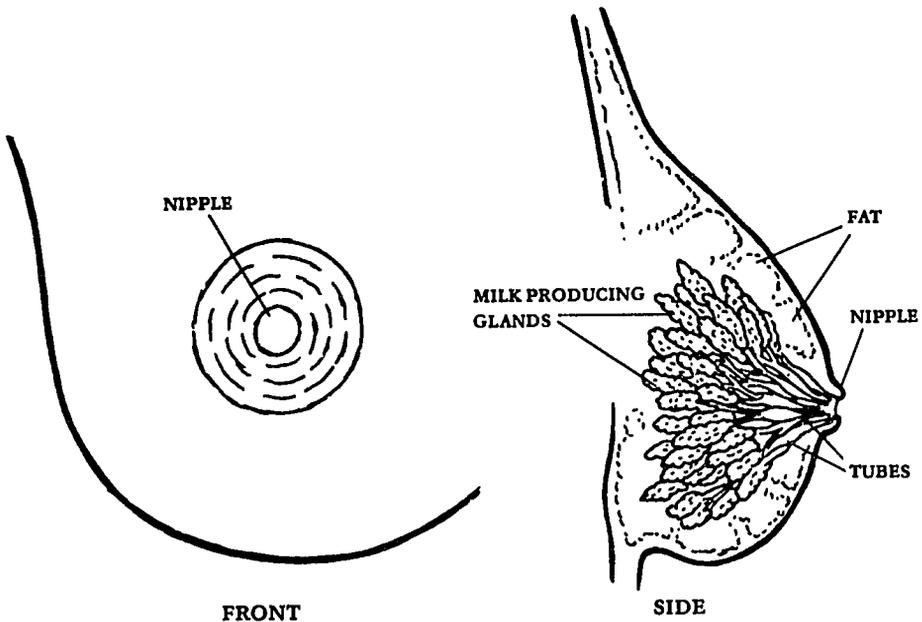
Progesterone is produced by the ovaries and by the placenta. Progesterone helps to maintain pregnancy.

Puberty occurs in the female at about age ten to thirteen when her ovaries begin to produce increased amounts of estrogen and progesterone. Egg cells begin to mature in the ovaries, and menstruation begins. Hair develops on the girl's pubic area and under her arms. Her breasts begin to grow.

Around the age of forty to fifty, a woman's body stops producing estrogen and progesterone. Her menstrual periods stop. The ending of menstrual cycles is called menopause. Some women go through other physical and emotional changes during menopause. Symptoms include headaches, muscle pains, and sudden unpleasant feelings of warmth. After menopause, a woman can no longer become pregnant.

9.6 STRUCTURE AND FUNCTIONS OF THE BREASTS

The female breasts consist of milk-producing glands arranged in sections. Tough fibrous tissue separates the sections. An infection of the breast causes painful swelling and stretching of the tissue. Special tubes carry milk from the glands. The tubes join and open at the nipple. A dark area of skin surrounds the nipple.

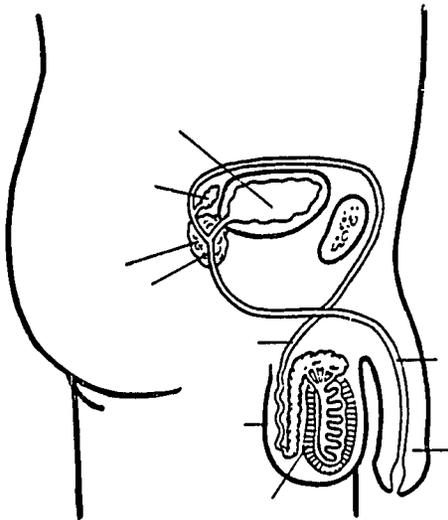


The development of the breasts and the production of milk depend on the action of hormones. Estrogen and progesterone cause the growth and development of the breasts after puberty. Production of these hormones increases during pregnancy. In response, the breasts enlarge. After delivery, another hormone causes the glands in the breasts to produce milk in response to the infant's sucking.

REVIEW QUESTIONS

Reproductive System

1. Label the parts of the male reproductive system on the diagram.

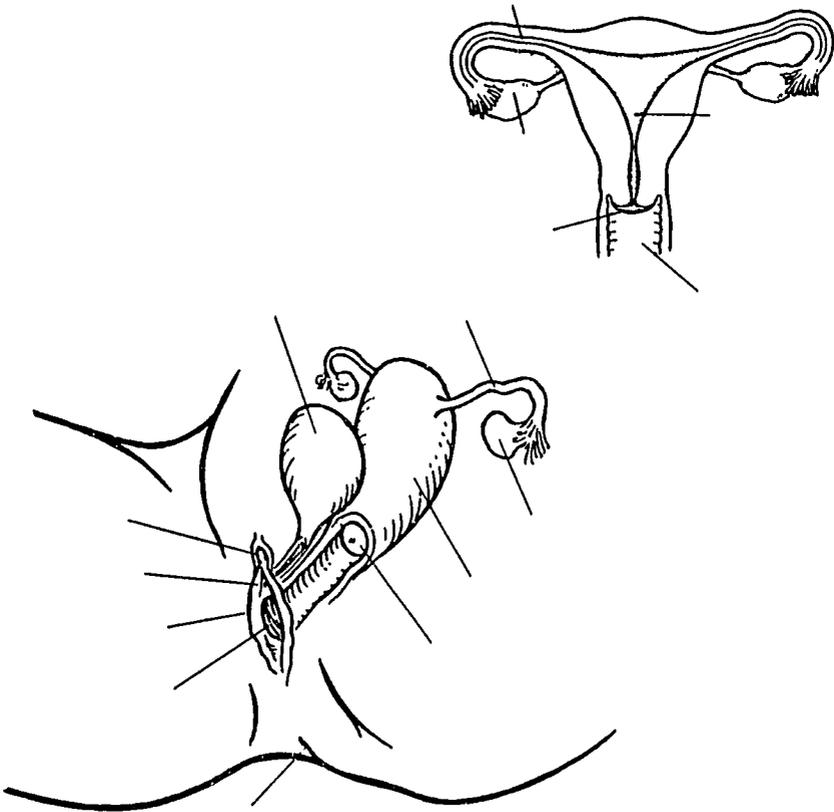


2. Match the terms in column A with the descriptions in column B. Write the letter of your answer in the space provided.

<u>A</u>	<u>B</u>
___ Testes	a. Produces mucus that mixes with milky fluid from the prostate gland and sperm from the testes
___ Scrotum	b. Produce sperm
___ Vas deferens	c. Sac of skin that hangs below and behind the penis
___ Prostate gland	

- ___ Seminal vesicles
 - ___ Ejaculatory tube
 - ___ Urethra
- d. Formed inside the prostate gland by the tube from the seminal vesicles and the vas deferens
 - e. Part of the urinary system and the reproductive system
 - f. Coiled tube that runs up from the testes, into the pelvis, and over the bladder to enter the prostate gland
 - g. Produces a milky substance that is part of semen

3. Label the parts of the female reproductive system on the diagram.



4. The vagina is a tube that lies between the urethra and the rectum. Describe the two functions of the vagina.

5. The folds of skin that surround the vaginal opening are called the _____ .

6. The uterus is located in the pelvis above and behind the bladder. Answer these questions about the uterus.

a. What is the lower end of the uterus called?

b. What is the normal size of the uterus?

c. The uterus is lined with mucous membranes that change according to the _____ .

d. The muscles of the uterus allow the uterus to _____ during pregnancy and to _____ during delivery.

7. TRUE (T) or FALSE (F)

___ Women normally have one fallopian tube.

___ The fallopian tubes produce the female reproductive cells called ova.

___ Ova are produced in and released from the ovaries.

___ The ovaries alternate in releasing an ovum about once a month.

___ The ova are picked up by finger-like projections at the ends of the fallopian tubes.

8. The joining of an ovum and a sperm cell in a fallopian tube is called _____ .

9. Where does a fertilized ovum attach?

10. What happens to the lining of the uterus if fertilization does not occur?

11. **When each month does menstruation usually start?**

12. **What is the menstrual cycle?**

13. _____ is the main hormone of the male reproductive system.

14. _____ and _____ are the main hormones of the female reproductive system.

15. **Where is the hormone of the male reproductive system produced?**

16. **Name two functions of the male reproductive system hormone.**

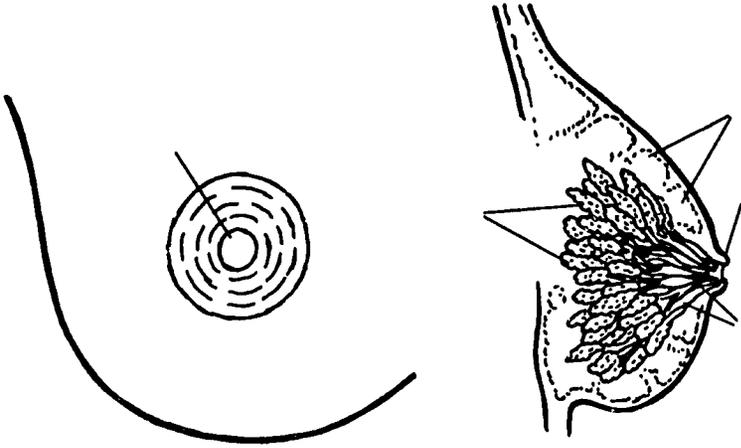
17. **Where are the hormones of the female reproductive system produced?**

18. **Name at least one function of each of the female reproductive system hormones.**

19. **The ending of menstrual cycles is called _____ .**

20. **Name one function of the breasts.**

21. Label the diagram of a breast.



Unit 10
Nervous System

STUDENT GUIDE

OBJECTIVE

Describe the structure and functions of the nervous system.

LEARNING ACTIVITIES

1. Read the Student Text on the nervous system and answer the review questions.
2. Identify and locate the structures of the central nervous system on a model of the human body. Describe the function of each of the structures. Describe the function of the peripheral nervous system.
3. Take part in a discussion of the review questions for Unit 10.

10.1 FUNCTIONS OF THE NERVOUS SYSTEM

The nervous system is the body's main communications system. The nervous system sends messages to and receives messages from all parts of the body. It also coordinates all of the body's activities.

10.2 STRUCTURE OF THE NERVOUS SYSTEM

The nervous system consists of the central nervous system and the peripheral nervous system.

Central Nervous System

The central nervous system includes the brain and the spinal cord. The brain and the spinal cord are made up of nerve tissue. The nerve tissue is made up of nerve cells that send and receive messages.

The brain is a large mass of nerve tissue located inside the skull. The brain is divided into three main parts. One part controls activities such as walking, talking, and writing. The second part maintains balance and body coordination. The third part controls the automatic regulation of the body systems. This part of the brain regulates the heart rate, blood pressure, respiratory rate, and the automatic functions of the digestive system and other body systems.

The spinal cord is a long, narrow structure that extends from the brain to the lower end of the spine. The spinal cord is an extension of the nerves of the brain. The vertebrae of the spine protect the spinal cord. Messages from the brain travel along the spinal cord to the nerves of the body. The spinal cord also carries messages from the body to the brain.

In addition to being protected by the skull and the vertebrae, the brain and spinal cord are covered by a protective membrane. A

fluid produced in the brain provides further protection. The fluid cushions the brain and the spinal cord against injury.

Infection or bleeding can increase the pressure of the fluid on the brain. Increased pressure can damage the brain and cause unconsciousness. In infants, increased pressure can make the fontanelles bulge. Bulging fontanelles are a sign of serious illness in an infant.

Peripheral Nervous System

The peripheral nervous system includes all of the nerves that carry messages to and from the brain and the spinal cord. The two types of nerves are sensory nerves and motor nerves.

Sensory nerves carry messages to the brain from the skin and organs of the body. Sensory nerve endings are located throughout the body. Some respond to pain, some to touch, and some to vibration.

Messages from these nerve endings travel through the sensory nerves along the spinal cord to the brain. If a sensory nerve is cut or damaged, the affected area of the body loses sensation. The messages from the sensory nerve endings cannot reach the brain.

Motor nerves carry messages from the brain to the muscles and organs of the body. Messages from the motor nerves cause the muscles to contract. Motor nerves help maintain the tone of the muscles. Muscle tone maintains posture. If a motor nerve is cut or damaged, messages from the brain cannot reach the muscles. The muscles weaken and lose tone. They can no longer contract. The loss of ability to contract a muscle and the resulting loss of power to move a part of the body is called paralysis.

10.3 SENSORY ORGANS

The eyes, ears, and nose are special sensory organs that have a direct relationship to the nervous system. They help in the overall functioning of the nervous system.

REVIEW QUESTIONS

Nervous System

1. Name the two functions of the nervous system.
2. The nervous system consists of two systems. Name these two systems.
3. The brain and the spinal cord are made up of _____.
4. Nerve tissue is made up of nerve cells. What is the function of nerve cells?
5. The brain is divided into _____ parts. Each part controls different activities within the body. Describe the function of each part of the brain.
6. The spinal cord is a long, narrow structure that extends from the _____ to the end of the _____.
7. What protects the spinal cord?
8. Name two functions of the spinal cord.

9. **What is the function of the fluid that surrounds the brain and the spinal cord?**

10. **What can happen if the fluid that surrounds the brain becomes infected or if there is bleeding into the fluid?**

11. **Name two types of nerves. Give at least one function of each type of nerve.**

12. **Name three sensory organs.**

Unit 11

Eyes

STUDENT GUIDE

OBJECTIVES

1. Describe the structure and functions of the eyes.
2. Identify and locate the structures of the eye.

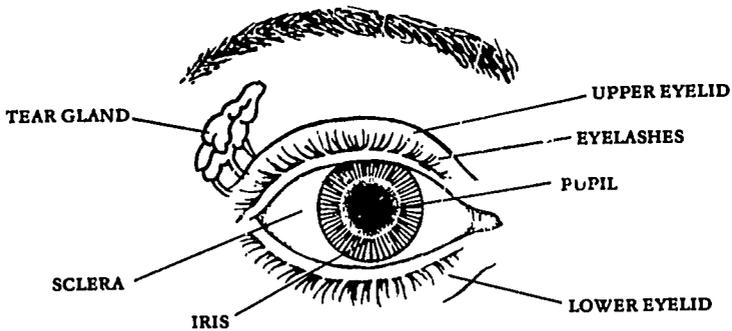
LEARNING ACTIVITIES

1. Read the Student Text on the eyes and answer the review questions.
2. Take part in a discussion of the eyes.
3. Locate the structures of the eye on a diagram, on an eye model, and on another student.
4. Take part in a discussion of the review questions for Unit 11.

11.1 STRUCTURE OF THE EYE

The eyes are the organs of sight. The eyes bring sight messages to the brain.

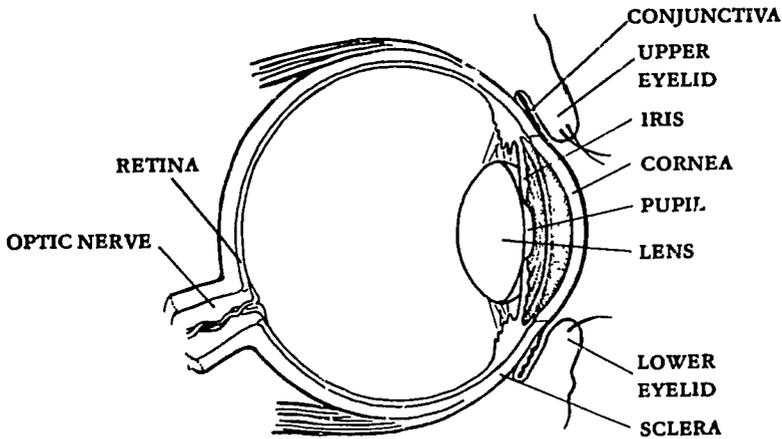
The eye is a round structure located in a bony hollow in the skull. The eyelid is the fleshy covering of the eye. The eyelid protects the eye from injury. Frequent blinking keeps the eye moist. The eyelid is edged with fine hairs called eyelashes. At the roots of the eyelashes are small glands. These glands can become swollen and infected.



Glands above the eyes produce tears. Blinking of the eyelids spreads tears across the eye. Tears keep the eye moist and clean. Irritation or strain of the eye increases blinking and the production of tears, called tearing.

The eyeball has three layers. The outer layer is the sclera. The sclera is a tough, white membrane that surrounds the eyeball. The middle layer contains the blood vessels. The inner layer is the retina. The retina is a dense mass of special nerves that respond to light and allow you to see.

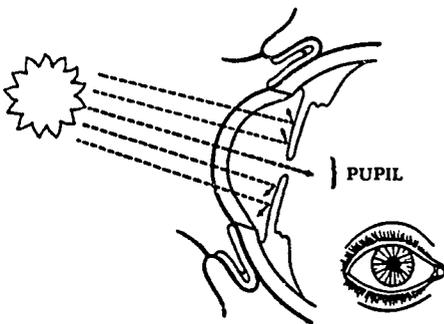
The conjunctiva is a thin mucous membrane layer that lines the eyelid and covers the front of the sclera. Mucus produced by the conjunctiva allows the eyelid to slide smoothly over the eye. The conjunctiva is



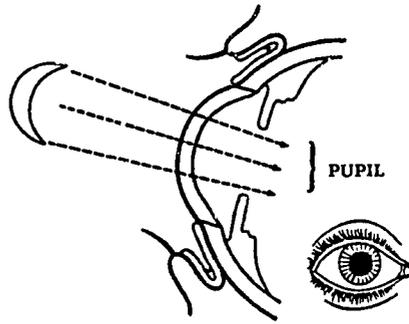
normally pink because it is supplied with blood vessels. Pale conjunctivae is a sign of anemia. Red conjunctivae is a sign of infection or inflammation.

The cornea is the clear tissue that covers the front of the eye. The cornea is not supplied with blood vessels. Therefore, the cornea must be kept moist to remain healthy.

The pupil is the small round opening through which light passes into the eye. By changing size, the pupil controls the amount of light that enters the eye. The pupil becomes very large in darkness. The pupil becomes very small in bright light. The reaction of the pupil to bright light is called the light reflex. Narrowing of the pupils indicates that the nerve pathways to the brain are working. Damage to the brain can affect the light reflex in one or both eyes. Enlarged pupils that do not react to light may be a sign of serious brain damage. Irregularly shaped pupils may be a sign of an eye injury or infection.



SMALL PUPIL IN BRIGHT LIGHT



LARGE PUPIL IN DARKNESS

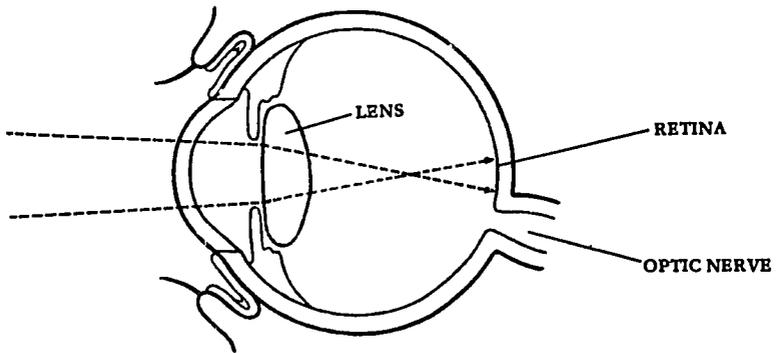
The iris is the colored structure that surrounds the pupil. Contraction and relaxation of the circular muscles of the iris cause the pupils to narrow or to open up.

The lens is a small round piece of clear tissue located behind the iris. The lens adjusts automatically to allow you to see objects at different distances. People must wear glasses when their lenses do not work properly.

The optic nerve extends from the back of the eye to the brain. The optic nerve carries sight messages from the retina to the brain.

11.2 FUNCTIONS OF THE EYE

The eye enables you to see. The eye collects light from objects in the environment. The light passes through the cornea and the pupil to the lens. The lens changes its shape to focus the light. Then the light falls on the retina. Special cells in the retina change the light into sight messages. The messages travel along the optic nerve to the brain. In the brain, the messages become the things that you see. The ability to see is called vision.

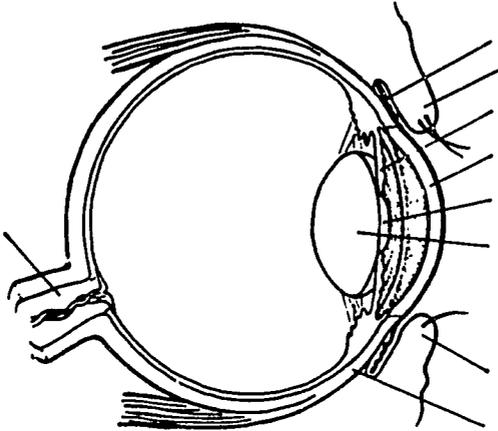


Anything that affects the movement and focusing of light will affect vision. For example, the cornea or lens may be clouded. Then light cannot reach the retina. Or, the retina may be damaged. Then sight messages cannot reach the brain.

REVIEW QUESTIONS

Eyes

1. Label the diagrams of the eye.



2. Name at least one function for each of these parts of the eye.

Eyelid:

Lens:

Tear glands:

Optic nerve:

Retina:

Conjunctiva:

Pupil:

- 3. The eye collects light from objects in the environment. This enables you to see. Chart the structures that light passes through from the environment to the brain.**

Unit 12

Ears, Nose, Sinuses, and Mouth

STUDENT GUIDE

OBJECTIVES

1. Describe the structures and functions of the ears, nose, sinuses, and mouth.
2. Identify and locate the structures of the ears, nose, sinuses, and mouth.

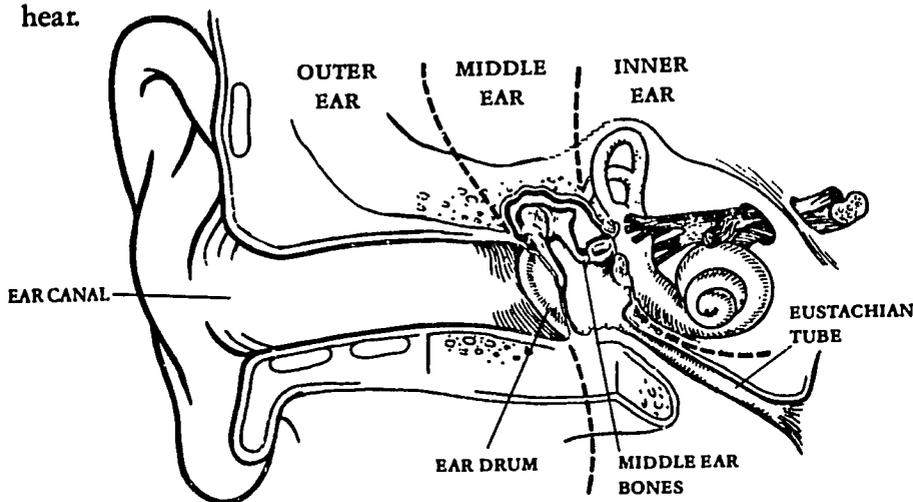
LEARNING ACTIVITIES

1. Read the Student Text and answer the review questions.
2. Take part in a discussion of the ears, nose, sinuses, and mouth.
3. Identify and locate the structures of the ears, nose, sinuses, and mouth on a model of the head.
4. Take part in a discussion of the review questions for Unit 12.

12.1 STRUCTURE AND FUNCTIONS OF THE EARS

The ears receive sound messages and send them to the brain. Sound travels in waves. The ears change sound waves into messages that the brain can understand.

The ear is divided into three parts: the outer ear, the middle ear, and the inner ear. The outer ear helps to collect sound waves and to direct them down through the ear canals. Sound waves are rapid vibrations transmitted by air or bone. The waves strike the eardrum which lies at the end of the ear canal. The vibrations move through three tiny bones attached to the eardrum in the middle ear. The movement of these bones changes into nerve messages in the inner ear. The nerve messages travel through large nerves to the brain. In the brain, the messages become the sounds that you hear.



The walls of the ear canals are lined with tiny glands that produce ear wax. The ear canal is also lined with very fine hairs. The hairs gently flush the ear wax down the canal and out of the ear. This flushing keeps the ears clean.

The middle ear is filled with air. Air enters the middle ear through the eustachian tube, a small air passageway that extends from the

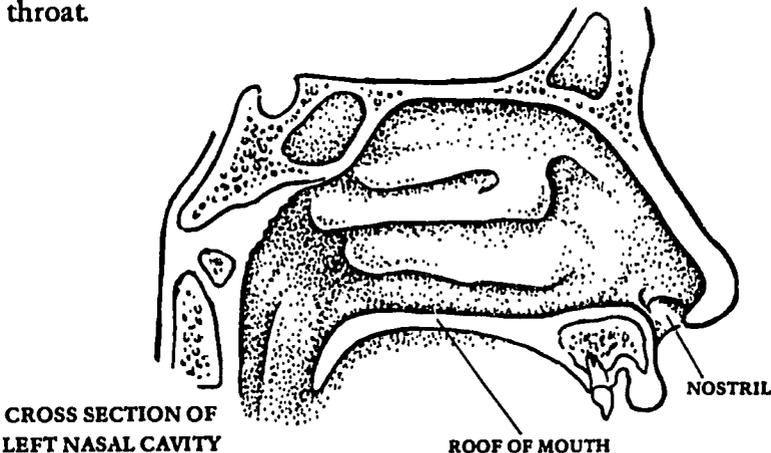
middle ear to the pharynx. The eustachian tube helps keep the pressure in the middle ear equal to the outside pressure. Normally, air passes between the throat and the middle ear through the eustachian tube. But infections can also travel easily from the throat to the middle ear. The mucous membranes that line the eustachian tube can become swollen. Air cannot pass easily through a swollen tube. The increased pressure in the middle ear causes severe pain.

Directly behind each ear lobe is a hollow bone with many air pockets. These are the mastoid bones. The air pockets of the mastoid bones are connected to the middle ear. An infection of the middle ear can spread to the mastoid bones as well.

12.2 STRUCTURE AND FUNCTIONS OF THE NOSE

The nose is the organ of smell. The nose is divided into right and left nostrils by the nasal septum. The septum is made of bones and cartilage. Mucous membranes line the nasal septum and the inside of the nose. The mucous membranes clean, warm, and moisten the air that you breathe. The mucous membrane lining of the nasal septum has a rich blood supply. An injury to the area can cause severe bleeding.

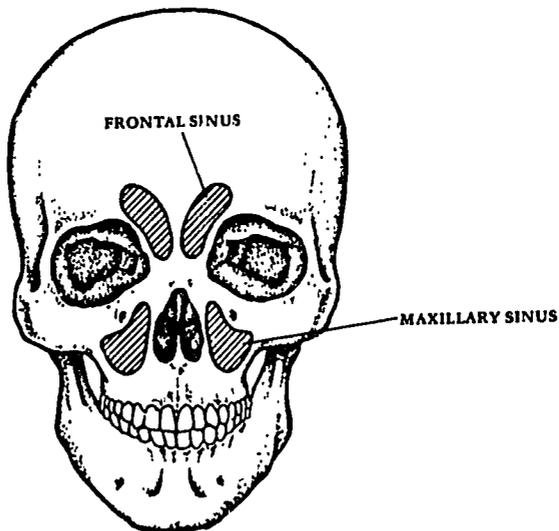
The bony roof of the mouth separates the inside of the nose from the mouth. The inside of the nose leads into the upper part of the throat.



12.3 STRUCTURE AND FUNCTIONS OF THE SINUSES

The sinuses are air pockets in the bones of the face that connect with the inside of the nose. The sinuses lighten the bones of the skull. They also affect the quality of the voice.

The two main sinuses are the frontal and maxillary sinuses. The frontal sinuses are located above the nose between the eyes. The maxillary sinuses are located on either side of the nose.



LOCATION OF SINUSES

Infection can spread quickly from the nose to the sinuses. The sinuses become filled with fluid. Fluid trapped in the sinuses causes severe pain.

12.4 STRUCTURE AND FUNCTIONS OF THE MOUTH

The mouth consists of the lips, cheeks, tongue, salivary glands, and teeth. The hard and soft palates form the roof of the mouth. Mucous membranes line the entire inside surface of the mouth.

Lips

The lips are fleshy structures that surround the mouth. They help bring food into the mouth and hold the food in place. They also shape the mouth for speaking.

Cheeks

The cheeks are flaps of skin on either side of the mouth. The cheek muscles help in eating.

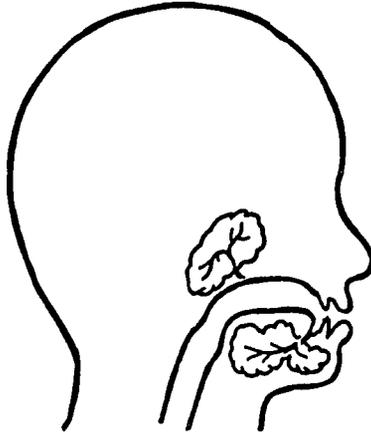
Tongue

The tongue is attached to the base of the mouth. In the mucous membrane lining of the tongue are the nerve endings for taste. The tongue is the organ for taste. The tongue also moves food around the mouth during chewing. It pushes the food into the throat as a first step in swallowing. It helps shape the mouth for speaking as well.

Salivary Glands

There are three pairs of salivary glands. The parotid glands lie below and in front of the ears. The other glands lie below the tongue and on the inner side of the lower jaw.

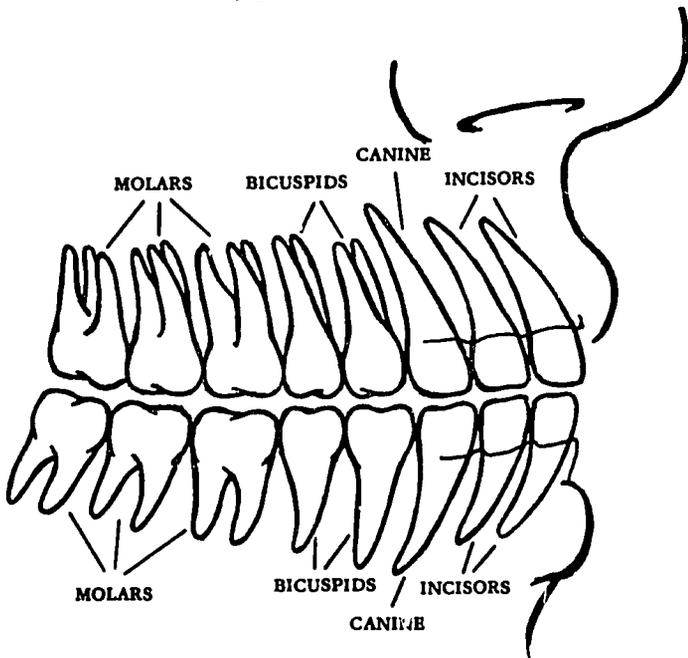
The salivary glands produce fluid called saliva. Saliva moistens and softens food and helps keep the mouth moist. The salivary glands also produce substances that help in digestion.



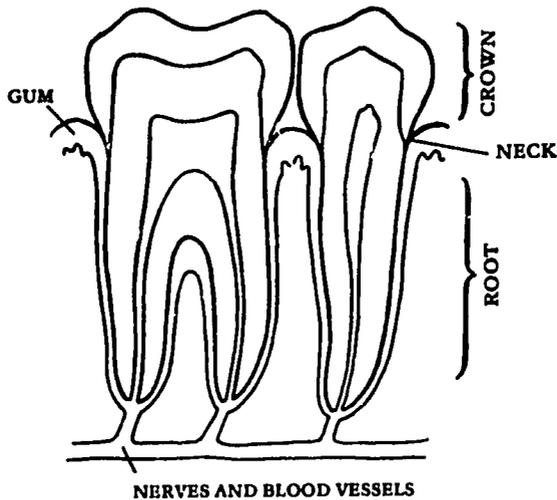
LOCATION OF SALIVARY GLANDS

Teeth

The adult has thirty-two teeth: four incisors, two canines, four bicuspid, and six molars in the lower jaw, and the same number in the upper jaw. Young children have a set of temporary teeth that are replaced by adult teeth as they grow older. The incisor and canine teeth are located in the front of the mouth. They cut and tear food. The bicuspid and molars are located at the sides and back of the mouth. They grind food.



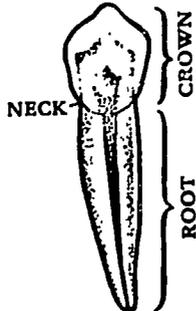
Each tooth has a crown, a neck, and a root. The crown is made of a hard, white substance which is the cutting surface. The neck is covered by the soft, fleshy gums. The root is buried in the bone of the jaw. The root contains nerves and blood vessels.



INCISOR



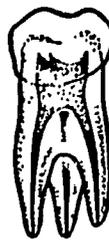
CANINE



BICUSPID



MOLAR



The teeth are held in sockets in the upper and lower jaws. Soft tissue called gums surround the teeth. The gums cushion the teeth and hold them firmly in place. The gums fall away from the teeth when they are diseased or infected. The teeth then loosen and eventually fall out.

REVIEW QUESTIONS

Ears, Nose, Sinuses, and Mouth

1. What is the function of the ears?

2. Name the three parts of the ear.

3. What are sound waves?

4. The ears collect sound waves and send them to the brain so that you can hear. What is the path of the sound waves from the environment to the brain?

5. What is one function of the fine hairs that line the ear canals?

6. The middle ear is filled with_____ .

7. The small air passageway that extends from the middle ear to the pharynx is called the_____. What is the purpose of this small air passageway?

8. Directly behind each ear lobe is a hollow bone with many air pockets. What are these bones called?

9. What are the two functions of the nose?

10. The nose is divided into right and left _____ by the _____ .

11. The inside of the nose leads into the _____ .

12. What are the two functions of the sinuses?

13. Name the two main sinuses.

14. Name five structures of the mouth. Name one function of each structure.

15. Give the location of three of the salivary glands.

16. The adult has _____ teeth.

17. Listed below are the different types of teeth. Give the number of each type of tooth in an adult. Give the function of each type.

TYPE OF TOOTH	NUMBER	FUNCTION
---------------	--------	----------

Incisor

Canine

Bicuspid

Molar

18. Name the parts of the tooth.

19. What is the function of the gums?

Unit 13

Skin

STUDENT GUIDE

OBJECTIVES

1. Describe the structure and functions of the skin.
2. Identify and locate the structures of the skin.
3. Explain how skin is replaced.
4. Describe subcutaneous tissue.

LEARNING ACTIVITIES

1. Read the Student Text on the skin and answer the review questions.
2. Take part in a discussion on the skin.
3. Identify and locate the structures of the skin on a wall chart.
4. Take part in a discussion of the review questions for Unit 13.

13.1 STRUCTURE OF THE SKIN

The skin covers the entire outer surface of the body. The skin is made up of two layers, the epidermis and the dermis.

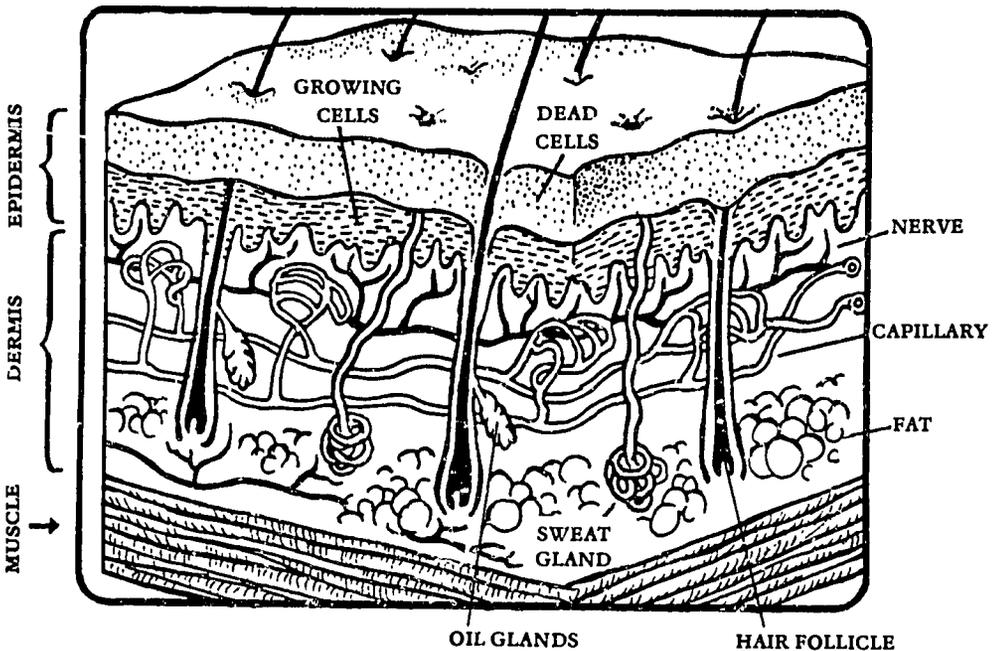
Epidermis

The epidermis is the thin, outer layer of the skin. The epidermis is mainly made of dead cells that flake off and are gradually replaced.

The nails of the fingers and toes develop from the epidermis. The nail beds are normally a pinkish color because they lie above a large number of small blood vessels.

Dermis

The dermis is the thick inner layer of the skin. As the cells from the dermis die, they slowly move up into the epidermis. The dermis is therefore continually supplying cells to the epidermis.



The dermis contains all of the blood vessels and nerves of the skin as well as the parts of the hairs and the glands that also make up the skin.

a. Hair

Hair grows from small structures in the dermis called hair follicles. Disease agents which cannot pass through the skin sometimes lodge in the hair follicles. Skin infections can start this way.

b. Oil glands

Oil glands are attached to the hair follicles. Oil glands help keep the skin soft and moist. Oil glands sometimes cause skin problems during adolescence. The openings of the glands become blocked. Red lumps develop on the skin of the face and upper body. Oil glands may also become infected.

c. Sweat glands

Opening onto the surface of the skin are tiny tubes that are attached to sweat glands. The sweat glands help regulate the temperature of the body. The sweat glands secrete a fluid, called sweat, which is mostly water and salt.

d. Blood vessels

Thousands of tiny blood vessels called capillaries are also found in the dermis of the skin. Capillaries bring nutrients to the skin and help regulate body temperature.

e. Nerves

The skin contains nerves that carry messages about the environment to the spinal cord and the brain. Different nerve endings respond to temperature, touch, pressure, pain, and changes in position.

13.2 FUNCTIONS OF THE SKIN

The skin has four main functions.

Protection

The skin covers the body and protects it from injury and infection. The oil produced by the oil glands keeps the skin soft and water proof. Most fluids are unable to pass through the skin. Too little oil dries the skin. Dry, flaky skin becomes infected easily. Too much oil may block the hair follicles and also increase the risk of infection.

Response to Sensation

Nerve endings in the skin are sensitive to temperature, touch, pressure, pain, and changes in position. When the nerves in the skin are destroyed, a person cannot feel heat, cold, or pain. He can injure himself easily.

Regulation of Body Temperature

The thousands of capillaries in the skin help regulate the temperature of the body. When the body temperature rises, the capillaries enlarge. Blood flow to the skin increases, and excess heat is given off. The skin becomes red and feels warm. The capillaries narrow when the body temperature drops. Blood flow to the skin is reduced, and body heat is conserved. The skin becomes pale and feels cold.

When the body temperature rises, the sweat glands also produce more sweat. Sweating uses up excess heat and helps cool the body.

Excretion

Sweating also helps rid the body of waste products. Sweat contains salt and other substances that remain on the skin when the water dries.

13.3 SKIN REPLACEMENT

The dead cells on the surface of the skin continually flake off and are replaced by new cells that are pushed up from below. Normally, only a few cells flake off at any one time. When the skin is injured, however, the skin surface loses a thick layer of cells. Still, the skin usually heals itself quickly because of the rapid replacement of cells. But a very severe injury destroys more cells. Healing is slow because new cells must grow in from the edges of the wound. Strong, hard tissue called scar tissue forms around the wound.

13.4 SUBCUTANEOUS TISSUE

Subcutaneous tissue is a layer of tissue under the dermis. "Sub" means "below," and "cutaneous" means "skin." "Subcutaneous" means "below the skin." Subcutaneous tissue is made up of loose tissue that connects the skin to structures that lie below it. Subcutaneous tissue contains fat tissue. Subcutaneous tissue insulates, protects, and cushions the body. You will learn to give patients injections of certain drugs into the subcutaneous tissue.

REVIEW QUESTIONS

Skin

1. The skin is made up of two layers. Name these two layers. Name at least one structure contained in each layer.
2. Name one function of each of the following structures
Oil glands:

Sweat glands:

Blood vessels:

Nerves:
3. Name the four main functions of the skin.
4. Define subcutaneous.
5. How is skin replaced?

Unit 14

Hormone System

STUDENT GUIDE

OBJECTIVES

1. Describe the functions of the hormone system.
2. Identify and locate the organs where these hormones are produced and describe the functions of the hormones:

Thyroid hormone

Insulin

Estrogen and progesterone

Testosterone

LEARNING ACTIVITIES

1. Read the Student Text on the hormone system and answer the review questions.
2. Take part in a discussion of the hormone system.
3. Identify and locate on a torso model the organs that produce the hormones discussed in Unit 14. Describe the function of each of the hormones.
4. Take part in a discussion of the review questions for Unit 14.

14.1 FUNCTIONS OF THE HORMONE SYSTEM

Each of the cells, tissues, and organs in the body has a specific function. The body is organized so that each part communicates with the others. The body uses the nervous system as one means of communication. Another means of communication is the hormone system.

Hormones are chemical substances produced by the hormone glands. One part of the body uses hormones to send messages to another part. Hormones affect the function of various parts of the body. Hormone glands release hormones directly into the blood. The blood carries the hormones from one part of the body to another part.

Hormones send two kinds of messages. They either stimulate or inhibit activity or growth. Hormones also send messages to other hormone glands. When the amount of hormones in the body increases beyond a certain limit, the gland producing that hormone reduces its production. Levels of different substances in the body also regulate hormone levels. For example, sugar in the blood affects the production of a hormone called insulin.

14.2 THYROID HORMONE

The thyroid gland produces thyroid hormone. The thyroid gland is located in the neck below the larynx. One part of the gland lies on each side of the trachea.

Thyroid hormone regulates the activities of the cells of the body. When the thyroid gland produces the proper amount of thyroid hormone, the cells work properly. The person's skin is warm and moist. He adjusts well to either hot or cold weather. He requires a normal amount of food and sleep.

Increased production of thyroid hormone speeds up the activities of the cells. The person's pulse rate increases. His skin becomes very warm. He suffers from the heat. His hands may shake. He may be very

restless. He may lose weight.

Decreased production of thyroid hormone slows down the activities of the cells. The person feels cold. His skin becomes rough and thick. He often gains weight and moves slowly.

14.3 INSULIN

The pancreas produces a hormone called insulin. The pancreas is located in the abdomen behind the stomach. The pancreas produces digestive fluids that empty into the small intestine. The pancreas is also a hormone gland.

The body cells need insulin to take sugar out of the blood. Without insulin, the body cells cannot use the sugar from food. The cells need sugar for energy. When the pancreas does not produce enough insulin, the level of sugar in the blood quickly rises. The sugar passes into the urine. This condition of decreased production of insulin and increased sugar in the blood is called diabetes.

14.4 ESTROGEN AND PROGESTERONE

Estrogen and progesterone are two hormones produced by the female reproductive system. Estrogen is produced by the ovaries. Estrogen is responsible for the development of female sex characteristics. Estrogen also regulates a woman's menstrual cycle.

Progesterone is produced by the ovaries and also by the placenta. Progesterone helps maintain pregnancy.

14.5 TESTOSTERONE

Testosterone is a hormone produced by the male reproductive system. The testes produce testosterone. Testosterone is responsible for the development of male sex characteristics. Testosterone is also responsible for the production and development of sperm.

REVIEW QUESTIONS

Hormone System

- 1. Describe the function of the hormone system.**
- 2. Hormones send two kinds of messages. Describe the two types of messages.**
- 3. Where is the thyroid gland located?**
- 4. Name one function of the thyroid gland.**
- 5. What happens to the body when the thyroid gland produces too much thyroid hormone?**
- 6. What happens to the body when the thyroid gland produces too little thyroid hormone?**
- 7. Where is insulin produced?**
- 8. Describe one function of insulin.**

The MEDEX Primary Health Care Series

MEDICAL HISTORY

Student Text

© 1982

Health Manpower Development Staff
John A. Burns School of Medicine
University of Hawaii, Honolulu, Hawaii, U.S.A.

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**SCHEDULE
MEDICAL HISTORY**

DAY 1	DAY 2	DAY 3	DAY 4
Introduction to Medical History module Overview of the medical history	Obtaining the history of the present problem	Using the practice guide for taking an adult medical history	Posttest
	Obtaining the past medical history	Recording an adult medical history	
Interviewing skills Obtaining the patient identification information Obtaining the presenting complaint		Taking and recording an adult medical history	

7

Skill development: one week

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Introduction

You already have studied the Identifying the Preventive Health Needs of the Community and the Anatomy and Physiology modules. What you learned in these modules has prepared you for the study of how to take a medical history. Before you start this module, be sure you know:

- Normal anatomy and physiology
- How to conduct an interview in the community

If you are not sure how well you know this information or can do this procedure, review the modules before you go on.

Activities in this module will help you learn how to properly interview a patient to take a medical history. You will first learn how to interview an adult to take an adult medical history. You will then learn how to interview a child or his parent to take a child medical history. These activities will take place in the classroom and in a hospital clinic or health center.

Your schedule shows you when the learning activities will occur. Student Guides in front of each unit tell you more about what you will be expected to do. The units will be taught in order, from Unit 1 to Unit 4. Your instructor will make special arrangements for Unit 5 which will take place in a hospital. Unit 6 will be taught during another part of your training. Your instructor will tell you when the learning activities for this unit will take place.

This training program can succeed only if you take an active part. Prepare for each session. Before each session:

- Read the Student Text and answer the review questions that go with it

- Write down questions to ask your instructor about any part of the lesson you do not understand

In class, the instructor will discuss the review questions and answer any other questions you have.

Immediately after completing the Medical History module, you will study the Physical Examination module.

EVALUATION

This training program will help you build your knowledge and skills. Regular evaluations will allow your instructor to watch your progress. If your progress does not meet the standard, you will be given more time to learn the subject. Your instructor will use the clinical performance records to measure your progress. Look at these performance records to prepare for your evaluation.

EVALUATION Level I

After three days of classroom and clinical experiences related to the Medical History module, you must be able to pass a written test of knowledge with a score of 80% or higher.

After another week of clinical experience, you must receive two Satisfactory ratings on your ability to:

- Demonstrate the recommended interviewing skills
- Conduct an interview of an adult to take a medical history, using the recommended steps
- Correctly record a medical history

Your training includes four months of clinical practice. During the clinical practice, you will be expected to correctly diagnose, treat, and advise patients having various problems. To make a correct diagnosis, you will need to use the skills for taking a medical history that you will have learned.

Unit 1

Overview of the Medical History

STUDENT GUIDE

OBJECTIVES

1. Describe the purpose of the medical history.
2. Explain how the medical history and the physical examination are related.
3. Describe the recommended steps for taking a medical history of an adult.
4. Explain these categories of interviewing skills:
 - Establishing a good relationship with a patient
 - Using non-verbal techniques to gather information
 - Conducting an interview
 - Supporting the patient

LEARNING ACTIVITIES

1. Listen to and observe presentations on:
 - The purpose of the medical history
 - How the medical history and the physical examination are related
 - The steps for taking an adult medical history
 - Interviewing skills to take an adult medical history
2. Take part in a discussion of the presentations.
3. Observe the instructor while he takes a medical history of an adult.

1.1 INTRODUCTION

When a person comes to the health center with a problem, you must try to learn all you can about his problem. First, you will talk to him and ask him questions about his problem. This is called taking a medical history. Next, you will examine his body. This is called doing a physical examination. You will combine the information from the medical history with what you find during the physical examination to decide what kind of problem the patient has. This is called making a diagnosis. After you make a diagnosis, you can help the patient and his family take care of the problem.

This module explains how to take and record a medical history of an adult and of a child. You take a medical history to obtain information that will help you understand a patient's health problem. A complete medical history will help you make a diagnosis. A medical history may also help you predict a patient's future health problems.

You will refer to the Medical History module throughout your training. You will use the knowledge and skills that you learn in this module as you study other modules. Your ability to listen to what the patient has to say and then to interpret what he says will be one of the most important skills that you will develop.

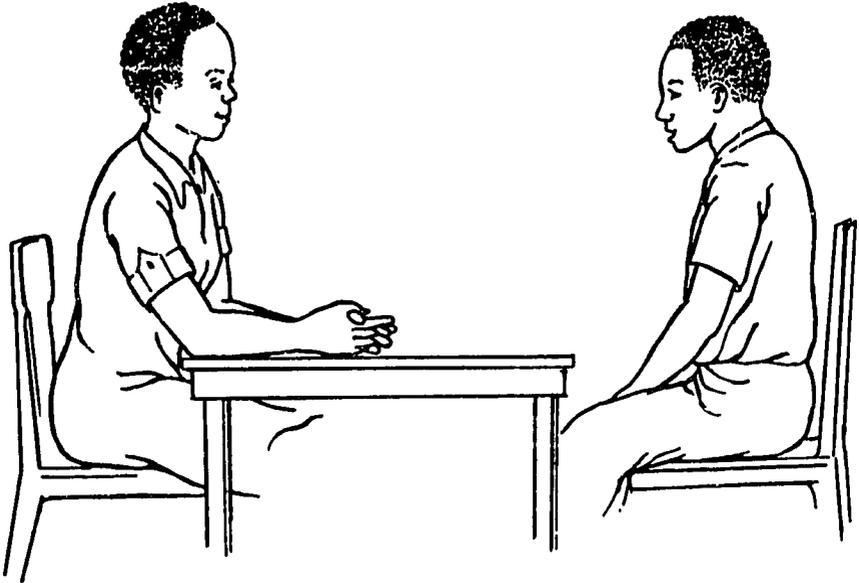
1.2 STEPS FOR TAKING AN ADULT MEDICAL HISTORY

You need to interview a patient to take his medical history. Follow this sequence of steps when you interview an adult patient:

- a. Greet the patient. Introduce yourself and explain your role.

(3)

- b. **Make the patient feel at ease. Briefly talk about social or personal matters that might interest him.**



- c. **Obtain the patient identification information. The patient identification information includes the date of the visit, and the patient's name, address, sex, date of birth, age, and marital status. Record the information at the beginning of a new patient's first visit.**
- d. **Find out the patient's presenting complaint. A presenting complaint is a brief description of a patient's problem. Ask the patient why he has come to the health center. Ask him how long he has had this problem.**
- e. **Take the history of the patient's present problem. This is a review of the patient's problem as it relates to the systems of the body. Ask questions that will give you a clear picture of what is bothering the patient.**
- f. **Take the patient's past medical history. The past medical history helps you understand the patient and his environment. It is a review of the patient's drug allergies, immunizations, past illnesses, operations, accidents, and personal health habits. The past medical history also includes information about other members of the patient's family and the details of his home and work environment.**

- g. Make sure the patient has given you all the information that he can provide. Review the information with the patient. Check for accuracy.**

The patient identification information, the presenting complaint, the history of the present problem, and the past medical history are discussed in detail in Unit 2.

1.3 INTERVIEWING SKILLS

Practicing some basic interviewing skills can help you obtain a complete and accurate medical history. These skills can be grouped into four categories:

Establishing a Good Relationship with a Patient

You and the patient must work together to identify and care for his problem. Establishing a good relationship with a patient will make him comfortable with the interviewing process. Then you will be able to obtain all the information that you need. Learn these techniques for establishing a good relationship with a patient:

- a. Dress appropriately for the interview.**
- b. Use greetings that are familiar to the patient.**
- c. Meet with the patient in a comfortable, private area.**
- d. Be aware of any difference in sex and age between you and the patient.**
- e. Introduce yourself. Explain your role and the reason for the interview.**
- f. Use the patient's name during the interview.**
- g. Use words that the patient understands. Avoid medical language.**
- h. Be pleasant and enthusiastic about your role.**
- i. Show respect for the patient, his family, and his ideas.**

Using Non-Verbal Techniques to Gather Information

People communicate without words as well as with words. A non-

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verbal technique is a way to communicate and to gather information without speaking. Learn these non-verbal techniques

- a. Listen carefully. Listen not only to what the patient says but to how he says it. Let the patient do most of the talking.
- b. Observe the patient's behavior. Notice how he reacts to your questions. Look for clues to how he feels about his problem.
- c. Observe your own behavior. The patient will also be watching your actions and responses. If you are anxious or upset, your actions can show that something is wrong. The patient may be uncomfortable because you are. If you are relaxed and calm, your actions can show that you are comfortable. The patient will likely feel comfortable because you are.

Conducting an Interview

These techniques will help you conduct an interview to obtain a complete and accurate medical history:

- a. Sit at the same eye level as the patient. Look directly at him. Direct eye contact reassures the patient that he has your full attention.
- b. Encourage the patient to explain his problem in his own words. At the start of the interview, ask questions that allow the patient to tell his own story. Say, "Describe your chest pain to me." Or ask, "What kinds of things cause the pain?"
Ask direct questions as the interview progresses. Direct questions can be answered with a yes or no, or with short, simple phrases. For example, ask, "Is the pain sharp or dull?" Or say, "Show me where the pain is." If necessary, explain to the patient why you are asking certain questions. Ask only one question at a time.
Use direct questions only after the patient has explained his problem in his own words. If you use direct questions too early, the patient will simply wait for the next question. You may not find out all you need to know about his problem.
- c. Do not interrupt the patient. Listen actively. Let the patient know that you are interested in what he is telling you. Nod your head as he speaks. Use expressions of interest and encouragement such as "yes, go on," or "I understand."
- d. Listen for key phrases. Learn to direct an interview by repeating important phrases as questions. For example, a patient may

say that he sleeps poorly at night. Say, "You are having difficulty sleeping at night?" This question will tell the patient that you are interested in hearing more about the problem. Most of the time, the patient will return to the subject and tell you more about it.

- e. Do not be embarrassed to ask the patient many questions about his problem. It is better to ask questions than to pretend to know something that you do not know.
- f. Make your notes brief. The patient will be giving you a great deal of information. You may want to write detailed notes about what he tells you. You should take notes on a blank sheet of paper to help you remember the important parts of the patient's medical history. Later, you will record the medical history on a form. But practice making the notes as brief as possible. You may distract the patient if you write for too long or look down at your paper too often.
- g. Use reference materials. You need to remember many things as you learn to interview patients. Refer to the practice guide for taking an adult medical history. Try not to read directly from the practice guide. You may distract the patient. But you can look down at the guide now and then to remind you of all the points that you need to cover in the interview.

Supporting the Patient

Supporting the patient means showing him that you understand what he is saying and that you are interested in helping him. You can show support by what you say and by how you act.

Supportive words show the patient that you understand how he feels. You can say, "That must have been very difficult for you to do," or "I understand what you are saying," or "You must have been very frightened when the chest pain started."

Supportive actions show your interest in the patient and your respect for what he says. Support the patient by being friendly and by showing that you are trying to help.

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REVIEW QUESTIONS

Overview of the Medical History

1. Why do you take a medical history?
2. Should you make a diagnosis by doing a physical examination and not a medical history? Why?
3. Write down as many of the steps for taking a medical history as you can.
4. List the four categories of interviewing skills.

REVIEW EXERCISE

Overview of the Medical History

Read the following situation. Answer the questions.

You are working in a rural health center. Your health center has one room that you use for examination and one room where you keep medicines and supplies. Many people are waiting to be seen. Some are sitting in the examination room. Others are sitting outside. You have been up most of the night with a difficult delivery. You are very tired. You are not very enthusiastic about working in the health center today.

1. Your first patient is Mrs. Smith. You both sit down in the examination room with the other waiting patients. You begin the interview. Mrs. Smith is hesitant to talk about her problem. How can you establish a good relationship with Mrs. Smith so that she is more willing to talk?
2. Your next patient is Mr. Lowell. At the start of the interview Mr. Lowell tells you that he has chest pains and difficulty breathing. This is how the interview continues:

HEALTH WORKER: "Now, Mr. Lowell, tell me about your chest pain."

MR. LOWELL: "I have never had anything like this before. It feels like a tight band around my chest. When I get the pain, I cannot breathe."

HEALTH WORKER: "Mr. Lowell, what were you doing when the pain started? Were you walking, sitting, working?"

MR. LOWELL: "Walking."

HEALTH WORKER: "Do you have any swelling of your legs, or difficulty breathing during the night? Oh yes, by the way, how many pillows do you sleep on at night?"

MR. LOWELL: "Hmmm... would you repeat that?"

HEALTH WORKER: "What I mean is, do you have any edema or orthopnea? How many pillows do you use to sleep on at night?"

MR. LOWELL: "Hmmmmmm...."

- a. What was good about this interview?

Unit 2

Taking an Adult Medical History

STUDENT GUIDE

OBJECTIVES

1. Describe the information that you should obtain for the
Patient identification information
Presenting complaint
History of the present problem
Past medical history
2. Explain how to conduct an interview to obtain the
Patient identification information
Presenting complaint
History of the present problem
Past medical history
3. Interview other students to obtain the
Patient identification information
Presenting complaint
History of the present problem
Past medical history
4. Describe how to use the practice guide for taking an adult medical history.

LEARNING ACTIVITIES

1. Through instructor presentations and class discussions, learn what information to obtain for an adult medical history.
2. Through instructor demonstrations, work in pairs, and class discussions, learn how to interview an adult to take a medical history.
3. Use role-plays to practice interviewing an adult to take a medical history.
4. Through a presentation and discussion, learn how to use the practice guide for taking an adult medical history.

2.1 PATIENT IDENTIFICATION INFORMATION

The patient identification information is a record of basic facts about a patient. You should obtain the patient identification information on a patient's first visit. Record the information before you attend to the patient's present problem, unless the problem is a medical emergency.

The patient identification information includes

Date of Visit

The date of a patient's visit is useful if you need to know when you first saw him in the health center. Note the day, month, and year.

Name

Be sure to find out the patient's full name. Print clearly.

Address

The address is important if you ever need to visit the patient at home. Be sure to write down the complete address or landmarks that can help you locate the patient's home.

Sex

You often care for male and female problems differently. The sex of a patient is not always clear from his name.

Date of Birth and Age

Find out both the patient's date of birth and his age. Many problems are related to age. Dosages of medicine may also differ with age.

Marital Status

Some problems are related to a patient's family situation. A patient's marital status may also affect his care and the kind of support which is available to him.

Check the patient identification information at each patient visit. A patient's name, address, and marital status may change. Re-checking ensures that you always have correct, up-to-date information.

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Refer to the practice guide for taking an adult medical history that appears at the end of this unit. Find and review the patient identification information.

2.2 SYMPTOMS AND SIGNS

After you take the patient identification information for a new or returning patient, you are ready to find out the reason for his visit. When you ask a patient why he has come to see you, he will rarely tell you that he is suffering from a particular disease. Instead, the patient will usually describe a problem that he has. The problem that the patient describes to you consists of symptoms. A symptom is a change in the body or in its normal functions which a patient can tell you about. A patient may complain of a cough. A cough is a symptom. A patient may tell you that he has a sick feeling in his stomach and is passing loose stools. These are symptoms. You learn about symptoms when you take a patient's medical history.

After you find out about a patient's symptoms, you need to look for evidence of disease. A sign provides evidence of disease. A sign is a change in the body or in its normal functions which you can detect or observe when you examine a patient. A patient's symptoms give you clues to where to look for signs of disease. For example, if a patient says that he has a cough, you should examine his lungs for signs of disease. You detect signs when you do a physical examination.

Sometimes a finding is both a symptom and a sign. A patient may complain of a fever. A fever is a symptom because the patient described it to you. Suppose you examine the patient and find that he does have a fever. Then the fever is also a sign because you detected it.

In some cases, a patient will not complain of any symptoms. But you may find signs of disease when you examine him. High blood pressure is a disease which often causes no symptoms. Such a disease is called an asymptomatic disease, or a disease without symptoms. In other cases, a patient will complain of many symptoms, but you can find no signs of disease. Many mental health problems occur without signs of physical illness.

2.3 PRESENTING COMPLAINT

The presenting complaint is the reason for the patient's visit. A patient will usually tell you about one major problem or symptom which is bothering him. Record the presenting complaint in the patient's own words. Also note how long the patient has had the symptom. Some examples are, "diarrhea for three days," "cough for two months," or "tired for one month."

Sometimes, a patient will complain of two symptoms. Two symptoms can be part of the same illness. In that case, both symptoms will make up the presenting complaint, such as "burning during urination and discharge from the penis for two days," or "loss of appetite and weight loss for two months."

At other times, a patient may tell you about two symptoms that are not related. Choose the symptom which seems to bother the patient most. Call that symptom the presenting complaint. Focus the interview on the presenting complaint. Find out more about the other symptom later in the interview. For example, a patient may say that he has had a cough for two months, and pain in his right knee for five years. He may tell you that he is most worried about the cough. The presenting complaint would be "cough for two months." You can find out more about the pain in his right knee later in the interview.

Refer to the practice guide for taking an adult medical history that appears at the end of this unit. Find and review the presenting complaint. Note the proper sequence for taking a medical history.

2.4 HISTORY OF THE PRESENT PROBLEM

After obtaining a patient's presenting complaint, you must find out more about his problem. These additional details make up the history of the present problem. Learn to ask these questions about a patient's problem.

“When Did the Symptom Start?”

Find out when the first symptom occurred and when each subsequent symptom occurred. This is called the onset of the symptoms.

A symptom may begin suddenly and become very severe within minutes. Or a symptom may develop gradually over many days or weeks. Symptoms such as diarrhea, headache, chest pain, or shortness of breath can begin either suddenly or gradually. The way a symptom begins may help you determine the most likely cause of a patient's problem.

When a symptom has been present for a long time, a patient may have difficulty remembering exactly when it started. Ask the patient to think back to an important event or holiday. Ask him if he had the symptom at that time. For example, ask the patient if he had the symptom at his birthday or at Christmas. These questions may help the patient remember when the symptom started.

“How Long Have You Had the Symptom?”

The length of time that a symptom lasts is called its duration. A patient may have a symptom for a few hours, days, weeks, months, or even years before he comes to see you. For example, a patient may say, “I have had an earache for three days,” or “I have been feeling tired for two months now.”

“Where is the Symptom?”

A patient will usually say that the symptom is in a certain part of his body. For example, a patient may say, “I have stomach pain,” or “I have back pain.” Try to find the exact location of a patient's pain. The patient who has “stomach pain” might actually have pain in a particular part of his abdomen. Ask the patient to describe exactly where the pain is. Ask the patient to point to where he feels the pain.

After you locate a symptom such as pain, find out if it radiates or travels. For example, if a person complains of pain in the left side of his chest, find out if the pain travels down his left arm or up into his neck.

“How Often Does the Symptom Occur?”

The frequency with which a symptom occurs and its pattern of occurrence are other important clues to a patient's problem. A patient may say, “I have been feeling sick for one week. At times,

I get cold and begin to shake all over. I cannot stop shaking. The shaking stops after one-half hour. Then I get very hot and feel like I have a very high fever. The fever lasts for about eight hours, and then it goes away. I feel very tired after the fever goes away. This cold then hot feeling comes and goes every two days." This description of a pattern of symptoms may help you diagnose a patient's problem.

"How Severe is the Symptom?"

Ask the patient to describe the symptom. Find out if it is mild, moderate, or severe. Find out if the symptom affects the patient's daily activities. For example, if a patient complains of shortness of breath, ask, "How far can you walk before you become short of breath?" He might answer, "I cannot walk across the room without becoming short of breath."

When a patient has the symptoms of bleeding, vomiting, or coughing up sputum, you need to find out how much volume the patient noticed. For example, was it a tablespoon of sputum or one-half cup? Remember to use a measurement that the patient understands.

"When Does the Symptom Occur?"

The patient may notice that certain events in his life cause the symptom to occur. A patient may say, "I get lower belly pain every time my menstrual period comes," or "I get a headache every time I fight with my wife," or "I get pain in my stomach two to three hours after eating. The pain also wakes me up in the middle of the night."

"What Makes the Symptom Better or Worse?"

Things which make a symptom better are called alleviating, or relieving, factors. Things which make a symptom worse are called aggravating factors. A patient may say, "Walking upstairs usually brings on the chest pain. When I stop and rest, the chest pain goes away." A description of what makes a symptom better or worse sometimes helps you decide what a patient's problem is. It may also help you care for the patient once you make a diagnosis.

"Do You Have Any Associated Symptoms?"

An ill patient usually has more than one symptom. Some symptoms occur in the diseased, or affected, part of his body. For

example, a patient with tuberculosis of the lungs will complain of a cough and coughing up sputum. These symptoms relate directly to the illness in his lungs.

Other symptoms will appear because one part of the body can affect another part. For example, a patient with tuberculosis of the lungs might also have a loss of appetite, weight loss, and fever. These other general body symptoms are called associated symptoms. The illness in the lung causes the symptoms of cough and coughing up sputum. The illness in the lung also causes associated symptoms of loss of appetite, weight loss, and fever.

“Have You Been Treated For This Symptom Before?”

If a patient has a history of similar symptoms, ask if he has been treated for the symptoms before. Ask if the treatment helped. For example, a patient may say, “Every spring when the plants start growing again, I get itchy eyes and a runny nose. I take a tablet and the symptoms go away.” Such information may help you decide how to treat the patient’s present problem.

“Have You Come in Contact with Anyone Else Who Has the Same Symptom?”

Some illnesses are passed from one person to another. A patient may say, “I developed a vaginal discharge and pain when I urinate three days after I had intercourse with a man. He told me afterward that he has had a drip from his penis for five days.”

Also, people who live closely together can get the same illness from the same source. For example, a patient may say, “Our main spring dried up. Six families in my village started using another spring. Since then, most of us have had diarrhea.”

By listening to a patient’s story and questioning him about his symptoms, you will put together a picture of his problem. This will be very difficult at first. In time, you will learn to relate the symptoms that the patient tells you about to a problem that you have studied. This will take practice and experience.

Refer to the practice guide for taking an adult medical history that appears at the end of this unit. Find and review the history of the present problem. Note the proper sequence for taking a medical history.

2.5 REVIEW OF SYSTEMS

A person can develop a problem in any system of his body. A patient with a problem in a particular body system will complain of symptoms related to that body system. For example, a patient with a problem of the respiratory system may complain of a cough, coughing up sputum, coughing up blood, chest pain, wheezing, or difficulty breathing. Asking a patient questions about symptoms according to the systems of his body is called a review of systems. You review the body systems to be sure that you find out about all of the patient's symptoms. The review helps you to obtain a complete history of the present problem.

Here is a list of symptoms arranged by body system. Learn these symptoms by the body system affected.

REVIEW OF SYSTEMS

GENERAL: Fever, chills, fatigue, weight loss, weight gain, loss of appetite, sensitivity to heat or cold, sweating, dizziness, unusual thirst, unusual hunger

HEAD AND SINUSES: Injury, headache, sinus problem

EYES: Pain, discharge, blurred vision, blindness, difficulty seeing at night

EARS: Pain, discharge, hearing problem

NOSE: Injury, bleeding, blockage

MOUTH: Tooth pain, missing teeth, problem with lips or gums

THROAT: Pain, swelling, blockage, difficulty swallowing, change in voice

RESPIRATORY: Cough, coughing up sputum, chest pain, wheezing, shortness of breath, difficulty breathing, fever, weight loss, loss of appetite

HEART: Chest pain, edema, shortness of breath, high blood pressure

GASTROINTESTINAL: Nausea, vomiting, blood in vomit, diarrhea, constipation, blood or mucus in stool, heartburn, abdominal pain, pain or itching around the rectum, worms, fever, chills, weight loss

GENITOURINARY: Pain on urination, frequent urination, increased urination, having to urinate frequently at night, trouble starting and stopping the flow of urine, blood in urine, swelling of face and legs, colicky pain in loin or flank, radiating flank pain, fever, chills

MALE GENITAL: Discharge from the penis, pain or swelling in the scrotum, pain in the lower abdomen, sores

FEMALE GENITAL: Last menstrual period, pain, discharge from the vagina, unexpected bleeding, sores

MUSCULOSKELETAL: Joint pain, joint swelling, joint redness, limited joint movement, joint deformity, muscle weakness, fracture

NERVOUS SYSTEM: Headache, convulsion, fainting, paralysis of an arm or leg, loss of consciousness, loss of speech, loss of memory, loss of sensation

SKIN: Sores, sores that do not heal, color change, injury, itching, texture change, loss of sensation

MENTAL HEALTH: Nervousness, irritability, loss of memory, depression, trouble sleeping, problems with daily life, abnormal fears

When a patient complains of a symptom associated with one body system, you should ask about the other symptoms associated with that system. For example, suppose a patient complains of a cough. A cough is a symptom associated with the respiratory system. Therefore, you should also ask: "Are you coughing up sputum? How much sputum are you coughing up? Do you have chest pain or wheezing? Do you have difficulty breathing or shortness of breath? Have you noticed any fever, weight loss, or loss of appetite?" These are the other symptoms associated with the respiratory system. Knowing about these symptoms will help you diagnose a patient's problem.

A patient may also describe a symptom that is associated with more than one system. For example, a woman may complain of pain in her lower belly. A problem in the gastrointestinal system, the genitourinary system, or the female genital system can cause pain in the lower abdomen. You should do a complete review of systems to find

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Immunizations

Question the patient about immunizations. Ask him what injections or other medicines he has been given to prevent him from getting sick. Note all the immunizations that he has received and the dates that they were given.

Childhood Illnesses

An accurate history of childhood illnesses can be very helpful. Some diseases can only occur once. If a patient has already had one of these diseases, you can be sure he does not have it now. Other childhood diseases weaken the body. Such a disease may affect a person's health even as an adult. For instance, rheumatic heart disease can affect the heart. However, the heart damage may not become severe until several years after a patient develops the disease.

Note any illnesses the patient had as a child. Be sure to ask about measles, mumps, whooping cough, polio, rheumatic heart disease, tuberculosis, kwashiorkor, and marasmus.

Adult Illnesses

Ask the patient to tell you about any illnesses he has had as an adult. Be sure to ask about high blood pressure, diabetes, heart disease, tuberculosis, filariasis, malaria, and cancer.

Also find out about any illness that was not necessarily diagnosed by name, but which the patient can describe. For example, a patient may remember that he had a cough for three months, associated with loss of appetite, weight loss, and weakness.

Operations

Find out if the patient has ever had an operation. Ask him if a doctor has ever removed anything from his body. Ask him if a surgeon has cut into his body for any reason. Ask if any part of his body has been repaired by surgery.

Note each operation that the patient has had and the date that it was done. This information may help you make a diagnosis. For example, if a patient's appendix has been removed, he cannot be suffering from appendicitis. Also, infection can sometimes be introduced into a patient's body during an operation. Information on past operations may therefore help you see a pattern in a patient's illnesses.

Accidents

Find out if the patient has had any serious accidents. Information about an accident might help to explain deformities, scars, or limited movement in parts of his body.

Menstrual and Obstetrical History

Ask a woman patient about her menstrual periods. Note the date of her last menstrual period. Are her menstrual periods regular? Find out how many days her menstrual periods usually last. Find out if she usually has pain when she menstruates.

Ask the patient if she is using a contraceptive method. If she is using a method, note the method she is using, how long she has been using it, and any problems she may be having with its use.

Ask a woman patient how many times she has been pregnant and how many deliveries she has had. Find out how many live children she has. Note the patient's age at the time of each delivery and the dates of each delivery, no matter what the outcome. Ask for details of any abortions, miscarriages, or stillbirths. Find out about any complications of pregnancy, including cesarean section deliveries.

Family History

Some health problems are common among members of the same family. It is important to find out about the health of the patient's grandparents, parents, brothers, and sisters. Be sure to ask if they have had diabetes, cancer, high blood pressure, heart disease, or tuberculosis. Ask about the cause of death of any close family members.

Other diseases can be passed from person to person. If a patient has an infection and his family is malnourished, other family members might develop the same illness. Find out about the health of others in the patient's household. Ask about the health of the patient's spouse and children. Ask if anyone in the patient's family has symptoms like those of the patient. Be sure to see other members of a patient's family who might be sick.

Social History

Anything a patient does can affect his health. You need to find out about his personal habits. Question him about how he lives, what he does, and where he goes.

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a. Education

Find out if the patient went to school and for how long. Knowing about a patient's education can help you to decide how to explain his disease and how to care for him. Giving a patient written instructions if he is unable to read would be useless. If a patient has little schooling or cannot read, you will have to explain treatment and dosages in simple words.

b. Housing

Find out about the patient's house and its surroundings. Infections spread easily when people live in crowded or unclean conditions. Knowing about a patient's house and its surroundings can also give you an idea of the community work you need to do.

Find out what kind of house the patient lives in. Is it big enough for all the members of his family? Ask about the surroundings of the house. Find out if the family has a latrine. If so, do they use it? Find out where they get their water. If the water is from a spring or river, does the family boil their water before drinking it? Ask where the family disposes of their garbage. Ask if they have a garden. Find out if they keep animals in their living compound.

c. Travel

Question the patient about travel. Some health problems are more common in some areas than in others. For example, if your patient lives high in the mountains, you would not suspect he had malaria unless he had recently returned from the lowlands. Find out if the patient has done any traveling recently. Ask if he or any member of his family recently arrived from another place.

d. Occupation

Ask the patient what kind of work he does. If he is not employed, ask him how he supports his family. Have the patient describe what he does in his job. Some health problems are related to a patient's job or place of work.

e. Personal habits

Question the patient about personal habits which may increase the risk of illness. Ask the patient how often he drinks alcohol. Find out when he drinks. Does the patient smoke? Ask what

he smokes and how long he has smoked. Patients who smoke are at increased risk of developing chronic bronchitis, emphysema, lung cancer, and heart disease.

Refer to the practice guide for taking an adult medical history that appears at the end of this unit. Find and review the past medical history. Note the proper sequence for taking a medical history.

Practice Guide for Taking an Adult Medical History

This practice guide will help you when you interview an adult to take a medical history. The guide lists the sequence of steps for taking an adult medical history. It also outlines the information that you have learned to ask about. Your instructor will give you a copy of this guide to use when you interview other students in your class and patients in the hospital ward or outpatient clinic. Refer to the practice guide to remind you of the information to include in an adult medical history.

PATIENT IDENTIFICATION INFORMATION DATE OF VISIT, NAME, ADDRESS, SEX, DATE OF BIRTH, AGE, MARITAL STATUS

PRESENTING COMPLAINT REASON FOR THE PATIENT-S VISIT
HOW LONG HE HAS HAD THE PROBLEM

HISTORY OF THE PRESENT PROBLEM ONSET, DURATION, LOCATION, FREQUENCY, DESCRIPTION OF SYMPTOM
THINGS THAT MAKE THE SYMPTOM BETTER OR WORSE
ASSOCIATED SYMPTOMS, HISTORY OF SIMILAR SYMPTOMS, CONTACTS

REVIEW OF SYSTEMS

GENERAL: Fever, chills, fatigue, weight loss, weight gain, loss of appetite, sensitivity to heat or cold, sweating, dizziness, unusual thirst, unusual hunger

HEAD AND SINUSES: Injury, headache, sinus problem

EYES: Pain, discharge, blurred vision, blindness, difficulty seeing at night

EARS: Pain, discharge, hearing problem

NOSE: Injury, bleeding, blockage

SKIN: Sores, sores that do not heal, color change, injury, itching, texture change, loss of sensation

MENTAL HEALTH: Nervousness, irritability, loss of memory, depression, trouble sleeping, problems with daily life, abnormal fears

PAST MEDICAL HISTORY

DRUG ALLERGIES: Allergy to any drug

IMMUNIZATIONS: Immunizations and dates given

MOUTH: Tooth pain, missing teeth, problems with lips or gums

THROAT: Pain, swelling, blockage, difficulty swallowing, change in voice

RESPIRATORY: Cough, coughing up sputum, chest pain, wheezing, shortness of breath, difficulty breathing, fever, weight loss, loss of appetite

HEART: Chest pain, edema, shortness of breath, high blood pressure

GASTROINTESTINAL: Nausea, vomiting, blood in vomit, diarrhea, constipation, blood or mucus in stool, heartburn, abdominal pain, pain or itching around the rectum, worms, fever, chills, weight loss

GENITOURINARY: Pain on urination, frequent urination, increased urination, having to urinate frequently at night, trouble starting and stopping the flow of urine, blood in urine, swelling of face and legs, colicky pain in loin or flank, radiating flank pain, fever, chills

MALE GENITAL: Discharge from the penis, pain or swelling in the scrotum, pain in the lower abdomen, sores

FEMALE GENITAL: Last menstrual period, pain, discharge from the vagina, unexpected bleeding, sores

MUSCULOSKELETAL: Joint pain, joint swelling, joint redness, limited joint movement, joint deformity, muscle weakness, fracture

NERVOUS SYSTEM: Headache, convulsion, fainting, paralysis of an arm or leg, loss of consciousness, loss of speech, loss of memory, loss of sensation

CHILDHOOD ILLNESSES: Measles, mumps, whooping cough, polio, rheumatic heart disease, tuberculosis, kwashiorkor, marasmus

ADULT ILLNESSES: High blood pressure, diabetes, heart disease, tuberculosis, filariasis, malaria, cancer
Other illnesses

OPERATIONS: Procedures involving cutting into the body or removing tissue

ACCIDENTS: Serious accidents

MENSTRUAL AND OBSTETRICAL HISTORY:

Last menstrual period, menstrual periods regular, number of days, pain

Contraceptive method

Number of pregnancies, live children, abortions, stillbirths, miscarriages

Complications

FAMILY HISTORY:

Health of family members

History of family members with diabetes, cancer, high blood pressure, heart disease, tuberculosis

SOCIAL HISTORY:

Education - years of school

Housing - house and surroundings, latrine, water, garbage, animals

Travel - travel outside home area

Occupation - type of work, location, work

Personal habits - drinking, smoking

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REVIEW QUESTIONS

Taking an Adult Medical History

1. List seven items that make up the patient identification information.
2. When should you obtain the patient identification information?
3. What is the difference between a symptom and a sign?
4. Write what you think each of these mean.
 - a. Presenting complaint:
 - b. History of the present problem:
 - c. Review of systems:
5. Write the presenting complaint of a patient who tells you:
"I have had a cough for two months. Just recently, I have been very tired and have not wanted to eat."
6. You have obtained a patient's presenting complaint. You have found out when and how the symptoms started. You have also found out what makes the symptoms better or worse. List at least four questions that you should ask the patient next.

7. A patient's presenting complaint is "pain in the throat and difficulty swallowing for three days." List at least six questions that you should ask about his present problem.

8. A patient complains of a "cough for two months." List at least six questions that you should ask about his present problem.

9. A patient complains of "pain in the chest for one week." Name three body systems that you should be sure to review.

10. A man complains of "pain in his lower belly for three days." Name the body systems that you should review.

11. What symptoms should you ask about when you review the gastrointestinal system?

12. List five symptoms that you might find out about when you ask a patient about passing urine.

13. List four findings in a medical history that would make you suspect that a patient has a problem of the nervous system.

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14. Write what you think taking the past medical history means.
15. You are taking the past medical history of a male patient. What must you be sure to ask about?
16. How is the past medical history of a female patient different from the past medical history of a male patient?
17. List three important reasons for taking a family history.
18. A patient tells you that he is allergic to penicillin. What should you do with this information?
19. When you ask a patient if he has received any injections to prevent him from getting sick, you are asking if he has received any
_____.
20. List six childhood illnesses that you should ask a patient about.
21. List at least six adult illnesses that you should ask a patient about.
22. Why should you ask if a patient has had any operations?

23. Why should you ask if a patient has had any accidents?
24. What should you ask a woman patient about her menstrual periods?
25. Listed below are statements from a patient's past medical history. Check (x) the statements that are part of the social history.
- ___ The patient had polio as a child.
 - ___ The patient's mother had tuberculosis two years ago.
 - ___ The patient is living in a two-room house.
 - ___ All of the patient's brothers and sisters are living.
 - ___ The patient buries all of his garbage.
 - ___ The patient travelled to a neighboring district one month ago.
 - ___ The patient has had three DPT immunizations.
 - ___ The patient is a shopkeeper.
 - ___ The patient drinks two glasses of homemade beer daily.
 - ___ The patient is allergic to penicillin.
 - ___ The patient has had six years of school. He reads and writes well.
 - ___ The patient smokes six to seven cigarettes per day.

REVIEW EXERCISE

Taking an Adult Medical History

The medical history information below was received from a patient who came into a health center. Read the information. Write the medical history information in the correct categories:

a. PATIENT IDENTIFICATION INFORMATION

b. PRESENTING COMPLAINT

c. HISTORY OF THE PRESENT PROBLEM

Onset of symptom:

Duration of symptom:

Location of symptom:

Frequency that symptom occurs

Severity of symptom:

What makes symptom better:

What makes symptom worse:

Associated symptoms:

History of similar symptoms:

d. PAST MEDICAL HISTORY

Drug allergies:

Immunizations:

Childhood illnesses:

Adult illnesses:

Operations:

Accidents:

Menstrual and obstetrical history:

Family history:

Social history:

Medical History Information

Car accident 1977. Fractured right arm put in cast at the Cairo General

Wife is healthy, with no problems

Had smallpox vaccine as a child. Does not remember any other immunizations

While working in his construction job three days ago, bent down to lift heavy boxes. Felt immediate pain

James Litton

Had whooping cough and measles. No other diseases

Has high school education

Has had constant pain for the past three days

Lives in a two-bedroom house at the outskirts of town

3 May 1982

Wife draws the water from a protected well next to the house

No previous history of similar symptoms

Hospitalized in 1966 for appendectomy

Pain is continuous

The family has a latrine that only they use

Lying on his back with his knees bent eases the pain

Address - 1303 West Street, Cairo, Egypt

Walking or sitting makes the pain worse

Is a construction worker

Male

Drinks local beer daily

Has some tingling and loss of sensation in his left leg

Married

Smokes ten to fifteen cigarettes per day

Hospitalized in 1979 for pneumonia in right lung

Allergic to penicillin

Patient has not travelled outside the town in the past two years

Age 38

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Pain is so severe that he is unable to sit or to walk

Pain is in his lower back and moves down his left leg

Pain in lower back for three days

All four grandparents living and in good health. Parents living and in good health. No brothers or sisters

Does not apply

Has two sons, both healthy

Unit 3

Recording an Adult Medical History

STUDENT GUIDE

OBJECTIVE

Record an adult medical history on a practice sheet in the recommended way.

LEARNING ACTIVITIES

- 1. Through an instructor presentation and class discussions, learn how to record an adult medical history on a practice sheet.**
- 2. Practice recording an adult medical history by listening to an interview and recording the medical history on a practice sheet.**

3.1 RECORDING AN ADULT MEDICAL HISTORY

Once you have completed a medical history interview, you must record the information that you have obtained. You can use the information to remind you of the details of the patient's problem. The information will also help other health workers who might see the patient later.

Use the practice sheet for taking an adult medical history in this unit to record the medical histories that you obtain. Follow these instructions for using the practice sheet:

- a. Write the patient identification information in the appropriate spaces after number 1 through 7. Remember to record the patient's complete name and address.
- b. Complete the medical history interview. Take notes on a blank sheet of paper to help you remember important points. Be sure that you have all of the information that you need before you record the medical history on the practice sheet. Refer to the practice guide for taking an adult medical history to check that you have asked all of the questions that you need to ask. If necessary, talk to the patient again to obtain all of the information that you need. Fill in the appropriate parts of the practice sheet after you complete the interview and review your notes.
- c. Write the presenting complaint in the space provided after number 8. Remember to record the presenting complaint in the patient's own words.
- d. Write the history of the present problem in the space provided after number 9. Describe how the symptom began. Describe the course of the problem. Note the onset, duration, location, and frequency of the symptom. Note how severe the symptom is and what makes it better or worse. List any associated symptoms. Note any history of similar symptoms. Give details of any contacts. Record the history in the sequence that the symptoms occurred.

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This is an example from the record of a twenty-five-year-old man:
 Presenting complaint *Low back pain for three days*

History of the present problem *Three days ago, the patient was lifting heavy bags of potatoes from the ground and carrying them to a cart. He bent down and picked up a bag. He felt a sudden, sharp pain in his lower back. The pain radiated down his left leg. He could not stand up straight because of the pain. His friends carried him into his house. He has been in bed since the incident occurred. Walking and sitting make the pain worse. Lying on his back with his knees bent eases the pain. He has no previous history of similar symptoms.*

Record only what the patient tells you. Do not diagnose the problem. For example, do not write that the patient "has pelvic inflammatory disease." Instead, write: "This twenty-two-year-old woman developed a foul smelling yellowish discharge from her vagina four days ago. Yesterday she developed mild lower abdominal pain, slight burning with urination, and continuing yellowish discharge from her vagina. The pain radiates to her lower back. Walking makes the pain worse. Lying down in the fetal position eases the pain. She feels like she has a fever. She has no history of similar symptoms. Her husband has had a yellowish discharge from his penis for one week."

- e. Record the past medical history in the spaces after number 10.

Record any drug allergies in large, bold letters in the space after letter a. For example, write: "ALLERGIC TO PENICILLIN".

Record all of the immunizations that the patient has received and the dates that they were given in the appropriate spaces after letter b. For example:

BCG	_____	Polio #1	_____	DPT #1	_____	<i>3 June 1960</i>
Tetanus booster	_____	Polio #2	_____	DPT #2	_____	<i>5 August 1960</i>
Measles	_____	Polio #3	_____	DPT #3	_____	<i>3 September 1960</i>
Other	_____	Polio #4	_____	DPT #4	_____	<i>3 September 1961</i>

In the space after letter c, record any illnesses that the patient had as a child. For example, write: "Patient had mumps, measles, and whooping cough as a child."

In the space after letter d, record any illnesses that the patient has had as an adult. For example, write: "Patient developed a cough

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three years ago, with weight loss and loss of appetite. Problem was diagnosed as tuberculosis. Patient was on INH and thiacetazone for two years. No problems since treatment.”

In the space after letter e, record any operations that the patient has had and the dates that they were done. For example, write: “Patient had an appendectomy in June 1978.”

In the space after letter f, describe any accidents. For example, write: “In 1971, a patient fell from a tree and fractured his right elbow. He had a cast on his arm for two months. No problems with elbow since accident.

Section g provides space for the menstrual and obstetrical history for female patients. In the appropriate spaces, record the date of the patient’s last menstrual period and the contraceptive method that she is using, if any. Give details of contraceptive use, as appropriate. Describe her menstrual periods in the space labeled “Menstrual history.” Note each pregnancy, whether full term or not. Record the number of live children. Give the details of any abortions, miscarriages, stillbirths, and complications of pregnancy. For example:

Last menstrual period 3 February 1982

Contraceptive method None

Menstrual history *Menstrual periods regular, lasting four days. Has mild cramps with menstrual periods*

Number of pregnancies 3

1975 at age 18

1976 at age 19

1978 at age 21

Number of live children 2

Abortions None

Miscarriages 1976 at age 19 had a miscarriage at four months of pregnancy

Stillbirths None

Complications None

Record the family history in the space after letter h. Note if any of the patient’s grandparents, parents, brothers, or sisters had diabetes, cancer, high blood pressure, heart disease, or tuberculosis. Record any illnesses of the patient’s spouse or children. For example, write: “Patient’s grandmother, father, and one brother all have high blood pressure. Patient’s wife now receiving treatment for tuberculosis. Two aunts living in house. Both

1/6'

healthy. Child, aged two, has diarrhea.”

Write down the social history in the space after letter i. Give details of the patient's education. Record how many years he has attended school. Note if he can read and write. Record the details of the patient's housing and living conditions. Note the number of rooms in his house. Note if the house has a latrine. Write down where the patient gets his water and how he disposes of his garbage. Note if he has a garden and if he keeps any animals near his house.

Next, note any traveling the patient has done outside his district recently. Record the details of his occupation. Record information about his personal habits, such as drinking alcohol and smoking cigarettes. For example:

Education *Finished eight years of school. Reads and writes.*

Housing *Lives in a two-room house. Family has a latrine that only they use. Family buries garbage next to the house near the garden. Draws water from a nearby, unprotected spring. Animals in corral away from the house.*

Travel *Traveled out of the district two months ago. Traveled out of the country one year ago.*

Occupation *Farmer. Has one acre of land that he cultivates with the help of his wife. Has six cows that his son herds.*

Personal habits *Drinks homemade beer daily. Unsure of the amount, but usually two cups per day. Smokes cigarettes that he rolls himself. Smokes six to eight per day.*

Remember to print clearly. Make your notes brief, but complete. Review the information with the patient, and check for accuracy.

The patient will give you a great deal of information during the interview. Remember, do not write down everything that he said. Review your notes. Make a decision about what is important to write down on the practice sheet. Think about what another health worker who has not seen the patient would need to know to get a clear picture of the patient's problem.

Your notes on the practice sheet will be quite long as you learn to record a medical history. They will become shorter as you gain experience in recording medical histories. A separate unit in the Physical Examination module gives instructions for writing brief medical histories. How to write a brief medical history is discussed at the same time as how to write a brief physical examination report.

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Practice Sheet for Recording an Adult Medical History

1. Date of visit _____

2. Name _____ 3. Date of birth _____ 4. Age _____

5. Address _____

6. Sex _____ 7. Marital status _____

8. Presenting complaint _____

9. History of the present problem _____

10. Past medical history

a. Drug allergies _____

b. Immunizations

BCG _____ Polio #1 _____ DPT #1 _____

Tetanus booster _____ Polio #2 _____ DPT # 2 _____

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Measles _____ Polio #3 _____ DPT #3 _____

Other _____ Polio #4 _____ DPT #4 _____

DT _____

c. Childhood illnesses

d. Adult illnesses

e. Operations

f. Accidents

g. Menstrual and obstetrical history

Last menstrual period

Contraceptive method

Menstrual history _____

Number of pregnancies

Complications _____

Number of live children _____

Abortions _____

Stillbirths _____

Miscarriages _____

h. Family history _____

i. Social history

Education _____

Housing _____

Travel _____

Occupation _____

Personal habits _____

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Unit 4

Taking and Recording an Adult Medical History

STUDENT GUIDE

OBJECTIVES

1. Demonstrate how to use these interviewing skills:
 - Establishing a good relationship with a patient
 - Using non-verbal techniques to gather information
 - Using recommended techniques for conducting an interview
 - Supporting the patient
2. Take an adult medical history in the recommended sequence. Include the:
 - Patient identification information
 - Presenting complaint
 - History of the present problem
 - Past medical history
3. Record an adult medical history on the practice sheet in the recommended way.

LEARNING ACTIVITIES

1. Review with the instructor and the class interviewing skills, the sequence for taking an adult medical history, recording the adult medical history, and using the practice guide for taking an adult medical history.
2. Through presentation and class discussion, learn how to use the adult medical history skill checklist.
3. Practice interviewing other students to take adult medical histories.
4. Practice recording an adult medical history on the practice sheet.

SKILL CHECKLIST

Taking and Recording an Adult Medical History

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or the skills of other students.
- 2) Supervisors should use it when they evaluate how well students take and record an adult medical history.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate
 2 = Needs improvement
 3 = Satisfactory
 4 = Above average
 5 = Excellent

When taking and recording an adult medical history:

	YES	NO	RATING	COMMENTS
1. Practice these skills throughout the interview: a. Establish a good relationship with the patient b. Use non-verbal techniques to gather information c. Use recommended techniques for conducting an interview d. Support the patient				
2. Greet the patient and introduce yourself				
3. Make the patient feel at ease				
4. Take and record the patient identification information				
5. Obtain the presenting complaint				

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YES NO RATING COMMENTS

	YES	NO	RATING	COMMENTS
<p>6. Take the history of the present problem. Ask these questions:</p> <p>a. "When did the symptom start?"</p> <p>b. "How long have you had the symptom?"</p> <p>c. "Where is the symptom?"</p> <p>d. "How often does the symptom occur?"</p> <p>e. "How severe is the symptom?"</p> <p>f. "When does the symptom occur?"</p> <p>g. "What makes the symptom better or worse?"</p> <p>h. "Do you have any associated symptoms?"</p> <p>i. "Have you ever had the symptom before?"</p> <p>j. "Have you come in contact with anyone else who has the same symptoms?"</p>				
7. Review the appropriate systems				
<p>8. Take the past medical history. Include:</p> <p>a. Drug allergies</p> <p>b. Immunizations</p> <p>c. Childhood illnesses</p> <p>d. Adult illnesses</p> <p>e. Operations</p> <p>f. Accidents</p> <p>g. Menstrual and obstetrical history, if appropriate</p> <p>h. Family history</p> <p>i. Social history</p>				
9. Review your medical history notes with the patient. Check for accuracy				

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	YES	NO	RATING	COMMENTS
10. Record the adult medical history on the medical history form. Record the presenting complaint. State the reason for the patient's visit, in his own words. State how long the patient has had his problem				
11. Record the history of the present problem. Develop a clear picture of the patient's problem: a. Note appropriate information about the onset, duration, location, and frequency of the symptom b. Describe how severe the symptom is and when it occurs c. Describe anything that makes the symptom better or worse d. List any associated symptoms e. Give details of any history of similar symptoms or patient contacts f. Write the history in the sequence that the symptoms occurred g. Make the history brief and clear				
12. Record the past medical history according to the recommended categories. Give appropriate details for each category, including dates				

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Unit 5

Taking and Recording an Adult Medical History, Skill Development

STUDENT GUIDE

OBJECTIVES

1. Interview adult patients to take medical histories, using these interviewing skills:

Establishing a good relationship with a patient

Using non-verbal techniques to gather information

Using recommended techniques for conducting an interview

Supporting the patient

2. Properly record the medical history

LEARNING ACTIVITIES

Participate in one week of clinical practice in a hospital ward or outpatient clinic. During that time you will take medical histories of adult patients, using the practice guide for taking an adult medical history.

Unit 6

Taking and Recording a Child Medical History

STUDENT GUIDE

OBJECTIVES

1. Describe the difference between a child medical history and an adult medical history.
2. Describe the recommended steps for taking a medical history of a child.
3. Demonstrate how to use these interviewing skills when interviewing a child or his parent to take a child medical history:

Establishing a good relationship with a child and his parent

Using non-verbal techniques to gather information

Using recommended techniques for conducting an interview

Supporting the child and his parent

4. Interview a child or his parent to obtain the:

Patient identification information

Presenting complaint

History of the present problem

Past medical history

5. Record a child medical history on the medical history form.

LEARNING ACTIVITIES

1. Through presentations by the instructor and class discussions, learn:

The difference between a child medical history and an adult medical history

Interviewing skills for taking a medical history of a child

Steps for taking a medical history of a child

2. Observe the instructor taking a medical history of a child.
3. In the classroom, use role-play to practice interviewing a child and his parent to take the child's medical history.
4. Interview children and their parents during a one-day clinical practice.

6.1 INTRODUCTION

Taking the medical history of a child is very much like taking the medical history of an adult. But there are a few differences. A parent or other adult will usually accompany a child to the health center. To take a medical history, you will need to interview both the parent and the child, if the child is old enough.

The child medical history also focuses on the child's development. Development is the process of gradually acquiring certain skills as a child grows older. Children grow and develop very quickly. A child's environment, his family history, his general health, and his diet can all affect his normal development. You need to focus on these areas when you take the medical history of a child.

6.2 INTERVIEWING SKILLS

The same interviewing skills that you learned in the discussion of the adult medical history also apply when you interview a parent and child to take a child medical history. You need to establish a good relationship with both the parent and the child. You need to use non-verbal techniques to gather information. You need to conduct the interview in the proper way. And you need to support the parent and the child through your words and actions. These additional interviewing skills can also help you take a complete and accurate medical history of a child:

- a. Amuse the child to make him feel comfortable. Each child will respond differently to an interview. Some will be accepting. Others will be quite frightened. Do all that you can to make the child feel at ease. Allow the child to sit on his parent's lap or near his parent throughout the interview. Give the child a toy or something to play with during the interview.



- b. Be friendly, kind, and gentle. Speak softly. The child may or may not understand your words, but he may understand your approach and be reassured by it.
- c. Give the child a chance to talk. The parent will probably give most of the information about the child's medical history. Whenever possible, however, allow the older child to tell his own story.

6.3 STEPS FOR TAKING A CHILD MEDICAL HISTORY

The medical history of a child follows the same sequence as the medical history of an adult. The only differences are in the content of the past medical history. Questions about development and diet are added. Questions about adult illnesses, the menstrual and obstetrical history, occupation, and personal habits are left out.

Follow this sequence of steps when you interview a child and his parent:

- a. Greet the child and his parent. Introduce yourself and explain your role.
- b. Make the child and his parent feel at ease.
- c. Record the patient identification information.

- d. Find out the patient's presenting complaint. Ask the child or his parent why he has come to the health center.
- e. Take the history of the patient's present problem. Ask questions that will give you a clear picture of what is bothering the child.
- f. Take the patient's past medical history. Ask about:
 - Drug allergies
 - Immunizations
 - Childhood illnesses
 - Operations
 - Accidents
 - Development
 - Diet
 - Family history
 - Social history
- g. Review your medical history notes with the child or his parent. Make sure the child or his parent have given you all the information that they can provide. Check for accuracy.
- h. Record the child medical history on the medical history form.

6.4 SPECIAL CONSIDERATIONS FOR A CHILD MEDICAL HISTORY

Two areas have been added to the past medical history part of the interview for a child medical history. The two areas are development and diet.

Development

As a child grows, he passes through basic stages of physical, language, and social development. Physical development is the process of learning how to move his body. The ability to move develops in stages. That is, physical changes in the child's body allow him to do certain things at a certain age and not before. For example, a newborn can move his arms and legs, but he cannot walk. As he grows, his body continues to develop. By the time he is about twelve months old, he will be able to walk.

Language development is the process of learning how to use language to communicate. Like body movement, language develops in stages. For example, an infant usually cries, coos, or makes babbling noises before he speaks his first word.

Social development means learning how to act with other people. A child learns how to act with other people by copying. A child's ability to act with other people also develops in stages. A six-month-old child picks up his food with his hands. He does not begin to eat with a spoon until he is about two years old. A six-week-old baby will copy an adult's smile. By the age of three months, however, he will smile on his own.

A child's development is continuous. Still, it is helpful to look at a child at different ages to see if he is developing normally. Remember, though, that all children are different. Some walk early. Others walk late. An individual child can differ widely from the average and still be normal. In general, however, if a child is very late developing a skill, you should observe and examine him carefully. Malnutrition and illness can affect a child's development. Lack of stimulation, encouragement, and attention can also affect development. The average age at which children develop various social, physical, and language skills is listed in the child development guide.

CHILD DEVELOPMENT GUIDE

AGE RANGE IN WHICH SKILLS SHOULD BE ATTAINED	SOCIAL SKILLS	PHYSICAL SKILLS	LANGUAGE SKILLS
Birth to first few minutes of life		Moves arms and legs	Cries
6 weeks to 2 months	Smiles in response to mother's smile	Can lift head when on belly	Listens to sounds

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AGE RANGE IN WHICH SKILLS SHOULD BE ATTAINED	SOCIAL SKILLS	PHYSICAL SKILLS	LANGUAGE SKILLS
3 to 5 months	Smiles on own	Good head control Rolls over Plays with hands Grasps objects	Laughs and squeals Follows object with eyes
6 to 8 months	Feeds self biscuit Shy with strangers	Sits without support Stands with support	Makes babbling sounds Turns toward voice
8 to 11 months	Copies mother clapping hands	Crawls Pulls self to stand	Imitates sounds Says one word of one syllable
12 to 14 months	Drinks from a cup	Stands alone Walks holding on Grasps small object with thumb and forefinger Bangs two objects together	Says "mama" or "dada" to the correct person
18 to 20 months	Imitates mother doing house work	Walks alone Walks up stairs Walks backwards	Says two to three words other than mama and dada
24 to 30 months	Uses spoon Washes and dries hands Removes clothing	Jumps in place Kicks and throws ball	Follows simple directions Points to body parts named Can say about twenty-five words
3 to 3½ years	Dresses self with help Separates from mother easily	Climbs Stands on one foot Plays actively	Knows and can say name Talks well in sentences Asks many questions

AGE RANGE IN WHICH SKILLS SHOULD BE ATTAINED	SOCIAL SKILLS	PHYSICAL SKILLS	LANGUAGE SKILLS
4 to 4½ years	Buttons clothes	Hops on one foot	Can explain what he wants when he is cold, tired, or hungry Gives both names
5 to 5½ years	Dresses without help	Catches a bounced ball	Understands what "on," "under," "in," "over," and "behind" mean

Learn all you can about a child's development during the medical history. Refer to the child development guide to find the appropriate skills for each age group. Ask the parent if the child can perform these skills. For example, ask the parent of an eighteen-month-old child these questions:

"Does your child imitate you when you do your house work?"
This question asks about social development.

"Can your child walk alone? Can he walk backwards? Can he walk up steps?"
This is a way of finding out about physical development.

"How many words can your child say? What are the words?"
These questions assess language development.

During the physical examination you can actually observe how the child performs certain skills. How to observe a child to assess his development is discussed in the Physical Examination module.

Diet

A child's diet can seriously affect his health and his development. A child who does not eat enough of the right foods will develop malnutrition. Malnutrition affects the growth of a child's body and brain. A malnourished child will not develop normally. He will become sick easily. The effects of malnutrition may stay with a child for the rest of his life.

Explain to the parent that what the child eats will determine how healthy he is and how well he grows. Include these questions about diet when you take the medical history of a child:

- “If the child is under two, is he still breast-feeding?”
- “What foods does the child eat?”
- “How much food does the child eat?”
- “How often does the child eat each day?”
- “Why does the child eat the foods that he does?”

Also find out what the child has eaten over the last twenty-four hours. Ask the parent to tell you what the child has eaten most recently. Then ask about the previous meal. Next ask about the meal before that. Continue to question the parent until you have obtained information for a twenty-four hour period.

Write down each food that the parent reports to you. Record the time of day that the child ate the food. Also record the approximate amounts of each food that the child ate. Be sure to ask if others in the family might have also given the child food.

Review the record of the child's diet with the parent. Help the parent remember other foods that the child may have eaten. Find out if these foods represent the child's usual diet. If not, find out how it is different. Record other foods that the child usually eats. Here is a sample twenty-four hour diet record for an eighteen-month-old child:

The child is not breast-feeding because the mother is pregnant
Has not been breast-feeding for three months

Foods eaten: Lunch

¼ cup of corn porridge, slice of bread

Breakfast

¼ cup of corn porridge mixed with about

¼ cup of milk

Supper

Ate off mother's plate of meat and vegetable
stew with white rice

Mother unsure of amounts

Mother gives the child slices of bread throughout the day. She is unsure of the quantity

The foods reported represent the child's usual daily diet

Also record the child's diet according to food groups. List the foods according to whether they are protective, body building, or energy foods. For example:

PROTECTIVE FOODS	BODY BUILDING FOODS	ENERGY FOODS
Vegetables in stew (amount unknown)	Milk ($\frac{1}{4}$ cup) Meat in stew (amount unknown)	Corn porridge (total of $\frac{1}{2}$ cup) Bread (amount unknown) White rice (amount unknown)

Listing foods by groups will help you decide what information to give the parent about how to improve the child's diet as necessary to prevent malnutrition. Remember, you can prevent malnutrition more easily than you can treat it.

Practice Guide for Taking a Child Medical History

This practice guide will help you when you interview a child and his parent to take a medical history of a child. The guide lists the sequence of steps for taking a child medical history. It also outlines the information that you have learned to ask about. Your instructor will give you a copy of this guide to use when you interview children and their parents. Refer to the practice guide to remind you of the information to include in a child medical history.

PATIENT IDENTIFICATION INFORMATION

DATE OF VISIT, NAME, ADDRESS, SEX, DATE OF BIRTH, AGE

PRESENTING COMPLAINT

REASON FOR THE PATIENT'S VISIT

HOW LONG HE HAS HAD THE PROBLEM

HISTORY OF THE PRESENT PROBLEM

ONSET, DURATION, LOCATION, FREQUENCY, DESCRIPTION OF SYMPTOM

THINGS THAT MAKE THE SYMPTOM BETTER OR WORSE

ASSOCIATED SYMPTOMS, HISTORY OF SIMILAR SYMPTOMS, CONTACTS

REVIEW OF SYSTEMS

GENERAL: Fever, chills, fatigue, weight loss, weight gain, loss of appetite, sensitivity to heat or cold, sweating, dizziness, unusual thirst, unusual hunger

HEAD AND SINUSES: Injury, headache, sinus problem

EYES: Pain, discharge, blurred vision, blindness, difficulty seeing at night

EARS: Pain, discharge, hearing problem

NOSE: Injury, bleeding, blockage

MOUTH: Tooth pain, missing teeth, problem with lips or gums

THROAT: Pain, swelling, blockage, difficulty swallowing, change in voice

RESPIRATORY: Cough, coughing up sputum, chest pain, wheezing, shortness of breath, difficulty breathing, fever, weight loss, loss of appetite

HEART: Chest pain, edema, shortness of breath

GASTROINTESTINAL: Nausea, vomiting, blood in vomit, diarrhea, constipation, blood or mucus in stool, heartburn, abdominal pain, pain or itching around the rectum, worms, fever, chills, weight loss

GENITOURINARY: Pain on urination, frequent urination, increased urination, having to urinate frequently at night, trouble starting, and stopping the flow of urine, blood in urine, swelling of face and legs, colicky pain in loin or flank, radiating flank pain, fever, chills

MUSCULOSKELETAL: Joint pain, joint swelling, joint redness, limited joint movement, joint deformity, muscle weakness, fracture

NERVOUS SYSTEM: Headache, convulsion, fainting, paralysis of an arm or leg, loss of consciousness, loss of speech, loss of memory, loss of sensation

SKIN: Sores, sores that do not heal, color change, injury, itching, texture change, loss of sensation

MENTAL HEALTH: Nervousness, irritability, loss of memory, depression, trouble sleeping, problems with daily life, abnormal fears

PAST MEDICAL HISTORY

DRUG ALLERGIES: Allergy to any drug

IMMUNIZATIONS: Any immunizations and dates given

CHILDHOOD ILLNESSES: Measles, mumps, whooping cough, polio, rheumatic heart disease, tuberculosis, kwashiorkor, marasmus

OPERATIONS: Any procedure involving cutting into the body or removing tissue

ACCIDENTS: Any serious accidents

DEVELOPMENT:

AGE RANGE IN WHICH SKILLS SHOULD BE ATTAINED	SOCIAL SKILLS	PHYSICAL SKILLS	LANGUAGE SKILLS
Birth to first few minutes of life		Moves arms and legs	Cries
6 weeks to 2 months	Smiles in response to mother's smile	Can lift head when on belly	Listens to sounds
3 to 5 months	Smiles on own	Good head control Rolls over Plays with hands Grasps objects	Laughs and squeals Follows object with eyes
6 to 8 months	Feeds self biscuit Shy with strangers	Sits without support Stands with support	Make babbling sounds Turns toward voice
9 to 11 months	Copies mother clapping hands	Crawls Pulls self to stand	Imitates sounds Says one word of one syllable



AGE RANGE IN WHICH SKILLS SHOULD BE ATTAINED

SOCIAL SKILLS

PHYSICAL SKILLS

LANGUAGE SKILLS

12 to 14 months

Drinks from a cup

Stands alone
Walks holding on
Grasps small object with thumb and forefinger
Bangs two objects together

Says "mama" or "dada" to the correct person

18 to 20 months

Imitates mother doing house work

Walks alone
Walks up stairs
Walks backwards

Says two to three words other than mama and dada

24 to 30 months

Uses spoon
Washes and dries hands
Removes clothing

Jumps in place
Kicks and throws ball

Follows simple directions
Points to body parts named
Can say about twenty-five words

3 to 3½ years

Dresses self with help
Separates from mother easily

Climbs
Stand on one foot
Plays actively

Knows and can say name
Talks well in sentences
Asks many questions

4 to 4½ years

Buttons clothes

Hops on one foot

Can explain what he wants when he is cold, tired, or hungry
Gives both names

5 to 5½ years

Dresses without help

Catches a bounced ball

Understands what "on," "under," "in," "over," and "behind" mean

Diet: Breast-feeding
Foods eaten, quantities eaten
How often child eats, why child eats a food

Family history: Health of family members
History of family members with diabetes, cancer, high blood pressure, heart disease, tuberculosis

Social history: Education - years of school
Housing - house and surroundings, latrine, water, garbage animals

REVIEW QUESTIONS

Taking and Recording a Child Medical History

1. Write down as many steps for taking a child medical history as you can.

2. A mother brings in a three-year-old child. The child begins to cry as soon as he enters the examining room. What can you do to make the child and the parent feel at ease?

3. How does the medical history of a child differ from the medical history of an adult?

4. Write down the presenting complaint of this child:
"My child has had diarrhea for three days. Today she started vomiting. I stopped giving her food and milk yesterday because I thought she would get better. She is getting worse."

5. A mother brings in a child who has had diarrhea for three days. List at least six questions you would ask the mother about the child's present illness.

6. A mother brings in a six-year-old child. The child feels hot and tired. His right wrist and left knee are painful and swollen. You saw the

child three weeks ago for tonsillitis. You gave him penicillin. His mother gave him only three days of the treatment. What systems should you be sure to review?

- 7. You are taking the past medical history of a two-and-one-half-year-old child. List at least six areas you should ask about.**

- 8. List the three areas of development that you should ask about when you take a medical history of a child.**

- 9. A mother brings in a twelve-month-old child. List the skills that you would expect him to perform in these areas.**
 - a. Social skills:**

 - b. Physical skills:**

 - c. Language skills:**

- 10. List five questions to ask when you take the history of a child's diet.**

- 11. You are recording a diet history. What three food groups should you make a statement about?**

SKILL CHECKLIST

Taking and Recording a Child Medical History

This checklist has two purposes

- 1) Students should use it as a guide for checking their own skills or the skills of other students.
- 2) Supervisors should use it when they evaluate how well students take and record a child medical history.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate
 2 = Needs improvement
 3 = Satisfactory
 4 = Above average
 5 = Excellent

When taking and recording
a child medical history:

	YES	NO	RATING	COMMENTS
1. Practice these skills throughout the interview: a. Establish a good relationship with the child and his parent b. Use non-verbal techniques to gather information c. Use recommended techniques for conducting an interview d. Support the child and his parent				
2. Greet the child and the parent. Introduce yourself				
3. Make the child and his parent feel at ease				
4. Take and record the patient identification information				

	YES	NO	RATING	COMMENTS
5. Obtain the presenting complaint				
6. Take the history of the present illness. Ask these questions:				
a. "When did the symptom start?"				
b. "How long have you had the symptom?"				
c. "Where is the symptom?"				
d. "How often does the symptom occur?"				
e. "How severe is the symptom?"				
f. "When does the symptom occur?"				
g. "What makes the symptom better or worse?"				
h. "Do you have any associated symptoms?"				
i. "Have you ever had the symptom before?"				
j. "Have you come in contact with anyone who has the same symptoms?"				
7. Review the appropriate systems				
8. Take the past medical history. Include:				
a. Drug allergies				
b. Immunizations				
c. Childhood illnesses				
d. Operations				
e. Accidents				
f. Development				
g. Diet				
h. Family history				
i. Social history				

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	YES	NO	RATING	COMMENTS
9. Review your medical history notes with the child or his parent. Check for accuracy				
10. Record the child medical history on the medical history form				

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