

Lesson 1- 4

The Human Body

Objectives

Objectives Legend

C=Cognitive P=Psychomotor A=Affective
1 = Knowledge level
2 = Application level
3 = Problem-solving level

Cognitive Objectives

At the completion of this lesson, the CFR (CFR) student will be able to:

- 1-4.1 Describe the anatomy and function of the respiratory system. (C-1)
- 1-4.2 Describe the anatomy and function of the circulatory system. (C-1)
- 1-4.3 Describe the anatomy and function of the musculoskeletal system. (C-1)
- 1-4.4 Describe the components and function of the nervous system. (C-1)
- 1-4.5 Describe the function of the skin. (C-1)

Affective Objectives

No affective objectives identified.

Psychomotor Objectives

No psychomotor objectives identified.

Preparation

Motivation:

To perform an adequate patient assessment, the CFR must be familiar with the normal anatomy of the human body and topographical terminology. This information will provide a solid cornerstone on which the CFR can build the essentials of quality patient assessment and management.

Prerequisites:

None

Materials

AV Equipment:

Utilize various audio-visual materials relating to emergency medical care. The continuous development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to ensure that the objectives of the curriculum are met.

EMS Equipment:

Anatomy models (skeleton, respiratory system, airway, heart)

Personnel

Primary Instructor:

One EMT-B Instructor knowledgeable in human body systems and topographical terminology.

Assistant Instructor:

None required.

Recommended Minimum Time to Complete:

One hour

Presentation

Declarative (What)

- I. Body Systems
 - A. The Respiratory system
 1. Function
 - a. Deliver oxygen to the body
 - b. Remove carbon dioxide from the body
 2. Components/anatomy
 - a. Nose and mouth
 - b. Pharynx
 - (1) Oropharynx
 - (2) Nasopharynx
 - c. Epiglottis - a leaf-shaped structure that prevents food and liquid from entering the trachea during swallowing.
 - d. Windpipe (trachea)
 - e. Voice box (larynx)
 - f. Lungs
 - g. Diaphragm
 3. Physiology
 - a. Diaphragm moves down, chest moves out, drawing air into the lungs (inhalation)
 - b. Exchange of oxygen and carbon dioxide in the lungs
 - c. Diaphragm moves up causing air to exit the lungs (exhalation)
 4. Infant and child anatomy and physiology considerations
 - a. All structures are smaller and more easily obstructed than in adults.
 - b. Infants' and children's tongues take up proportionally more space in the mouth than adults.
 - c. The trachea is more flexible in infants and children.
 - d. The primary cause of cardiac arrest in infants and children is an uncorrected respiratory problem.
 - B. The Circulatory system
 1. Function
 - a. Deliver oxygen and nutrients to the tissues
 - b. Remove waste products from the tissues
 2. Components/Anatomy
 - a. Heart
 - (1) Atrium
 - (a) Right - receives blood from the veins of the body
 - (b) Left - receives blood from the lungs

- (2) Ventricle
 - (a) Right - pumps blood to the lungs.
 - (b) Left - pumps blood to the body.
 - (c) Valves prevent back flow of blood.
 - b. Arteries
 - (1) Carry blood away from the heart to the rest of the body.
 - (2) Major arteries
 - (a) Carotid
 - i) Major artery of the neck.
 - ii) Pulsations can be palpated on either side of the neck.
 - (b) Femoral
 - i) The major artery of the thigh.
 - ii) Pulsations can be palpated in the groin area (the crease between the abdomen and thigh).
 - (c) Radial
 - i) Major artery of the lower arm.
 - ii) Pulsations can be palpated at palm side of the wrist thumb-side.
 - (d) Brachial
 - i) An artery of the upper arm.
 - ii) Pulsations can be palpated on the inside of the arm between the elbow and the shoulder.
 - c. Capillaries
 - (1) Tiny blood vessels that connect arteries to veins
 - (2) Found in all parts of the body
 - (3) Allow for the exchange of oxygen and carbon dioxide
 - d. Veins - vessels that carry blood back to the heart
 - e. Blood
 - (1) Fluid of the circulatory system
 - (2) Carries oxygen and carbon dioxide
3. Physiology
- a. Left ventricle contracts, sending a wave of blood through the arteries.
 - b. Pulse can be felt anywhere an artery passes near the skin surface and over a bone.
 - (1) Carotid
 - (2) Femoral
 - (3) Radial
 - (4) Brachial

- C. The Musculoskeletal system
 - 3. The Skeletal System
 - a. Function
 - (1) Gives the body shape
 - (2) Protects vital internal organs
 - b. Components
 - (1) Skull - houses and protects the brain
 - (2) Face
 - (3) Spinal Column
 - (4) Thorax
 - (a) Ribs
 - (b) Breastbone (sternum)
 - i) Xiphoid process - lowest portion of the sternum
 - ii) Landmark for determining hand position for chest compressions
 - (5) Pelvis
 - (6) Lower extremities
 - (a) Thigh (femur)
 - (b) Knee cap (patella)
 - (c) Shin (tibia and fibula)
 - (d) Ankle
 - (e) Feet
 - (f) Toes
 - (7) Upper extremities
 - (a) Shoulder (collar bone and shoulder blade)
 - (b) Upper arm (humerus)
 - (c) Forearm (radius and ulna)
 - (d) Wrist
 - (e) Hand
 - (f) Fingers
 - (8) Joints - where bones connect to other bones
 - 4. The Muscular System
 - a. Function
 - (1) Give the body shape.
 - (2) Protect internal organs.
 - (3) Provide for movement.
 - b. Components
 - (1) Voluntary (skeletal)
 - (a) Attached to the bones.
 - (b) Under control of the nervous system and brain.
Can be contracted and relaxed by the will of the individual.
 - (c) Responsible for movement.

- (2) Involuntary (smooth)
 - (a) Found in the walls of the tubular structures of the gastrointestinal tract and urinary system.
 - (b) Also in the blood vessels and bronchi.
 - (3) Cardiac
 - (a) Found only in the heart.
 - (b) Can tolerate interruption of blood supply for only very short periods.
- A. The Nervous system
- 1. Function
 - a. Controls the voluntary and involuntary activity of the body.
 - b. Provides for higher mental function (thought, emotion)
 - 2. Components/Anatomy
 - a. Central nervous system
 - (1) Brain - located within the cranium.
 - (2) Spinal cord - located within the spinal column
 - b. Peripheral nervous system
 - (1) Sensory - carries information from the body to the brain and spinal cord.
 - (2) Motor - carries information from the brain and spinal cord to the body.
- B. Skin
- 1. Function
 - a. Protects the body from the environment, bacteria and other organisms.
 - b. Helps regulate the temperature of the body.
 - c. Prevents dehydration
 - d. Senses heat, cold, touch, pressure and pain; transmits this information to the brain and spinal cord.

Application

Procedural (How)

None identified for this lesson.

Contextual (When, Where, Why)

It is of utmost importance that the CFR have a basic level of knowledge concerning the human body. To accurately communicate to other health professionals, the CFR must be able to identify topographic anatomy.

The CFR must also understand the basic components of the body systems. Knowledge obtained in this lesson will be extremely beneficial in other modules throughout this curriculum.

Student Activities

Auditory (Hearing)

1. The student should hear the instructor describe the various components of the human body.

Visual (Seeing)

1. The students should see models of the human body.
2. The students should see diagrams of the human body.
3. The students should see a skeleton of the human body.

Kinesthetic (Doing)

1. The students should identify various structures of the human body.
2. The students should demonstrate their ability to identify topographic anatomy.

Instructor Activities

Facilitate discussion and supervise practice.

Reinforce student progress in cognitive, affective, and psychomotor domains.

Redirect students having difficulty with content. (Complete remediation form.)

Evaluation

Practical:

Evaluate the actions of the CFR students during role play, practice or other skill stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor objectives of this lesson.

Written:

Develop evaluation instruments, e.g., quizzes, oral reviews, and handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

Remediation

Identify students or groups of students who are having difficulty with this subject content. Complete remediation sheet from the instructor's course guide.

Enrichment

What is unique in the local area concerning this topic? Complete enrichment sheets from instructor's course guide and attach with lesson plan.

