

Medical / Behavioral and  
Obstetrics / Gynecology

Lesson 4-1  
General Pharmacology

# 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 EMT-Basic student will be able to:

- 4-1.1 Identify which medications will be carried on the unit.(C-1)
- 4-1.2 State the medications carried on the unit by the generic name. (C-1)
- 4-1.3 Identify the medications with which the EMT-Basic may assist the patient with administering. (C-1)
- 4-1.4 State the medications the EMT-Basic can assist the patient with by the generic name.(C-1)
- 4-1.5 Discuss the forms in which the medications may be found. (C-1)

### AFFECTIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-1.6 Explain the rationale for the administration of medications.(A-3)

### PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-1.7 Demonstrate general steps for assisting patient with self-administration of medications.(P-2)
- 4-1.8 Read the labels and inspect each type of medication.(P-2)

# Preparation

**Motivation:** Later in this course the EMT-Basic student will be learning specific medications which may be administered to a patient who has his own prescribed medication for a specific medical condition.

Some medications may be administered by the EMT-Basic when there are patients with specific chief complaints. Giving the proper medication in an emergency situation is critical to the well-being of the patient.

**Prerequisites:** BLS, Preparatory, Airway and Patient Assessment.

## MATERIALS

**AV Equipment:** Utilize various audio-visual materials relating to general pharmacology. The continuous design and 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 assure meeting the objectives of the curriculum.

**EMS Equipment:** None

## PERSONNEL

**Primary Instructor:** Advanced-level provider who has administered medications.

**Assistant Instructor:** The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in general pharmacology.

**Recommended Minimum Time to Complete:** One hour

# PRESENTATION

## Declarative (What)

- I. Overview - the importance of medications and the dangers associated with their administration.
- II. Medications (carried on the EMS unit)
  - A. Activated Charcoal - learned as a part of the poison/overdose module (4-6)
  - B. Syrup of Ipecac - learned as a part of the poison/overdose module. (4-6)
  - C. Oral Glucose - learned as a part of the diabetes module (4-4).
  - D. Oxygen (refer to airway module).
  - E. Aspirin – nonenteric chewable; learned as part of cardiac module (4- 3).
  - F. Epinephrine – learned as part of the allergies module (4-5).
- III. Medications (prescribed by a physician and the patient has them in his possession; they are not carried on the EMS unit. May assist patients in taking, with approval by medical direction).
  - A. Inhaler - learned as a part of the respiratory module (4-2).
  - B. Nitroglycerin - learned as a part of the cardiac module (4-3).
  - C. Epinephrine - learned as a part of the allergies module (4-5).
- IV. Medication names
  - A. Generic
    1. The name listed in the U.S. Pharmacopedia, a governmental publication listing all drugs in the U.S.
    2. Name assigned to drug before it becomes officially listed. Usually a simple form of the chemical name.
    3. Give examples per local protocol.
  - B. Trade
    1. Brand name is the name a manufacturer uses in marketing the drug.
    2. Give examples.
- V. Indications - the indication for a drug's use includes the most common uses of the drug in treating a specific illness.
- VI. Contraindications - situations in which a drug should not be used because it may cause harm to the patient or offer no effect in improving the patient's condition or illness.
- VII. Medication Form
  - A. Medications the EMT-Basic carries on the unit or medications that a patient may have a prescription for that the EMT-Basic may assist with administration.
    1. Compressed powders or tablets – nitroglycerin, aspirin
    2. Liquids for injection - epinephrine

3. Gels - glucose
  4. Suspensions - activated charcoal
  5. Fine powder for inhalation - prescribed inhaler
  6. Gases - oxygen
  7. Sub-lingual spray - nitroglycerin
  8. Liquid/vaporized fixed dose nebulizers
- B. Each drug is in a specific medication form to allow properly controlled concentrations of the drug to enter into the blood stream where it has an effect on the target body system.
  - C. Medications have a specific shelf life and expiration dates.
- VIII. Dose - state how much of the drug should be given.
- IX. Administration - state route by which the medication is administered such as oral, sublingual (under the tongue), injectable, or intramuscular.
- X. Actions - state desired effects a drug has on the patient and/or his body systems.
- XI. Side Effects - state any actions of a drug other than those desired. Some side effects may be predictable.
- XII. Re-assessment strategies
- A. Repeat vital signs.
  - B. Must be done as part of the on-going patient assessment.
  - C. Documentation of response to intervention.

## SUGGESTED APPLICATION

### Procedural (How)

Demonstrate reading labels and inspecting each medication that will be carried on the unit or assisted with by the patient.

### Contextual (When, Where, Why)

For years the primary medication used by the EMT was oxygen. The EMT-Basic will have activated charcoal, syrup of Ipecac and oral glucose on the unit to administer with medical direction. In addition, the EMT-Basic will be able to assist patients with several medications, again under the supervision of medical direction.

This pharmacology lesson will assist you in understanding basic components for each of the medications. In later lessons, you will obtain additional knowledge and skills concerning their administration.

## STUDENT ACTIVITIES

### Auditory (Hear)

1. The student will hear information on medications they will use on the EMS unit.

### Visual (See)

1. The student will see each type of medication they will use on the EMS unit.

### Kinesthetic (Do)

1. The student will practice inspecting and reading the labels of each type of medication they will use on the EMS unit.

## INSTRUCTOR ACTIVITIES

Supervise student practice.

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

Redirect students having difficulty with content (complete remediation forms).

## EVALUATION

Written: Develop evaluation instruments, e.g., examinations, verbal reviews, handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

Practical: Evaluate the actions of the EMT-Basic 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.

## REMEDIATION

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

## SUGGESTED ENRICHMENT

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

Medical / Behavioral and  
Obstetrics / Gynecology  
Lesson 4-2  
Respiratory Emergencies

# 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 EMT-Basic student will be able to:

- 4-2.1 List the structure and function of the respiratory system.(C-1)
- 4-2.2 State the signs and symptoms of a patient with breathing difficulty.(C-1)
- 4-2.3 Describe the emergency medical care of the patient with breathing difficulty.(C-1)
- 4-2.4 Recognize the need for medical direction to assist in the emergency medical care of the patient with breathing difficulty.(C-3)
- 4-2.5 Establish the relationship between airway management and the patient with breathing difficulty.(C-3)
- 4-2.6 List signs of adequate air exchange.(C-1)
- 4-2.7 List signs of inadequate air exchange.
- 4-2.8 State the generic name, medication forms, dose, administration, action, indications and contraindications for the prescribed inhaler.(C-1)

### AFFECTIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-2.9 Defend EMT-Basic treatment regimens for various respiratory emergencies.(A-1)
- 4-2.10 Explain the rationale for administering an inhaler.(A-3)

### PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-2.11 Demonstrate the emergency medical care for breathing difficulty.(P-1,2)
- 4-2.12 Perform the steps in facilitating the use of an inhaler.(P-2)

# PREPARATION

Motivation: Over 200,000 persons die from respiratory emergencies each year.

One large city reported 12% of their ambulance runs were respiratory emergencies. This represented three times the calls for heart attacks.

Prerequisites: BLS, Preparatory, Airway and Patient Assessment.

## MATERIALS

AV Equipment: Utilize various audio-visual materials relating to respiratory emergencies. The continuous design and 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 assure meeting the objectives of the curriculum.

EMS Equipment: Handheld inhaler suitable for training purposes and various spacer devices.

## PERSONNEL

Primary Instructor: One Advanced-Level Provider or EMT-Basic instructor who is knowledgeable in respiratory diseases and Handheld inhalers.

Assistant Instructor: The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in respiratory emergencies.

Recommended Minimum  
Time to Complete: Two and one half hours

# PRESENTATION

## Declarative (What)

- I. Anatomy review
  - A. Respiratory
    1. Nose and mouth
    2. Pharynx
      - a. Oropharynx
      - b. Nasopharynx
    3. Epiglottis - a leaf-shaped structure that prevents food and liquid from entering the trachea during swallowing.
    4. Trachea (windpipe)
    5. Cricoid cartilage - firm cartilage ring forming the lower portion of the larynx.
    6. Larynx (voice box)
    7. Bronchi - two major branches of the trachea to the lungs. Bronchus subdivides into smaller air passages ending at the alveoli.
    8. Alveoli
    9. Lungs
    10. Diaphragm
      - a. Inhalation (active)
        - (1) Diaphragm and intercostal muscles contract, increasing the size of the thoracic cavity.
          - (a) Diaphragm moves slightly downward, flares lower portion of rib cage.
          - (b) Ribs move upward/outward.
        - (2) Air flows into the lungs.
      - b. Exhalation
        - (1) Diaphragm and intercostal muscles relax, decreasing the size of the thoracic cavity.
          - (a) Diaphragm moves upward.
          - (b) Ribs move downward/inward.
        - (2) Air flows out of the lungs.
    11. Respiratory physiology
      - a. Alveolar/capillary exchange
        - (1) Oxygen-rich air enters the alveoli during each inspiration.
        - (2) Oxygen-poor blood in the capillaries passes into the alveoli.
        - (3) Oxygen enters the capillaries, as carbon dioxide enters the alveoli.
      - b. Capillary/cellular exchange
        - (1) Cells give up carbon dioxide to the capillaries.
        - (2) Capillaries give up oxygen to the cells.
      - c. Adequate breathing
        - (1) Normal Rate
          - (a) Adult - 12-20/minute

- (b) Child - 15-30/minute
      - (c) Infant - 25-50/minute
    - (2) Rhythm
      - (a) Regular
      - (b) Irregular
    - (3) Quality
      - (a) Breath sounds - present and equal
      - (b) Chest expansion - adequate and equal
      - (c) Effort of breathing - use of accessory muscles - predominantly in infants and children
    - (4) Depth (tidal volume) - adequate
  - d. Inadequate breathing
    - (1) Rate - outside of normal ranges.
    - (2) Rhythm - irregular
    - (3) Quality
      - (a) Breath sounds - diminished or absent
      - (b) Chest expansion - unequal or inadequate
      - (c) Increased effort of breathing - use of accessory muscles - predominantly in infants and children
    - (4) Depth (tidal volume) - inadequate/shallow
    - (5) The skin may be pale or cyanotic (blue) and cool and clammy.
    - (6) There may be retractions above the clavicles, between the ribs and below the rib cage, especially in children.
    - (7) Nasal flaring may be present, especially in children.
    - (8) In infants, there may be "seesaw" breathing where the abdomen and chest move in opposite directions.
    - (9) Agonal breathing (occasional gasping breaths) may be seen just before death.
12. Infant and child anatomy considerations
  - a. Mouth and nose - in general: All structures are smaller and more easily obstructed than in adults.
    - (1) Children tend to produce more saliva.
  - b. Pharynx - infants' and children's tongues take up proportionally more space in the mouth than adults.
  - c. Trachea (windpipe)
    - (1) Infants and children have narrower tracheas that are obstructed more easily by swelling.
    - (2) The trachea is softer and more flexible in infants and children.
  - d. Cricoid cartilage - like other cartilage in the infant and child, the cricoid cartilage is less developed and less rigid.
  - e. Diaphragm - chest wall is softer, infants and children tend to depend more heavily on the diaphragm for breathing.
- B. Adequate and inadequate artificial ventilation
1. An EMT-Basic is adequately artificially ventilating a patient when:

- a. The chest rises and falls with each artificial ventilation.
- b. The rate is sufficient, approximately 12 per minute for adults and 20 times per minute for children and infants.

NOTE: Heart rate may return to normal with successful artificial ventilation.

2. Artificial ventilation is inadequate when:

- a. The chest does not rise and fall with artificial ventilation.
- b. The rate is too slow or too fast.

NOTE: Heart rate may not return to normal with artificial ventilation.

## II. Breathing Difficulty

### A. Signs and symptoms

- 1. Shortness of breath
- 2. Restlessness
- 3. Increased pulse rate
- 4. Increased breathing rate
- 5. Decreased breathing rate
- 6. Skin color changes
  - a. Cyanotic
  - b. Pale
  - c. Flushed
  - d. Mottled
- 7. Noisy breathing
  - a. Crowing
  - b. Wheezing
  - c. Gurgling
  - d. Snoring
  - e. Stridor
    - (1) A harsh sound heard during breathing
    - (2) Upper airway obstruction
- 8. Silent chest - may be found in Asthma in child & adults
- 9. Inability to speak due to breathing efforts.
- 10. Retractions - use of accessory muscles.
- 11. Shallow or slow breathing may lead to altered mental status (with fatigue or obstruction).
- 12. Abdominal breathing (diaphragm only)
- 13. Coughing
- 14. Irregular breathing rhythm
- 15. Patient position
  - a. Tripod position
  - b. Sitting with feet dangling, leaning forward.
- 16. Unusual anatomy (barrel chest)

### B. Emergency Medical Care -

- 1. Perform initial assessment
- 2. Perform Focused History and Physical Exam
- 3. Important questions to ask
  - a. Onset

- b. Provocation
- c. Quality
- d. Radiation
- e. Severity
- f. Time
- g. Interventions
- 4. Breathing
  - a. Complains of trouble breathing.
    - (1) Apply oxygen if not already done.
    - (2) Assess baseline vital signs.
  - b. Has a prescribed inhaler available.
    - (1) Consult medical direction.
    - (2) Facilitate administration of inhaler
      - (a) Repeat as indicated.
      - (b) Continue focused assessment.
  - c. Does not have prescribed inhaler -
    - (1) continue with focused assessment.

### III. Special Considerations

- A. Relationship to Airway Management - should be prepared to intervene with appropriate oxygen administration and artificial ventilation support.
- B. Child and Infant consideration - See Module 6

### IV. Medications

#### A. Prescribed inhaler

NOTE: Only Bronchodilators listed below and authorized by the REMAC may be administered. DO NOT ADMINISTER A STEROID BASED INHALER.

- 1. Medication name
  - a. Generic - albuterol, isoetharine, metaproteranol, etc.
  - b. Trade - Proventil, Ventolin, Bronkosol, Bronkometer, Alupent, Metaprel, etc.
- 2. Indications - meets all of the following criteria:
  - a. Exhibits signs and symptoms of respiratory emergency,
  - b. Has physician prescribed handheld inhaler, and
  - c. Administration of medication is authorized by the Regional Medical Advisory Committee.
- 3. Contraindications
  - a. Patient is not alert.
  - b. Inhaler is not prescribed for the patient.
- 4. Medication form - handheld metered dose inhaler
- 5. Dosage - number of inhalations based upon medical direction's order or physician's order based upon consultation with the patient.
- 6. Administration
  - a. Obtain order from medical direction either on-line or off-line.
  - b. Assure right medication, right patient, right route, patient alert enough to use inhaler.
  - c. Check the expiration date of the inhaler.

- d. Check to see if the patient has already taken any doses.
  - e. Shake the inhaler vigorously several times.
  - f. Remove oxygen adjunct from patient.
  - g. Have the patient exhale deeply.
  - h. Have the patient put his lips around the opening of the inhaler.
  - i. Have the patient depress the handheld inhaler as he begins to inhale deeply.
  - j. Instruct the patient to hold his breath for as long as he comfortably can (so medication can be absorbed).
  - k. Replace oxygen on patient.
  - l. Allow patient to breathe a few times. Repeat second dose per protocol.
  - m. If patient has a spacer device for use with his inhaler, it should be used. A spacer device is an attachment between inhaler and patient that allows for more effective use of medication.
7. Actions - dilates bronchioles reducing airway resistance.
8. Side effects
- a. Increased pulse rate
  - b. Tremors
  - c. Nervousness
  - d. Nausea
9. Re-assessment strategies
- a. Gather vital signs and focused reassessment.
  - b. Patient may deteriorate and need positive pressure artificial ventilation.
10. Infant and child considerations
- a. Use of handheld inhalers is very common in children.
  - b. Chest Retractions are more commonly seen in children than adults.
  - c. Cyanosis is a late finding in children.
  - d. Very frequent coughing may be present rather than wheezing in some children.
  - e. Emergency care with usage of handheld inhalers is the same if the indications for usage of inhalers are met by the ill child.

# SUGGESTED APPLICATION

## Procedural (How)

1. Show students images of adults, children and infants with breathing distress.
2. Show students different types of inhalers.
3. Show students how to use a metered dose inhaler.

## Contextual (When, Where, Why)

Very few situations are more frightening to a patient than not being able to breathe. By giving oxygen and helping the patient use his inhaler, the EMT-Basic will be able to relieve a significant amount of the patient's anxiety. The sooner this is done, the better.

## STUDENT ACTIVITIES

### Auditory (Hear)

1. The student should hear noisy breathing on an audio tape of actual patients.

### Visual (See)

1. The student should see signs and symptoms of respiratory emergencies using various audio-visual aids or materials of patients exhibiting the signs.
2. The student should see a demonstration of the proper steps in assisting in the usage of handheld inhalers.

### Kinesthetic (Do)

1. The student should practice assessment and management of adult, child and infant patients having a respiratory illness who have been prescribed a handheld inhaler by their physician.
2. The student should practice the steps in facilitating the use of a handheld inhaler.
3. The student should practice role play situations where appropriate and inappropriate assistance of the usage of handheld inhalers occurs.

## INSTRUCTOR ACTIVITIES

Supervise student practice.

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

Redirect students having difficulty with content (complete remediation forms).

# EVALUATION

Written: Develop evaluation instruments, e.g., examinations, verbal reviews, handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

Practical: Evaluate the actions of the EMT-Basic 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.

## REMEDIATION

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

## SUGGESTED ENRICHMENT

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

Medical / Behavioral and  
Obstetrics / Gynecology

Lesson 4-3  
Cardiac Emergencies

# 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 EMT-Basic student will be able to:

- 4-3.1 Describe the structure and function of the cardiovascular system.(C-1)
- 4-3.2 Describe the emergency medical care of the patient experiencing chest pain/discomfort.(C-1)
- 4-3.3 Discuss the position of comfort for patients with various cardiac emergencies.(C-1)
- 4-3.4 Establish the relationship between airway management and the patient with cardiovascular compromise.(C-3)
- 4-3.5 Predict the relationship between the patient experiencing cardiovascular compromise and basic life support.(C-2)
- 4-3.6 Explain the importance of prehospital ACLS intervention if it is available.
- 4-3.7 Explain the importance of urgent transport to a facility with Advanced Cardiac Life Support if it is not available in the prehospital setting.(C-1)
- 4-3.8 Describe the student prerequisites for AED training and / or certification
- 4-3.9 Explain the importance of frequent practice with the AED
- 4-3.10 Describe the requirements for authorized use of an AED
- 4-3.11 Explain the rationale for early defibrillation
- 4-3.12 Explain the importance of early ALS intervention
- 4-3.13 Explain the importance of urgent transport to a medical facility with ALS if it is not available in the prehospital setting
- 4-3.14 Explain the terms “shockable” and “non-shockable” rhythms
- 4-3.15 Differentiate between a fully automated and a semi-automated defibrillator
- 4-3.16 Describe the NYS AED Treatment protocol
- 4-3.17 List the indications for automated external defibrillation (AED)
- 4-3.18 List the contraindications for automated external defibrillation (AED).
- 4-3.19 State the reasons for assuring that the patient is pulseless and apneic when using the AED
- 4-3.20 Explain the role of medical control in the use of an AED
- 4-3.21 State the reason why a case review should be completed following the use of AED
- 4-3.22 Identify a NYS approved Do Not Resuscitate (DNR) form
- 4-3.23 Describe the effect of an “Out-of-Hospital” DNR order on the use of CPR and the AED
- 4-3.24 List the steps in the operation of the AED
- 4-3.25 Explain the factors to consider for the safe use of AED
- 4-3.26 Explain the proper operator maintenance and inspection of AED
- 4-3.27 Explain the considerations for interruption of CPR, when using the AED

- 4-3.28 Recognize the need for medical direction or protocols to assist in the emergency medical care of the patient with chest pain.(C-3)
- 4-3.29 List the indications for the use of nitroglycerin.(C-1)
- 4-3.30 State the contraindications and side effects for the use of nitroglycerin.
- 4-3.31 State the definition of Cerebrovascular Accident (Stroke).
- 4-3.32 List the signs and symptoms of Cerebrovascular Accident (Stroke).
- 4-3.33 Describe the emergency medical care of the patient with signs and symptoms of a Cerebrovascular Accident (Stroke).

### AFFECTIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-3.34 Explain the rationale for administering nitroglycerin to a patient with chest pain or discomfort.(A-3)
- 4-3.35 State the reasons for obtaining initial training in AED and the importance of continuing education
- 4-3.36 Discuss the reasons for maintenance of the AED

### PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-3.37 Demonstrate the assessment and emergency medical care of a patient experiencing chest pain/discomfort.(P-1,2)
- 4-3.38 Demonstrate the application and operation of the AED
- 4-3.39 Demonstrate the operator maintenance of an AED
- 4-3.40 Demonstrate completing a Prehospital Care Report (PCR) for patients in cardiac arrest, when an AED is connected to the patient
- 4-3.41 Perform the steps in facilitating the use of nitroglycerin for chest pain or discomfort.(P-2)
- 4-3.42 Demonstrate the assessment and documentation of patient response to nitroglycerin.(P-1,2)
- 4-3.43 Practice completing a prehospital care report for patients with cardiac emergencies.(P-2)
- 4-3.44 Demonstrate the assessment and emergency medical care of a patient with signs and symptoms of a Cerebrovascular Accident (Stroke).

## PREPARATION

Motivation: Over 600,000 patients die each year from cardiovascular diseases; half of those occur outside the hospital, with sudden death (collapse) being the first sign of cardiac disease in 50%.

Rapid defibrillation, which will be covered in this module, is the major determinant of survival in cardiac arrest caused by ventricular fibrillation.

Prerequisites: BLS, Preparatory, Airway and Patient Assessment.

## MATERIALS

AV Equipment: Utilize various audio-visual materials relating to cardiac emergencies. The continuous design and 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 assure meeting the objectives of the curriculum.

EMS Equipment: CPR manikins, artificial ventilation manikins, automated external defibrillator, NTG training bottle, defibrillation manikin.

## PERSONNEL

Primary Instructor: Certified Instructor Coordinator with knowledge and experience in out-of-hospital cardiac resuscitation.

Assistant Instructor: The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in cardiac emergencies.

Recommended Minimum  
Time to Complete: Eight hours

# PRESENTATION

## Declarative (What)

- I. Review of Circulatory System Anatomy and Physiology
  - A. Circulatory (Cardiovascular)
    1. Heart
      - a. Structure/function
        - (1) Atrium
          - (a) Right - receives blood from the veins of the body and the heart and pumps oxygen-poor blood to the right ventricle.
          - (b) Left - receives blood from the pulmonary veins (lungs) and pumps oxygen-rich blood to left ventricle.
        - (2) Ventricle
          - (a) Right - pumps oxygen-poor blood to the lungs.
          - (b) Left - pumps oxygen-rich blood to the body.
        - (3) Valves prevent backflow of blood.
        - (4) Septum - divides the heart into right and left halves.
      - b. Cardiac conductive system
        - (1) Heart is more than a muscle.
        - (2) Specialized contractile and conductive tissue in the heart
        - (3) Electrical impulses
    2. Arteries
      - a. Function - carry blood away from the heart to the rest of the body.
      - b. Major Arteries
        - (1) Coronary arteries - vessels that supply the heart muscle with oxygenated blood.
        - (2) Aorta
          - (a) Major artery originating from the heart and lying in front of the spine in the thoracic and abdominal cavities.
          - (b) Divides at the level of the navel into the iliac arteries.
        - (3) Pulmonary
          - (a) Artery originating at the right ventricle.
          - (b) Carries oxygen-poor blood to the lungs.
        - (4) Carotid
          - (a) Major artery of the neck
          - (b) Supplies the head with blood.
          - (c) Pulsations can be palpated on either side of the neck.
        - (5) Femoral
          - (a) The major artery of the thigh
          - (b) Supplies the groin and the lower extremities

- with blood.
    - (c) Pulsations can be palpated in the groin area.
  - (6) Radial
    - (a) Major artery of the wrist
    - (b) Pulsations can be palpated at the wrist thumb side.
  - (7) Brachial
    - (a) An major artery of the upper arm
    - (b) Pulsations can be palpated on the inside of the arm between the elbow and the shoulder.
    - (c) Used when determining a blood pressure (BP) using a BP cuff (sphygmomanometer) and a stethoscope.
  - (8) Posterior tibial - pulsations can be palpated on the posterior surface of the medial malleolus.
  - (9) Dorsalis pedis
    - (a) An artery in the foot
    - (b) Pulsations can be palpated on the anterior surface of the foot.
- 3. Arterioles - the smallest branches of an artery leading to the capillaries.
- 4. Capillaries
  - a. Tiny blood vessels that connect arterioles to venules.
  - b. Found in all parts of the body
  - c. Allow for the exchange of nutrients and waste at the cellular level.
- 5. Venules - the smallest branches of the veins leading from the capillaries.
- 6. Veins
  - a. Function - vessels that carry blood back to the heart.
  - b. Major veins
    - (1) Pulmonary vein - carries oxygen-rich blood from the lungs to the left atrium.
    - (2) Venae Cavae
      - (a) Superior
      - (b) Inferior
      - (c) Carries oxygen-poor blood back to the right atrium.
- 7. Blood
  - a. Function
    - (1) Transports oxygen and nutrients to the tissues and transports waste products for elimination.
    - (2) Bleeding control
    - (3) Protection from foreign bodies
  - b. Composition
    - (1) Red Blood cells - contain hemoglobin which enables the cells to transport oxygen and carbon dioxide

- (2) White blood cells - fight infection
  - (3) Platelets - contain Fibrin, a protein which is responsible for clotting.
  - (4) Plasma - the fluid component which carries the cells and nutrients to all tissues of the body.
  - c. Volume
    - (1) Depends on a persons size
    - (2) Average volumes by age group
      - (a) adult - 6 liters
      - (b) teen - 4.5 -5.5 liters
      - (c) child - 1.5 -2.0 liters
      - (d) infant - 300 ml
  - 8. Physiology
    - a. Cardiac cycle
      - (1) Electrical impulse - spreads through the heart muscle causing it to contract.
      - (2) Myocardial contraction - forces blood from the ventricles to:
        - (a) the lungs - from the right ventricle
        - (b) the body - from the left ventricle
    - b. Pulse
      - (1) Left ventricle contracts sending a wave of blood through the arteries.
      - (2) Can be palpated anywhere an artery simultaneously passes near the skin surface and over a bone.
      - (3) Peripheral
        - (a) Radial
        - (b) Brachial
        - (c) Posterior tibial
        - (d) Dorsalis pedis
      - (4) Central
        - (a) Carotid
        - (b) Femoral
    - c. Blood Pressure
      - (1) Systolic - the pressure exerted against the walls of the artery when the left ventricle contracts.
      - (2) Diastolic - the pressure exerted against the walls of the artery when the left ventricle is at rest.
  - B. Inadequate circulation - Shock (hypoperfusion): A state of profound depression of the vital processes of the body. Characterized by signs and symptoms such as: pale, cyanotic, cool, clammy skin, rapid but weak pulse, rapid and shallow breathing, restlessness, anxiety or mental dullness, nausea and vomiting, reduction in total blood volume, low or decreasing blood pressure and subnormal body temperature.
- II. Cardiovascular Emergencies
- A. Background
    - 1. Causes

- a. Disease - Coronary Artery Disease - a disease process affecting the coronary vessels.
  - (1) Controllable risk factors include: smoking, diet, obesity, sedentary lifestyle, stress, diabetes, hypertension.
  - (2) Uncontrollable risk factors include: age, race, gender, heredity, type "A" personality.
- b. Structural defects
- c. Harmful substances - poisons, drugs
- 2. Assessment
  - a. History of present illness
  - b. Patient medical history
  - c. Family history
  - d. Physical assessment
- B. Disorders Affecting the heart
  - 1. Angina Pectoris - Temporary lack of oxygen to the heart muscle
    - a. Caused by a partial blockage of a coronary vessel which leads to ischemia of the heart muscle.
    - b. Signs and symptoms may include:
      - (1) Chest pain
      - (2) Difficulty breathing
      - (3) Diaphoresis
      - (4) Nausea
  - 2. Myocardial Infarction - Lack of oxygen to heart muscle leading to tissue death.
    - a. Caused by a complete blockage of a coronary artery which leads to tissue death.
    - b. Signs and symptoms may include:
      - (1) Chest pain
      - (2) Epigastric pain
      - (3) Difficulty breathing
      - (4) Diaphoresis
      - (5) Nausea, vomiting
      - (6) Feeling of impending doom
      - (7) Anxiety
      - (8) Abnormal pulse rate / rhythm
      - (9) Abnormal blood pressure

### III. Emergency Medical Care - Initial Patient Assessment Review

- A. Circulation - pulse absent
  - 1. Medical patient >12 years old - CPR with AED per NYS Protocol
  - 2. Medical patient < 12 years old or < 90 lbs. - CPR per NYS Protocol
- B. Responsive patient with a known history - cardiac
  - 1. Perform initial assessment.
  - 2. Exhibits signs / symptoms of cardiac compromise
    - a. Apply oxygen if not already done.
    - b. Assess vital signs.

3. Perform focused history and physical exam.
4. Place patient in position of comfort.
5. Important questions to ask.
  - a. Onset
  - b. Provocation
  - c. Quality
  - d. Radiation
  - e. Severity
  - f. Time
6. Has patient taken any aspirin products within the last 24 hours?
- 7 Has been prescribed nitroglycerin (NTG) and nitro is with the patient.
- 8 Does not have prescribed nitroglycerin (NTG) - continue with elements of focused assessment.
- 9 Transport promptly

#### IV. Relationship to Basic Life Support

- A. Not all chest pain patients become cardiac arrest patients.
- B. One Rescuer CPR - rarely done by EMT-Basics while on duty, may be done while partner is preparing equipment, or en route to facility.
- C. Two Rescuer CPR - learning outcomes of a Professional Rescuer CPR Course must be enhanced during an EMT-Basic course.
  1. EMT-Basics must also learn:
    - a. Use of automated external defibrillation.
    - b. To request available ALS backup to continue the chain of survival (as developed by AHA) when appropriate.
    - c. Use of bag-valve-mask devices with oxygen attached.
    - d. Use of flow-restricted, oxygen-powered ventilatory devices.
    - e. Techniques of lifting and moving patients.
    - f. Suctioning of airways.
    - g. Use of airway adjuncts.
    - h. Use of body substance isolation.
    - i. Interviewing bystanders/family to obtain facts related to pre-arrest events.

#### V. Automated External Defibrillation

- A. Review of requirements for authorization to use an AED
  1. Successful completion of this training course does not authorize an individual to operate an AED.
  2. An operator of an AED must (800.15):
    - a. be acting as certified first responder, emergency medical technician or advanced emergency medical technician;
    - b. be under medical control
    - c. be authorized by, and serving with, an agency providing emergency medical services which has been approved by the regional emergency medical advisory committee (REMAC) to provide AED level care within the EMS system



- C. Treatment Protocols -
  - 1. Patient Indications for use
    - a. Unresponsive
    - b. Pulse less
    - c. Apneic
  - 2. Patient Contraindications
    - a. Pediatric patient

Notes to Instructors: A chalkboard or an erasable white board will be useful. This brief lecture will be followed immediately by several scenarios that present the protocol contingencies that may be encountered in the clinical setting.

- D. Medical Control; Quality Improvement; Out-of-Hospital Do Not Resuscitate (DNR) Orders.
  - 1. Define:
    - a. "Patient Care Protocols"
    - b. "Medical Control"
  - 2. Documentation and record keeping
    - a. Voice narration
    - b. Patient Care Report (PCR)
    - c. Paper ECG strip if the AED provides one
  - 3. Quality Improvement
    - a. EMS agency quality improvement case reviews
    - b. REMAC quality improvement
  - 4. Contacting the medical director regarding a specific patient.
  - 5. Do Not Resuscitate (DNR) Orders
    - a. Some patients may have an "out-of-hospital" Do Not Resuscitate (DNR) order. Only a New York State Department of Health prescribed DNR form (DOH-3474), should be honored.
    - b. Living Wills and Health Care Proxies are not applicable for out-of-hospital emergencies.

Note to Instructors: Distribute the Department of Health Memorandum on DNR Law Changes (series 92-32, date 11/2/92).

- E. Orientation to the Automated External Defibrillator, Safety Issues and Demonstration

Note to Instructors: Current AHA Guidelines as outlined within the current NYS BLS Protocol must be used. Protocols, Policy Statements and SEMAC advisories are updated on a more frequent basis than the curricula are and will in fact supersede conflicts in the curricula. Assure that you are using the most current information.

- 1. Instructor displays an AED and describes its parts and support equipment. Controls should be described in the sequence in which they are used.

- a. Describe the function of all controls on the AED, including event documentation devices
  - (1) On/Off switch location and use.
  - (2) Screen (if unit has one)
  - (3) Battery and battery access
  - (4) Patient cables and electrodes
  - (5) Control Module (if unit has one) -
  - (6) Documentation device or tape recorder
  - (7) Battery charger
- b. Demonstrate proper maintenance of the battery and AED components
  - (1) Battery charger and battery support system components
  - (2) Battery charging requirements
  - (3) Battery capacity and number of shocks that can be delivered
- c. Demonstrate all messages the AED conveys to the operator
  - (1) Analyzing
  - (2) Charging
  - (3) Joule selection
  - (4) Improper lead attachment
  - (5) Other messages
- d. Demonstrate preparation of the AED for use, its after-use care, and daily equipment inspections
  - (1) Preparation before a call
    - (a) Proper storage
    - (b) Battery charging
    - (c) Electrodes and pad availability
    - (d) Control module or documentation device
    - (e) Other Disposable supplies and materials
      - Scissors
      - Razors
      - Disposable gloves
      - Towels ( for drying the chest )
  - (2) Patient preparation and use
    - (a) Place electrodes
    - (b) Turn unit on
    - (c) Activate documentation device
    - (d) Analyze rhythm
    - (e) Deliver shocks
  - (3) After Use
    - (a) Check equipment condition
    - (b) Replace/recharge battery
    - (c) Replace disposable supplies and materials
    - (d) Complete documentation and recordkeeping
    - (e) Replace cassette tape or event documentation module

- e. AED Maintenance
    - (1) Use of the AED operators shift checklist
    - (2) Agency maintenance requirements and limitations
    - (3) Authorized factory service maintenance
    - (4) Documentation components
      - (a) Cassette tapes
      - (b) ECG paper (if applicable)
      - (c) Digital or solid-state memory components
  - f. Demonstrate proper safety techniques
    - (1) Clearing the patient
    - (2) Clearing the stretcher
    - (3) "Dumping" a charge
    - (4) Problems with defibrillation while moving
    - (5) Rain and wet conditions and locations
    - (6) Patient on metal floor or decking
    - (7) Use in explosive atmosphere
- F. Demonstration of Automated Defibrillation Protocol
1. Present a demonstration of actual defibrillations that follow the approved protocols.
  2. Scenarios should include:
    - a. The rhythm is shockable; the patient receives one shock and regains a pulse.
    - b. The rhythm is shockable; the patient receives two shocks and does not regain a pulse.
    - c. The rhythm is shockable: the patient receives two shocks and the rhythm becomes non-shockable.
    - d. The rhythm is shockable; the patient receives three shocks and regains a pulse.
    - e. The rhythm is shockable; the patient receives three shocks and does not regain a pulse.
    - f. The rhythm is a non-shockable rhythm; the patient receives no shocks.
    - g. The patient is conscious then arrests during transport to the hospital.
    - h. ALS intercept arrives on the scene after the first shock.
    - i. Patient who regains a pulse but does not resume respirations
  3. Demonstrate the use of an AED - Simulate the arrival of a two person response team.
    - a. When demonstrating this procedure, the manikin is on the floor.
    - b. On arrival at the scene:
      - (1) One rescuer assumes responsibility for the patient and operates the AED.
      - (2) The other rescuer begins BLS (CPR).
      - (3) Stress the importance of deciding these roles before arrival at the scene.

- c. CPR
  - (1) Establish unresponsiveness; request ALS intercept.
  - (2) Position the victim; open the airway.
  - (3) Establish breathlessness.
  - (4) Give two full ventilations with bag-valve mask or pocket mask.

Note to Instructors: If a foreign body airway obstruction is identified, the airway must be cleared before proceeding any further.

- (5) Establish pulselessness.
  - (6) Announce "cardiac arrest-start defibrillation protocol," and begin CPR.
- d. Ventilations must be performed with ongoing CPR chest compressions.
- e. Stress that the AED is only put on an unresponsive, breathless and pulseless patient.
- f. Use a simulator to produce an appropriate rhythm.
- g. Place AED near the left side of the patient's head.
  - (1) Better access to the AED controls and placement of the defibrillation pads on the chest are achieved with the AED and the AED operator positioned at the patient's left side.
  - (2) However, this may not be possible in all clinical situations. Discuss alternatives.
- h. Attach patient cables to the AED (if necessary).
- i. Open defibrillation adhesive pads.
- j. Attach patient cables to defibrillation pads (for simulations, the patient cables may need to be attached to the connections of a simulator.)
- k. Attach defibrillation pads to the proper locations on the patient (manikin).
  - (1) White, or sternum, pads are attached to the right border of the sternum with the top edge just touching the bottom of the clavicle,
  - (2) Red, or apex, pads are attached to the left lower ribs at the anterior axillary line.

Note to Instructors: Demonstrate how the person performing CPR must briefly move his or her hands to achieve proper pad placement.

- l. Turn on "power."
  - (1) Make certain that the tape recorder is running (if applicable).
  - (2) Demonstrate the "no contact" signal from improper placement of the pads.

Note to Instructors: The AED operator is responsible for directing the medical treatment of the patient. The AED operator is also responsible to ensure that adequate CPR is performed.

- m. Begin verbal report. The rescuer should:
  - (1) Identify herself or himself and the responding emergency unit.
  - (2) Briefly describe the clinical situation.
  - (3) Report each step while proceeding through the protocol.
  - (4) State whether shocks are delivered.
  - (5) Continue to provide explanatory comments on actions, decisions to transport, and problems encountered.
  - (6) Emphasize the importance of accurate and adequate verbal and written documentation.

Note to Instructors: Be prepared to provide several examples of verbal reports. Verbal reports can be too short, resulting in insufficient information being provided, or too long, resulting in distraction from the performance of the defibrillation protocols. Be aware that everything said in the vicinity of the AED will also be recorded.

- n. If in a moving ambulance, tell driver to stop the vehicle in a safe location.

Note to Instructors: AED assessment should not take place in a moving ambulance. Movement of the patient during this time can interfere with rhythm analysis.

- o. Tell CPR technician to stop CPR and for everyone to "clear" the patient.
- p. Analyze the patient's rhythm.
  - (1) State loudly, "Everybody clear the patient!"
  - (2) Verify that everyone is clear of the patient. Everyone must remain clear of the patient while assessment is in progress.
  - (3) Press the "analyze" control of the AED.
  - (4) Takes 10 to 20 seconds depending on the manufacturer.
  - (5) Operator counts to 20 out loud slowly, during the assessment period.
  - (6) If by the count of 20 the device has not indicated that a shock is advised, resume CPR.

Note to Instructors: The AED indicates that charging is under way with a tone, voice-synthesized message, or light indicators.

- q. If a "shock indicated" message is presented, repeat the

"clear the patient" command

- (1) Once charging begins, the operator can assume that a shockable rhythm is present and that the device will indicate the need to deliver a shock.
  - (2) Visually check to make certain that everyone (including yourself) is clear from every part of the patient.
  - (3) In particular, check the person who was performing chest compressions and ventilation.
  - (4) Clear the stretcher
- r. Press the "shock" control.
- (1) Fully automated AEDs deliver shocks without additional actions from the operator.
  - (2) For shock-advisory devices, a message such as "shock advised," "shock now," or "shock indicated" will be presented to the operator from either a liquid crystal display or a voice synthesizer.
  - (3) Defibrillation should not be performed in a moving ambulance.
  - (4) Three (3) consecutive shocks will be delivered without interruption if the rhythm continues to be shockable.
- s. The first defibrillation should be performed within 90 seconds of the AED reaching the patient.
- t. Repeat analyze (step "p") and shock (step "q") to a maximum of three (3) shocks. Increase the energy level to 360 J for the third shock if not done automatically by the AED.
- u. If "no shock indicated" message is received or three (3) shocks have been delivered, check the pulse.
- v. If there is no pulse present, resume CPR for one (1) minute
- w. Reanalyze
- x. Repeat three (3) shocks if indicated.
- y. If "no shock indicated" message is received or three (3) shocks have been delivered, check the pulse.
- z. Reanalyze.
- aa. A maximum of six (6) shocks or three (3) "No Shock Indicated" are permitted at this time.
- bb. Continue CPR.
- cc. Support the patient with oxygen, if available.
- dd. Transport or intercept with ALS.

G. Small Group Teaching / Practice;

Note to Instructors: This is the most important part of the course. During this time students practice the step-by-step use of an AED. The students practice various scenarios and evaluate each others performance.

1. Students are encouraged to handle the AED,

- a. Open and feel sample pads - feel the adhesive,
  - b. Press the "power on" switch,
  - c. Press the "analyze" mechanism.
  - d. Instructors use rhythm simulators to demonstrate various scenarios and the use of an AED several times.
2. Small group practice with no more than six students per instructor.
- a. See equipment list for items needed in each teaching station
  - b. See Presentation F for scenarios that should be practiced.
  - c. During this time, each student should have the opportunity to practice using the AED. Talk the students through each step, and encourage questions from the students at all times.
3. Discuss the following topics:
- a. The high priority of defibrillation.
    - (1) No other therapeutic intervention should take precedence over, or be routinely performed, before defibrillation. These include:
      - (a) Setting up oxygen delivery systems
      - (b) Suction equipment
      - (c) Advanced airway procedures
      - (d) Intravenous lines
      - (e) Mechanical CPR devices
    - (2) The above listed interventions should proceed simultaneously whenever possible. This means that the AED operator concentrates on operation of the AED while the CPR providers attend to the airway and chest compressions. Additional providers may initiate the interventions described above.
  - b. Emphasize that defibrillation can not proceed in the presence of an obstructed airway. If necessary, foreign-body obstructed airway management must be performed, and an open airway established before attaching the AED to the patient.
  - c. Emphasize that three consecutive shocks will be delivered without interruption if the rhythm continues to be shockable. If a "no shock" message is received or three shocks have been delivered, the pulse is checked. In the absence of a pulse, CPR is performed for one minute. This is followed by rhythm analysis. Pulse checks are not performed after shocks 1 and 2, or 4 and 5 unless "no shock indicated" message is received. This is considered an acceptable exception to the ACLS recommendations for ventricular fibrillation. A pulse check is not considered necessary at these times because the patient has already been confirmed to be in cardiac arrest and a palpable pulse almost never returns immediately after the initial shocks.
  - d. Protocols may vary if ventricular fibrillation persists after the

first six shocks. The AHA Task Force on Defibrillation recommends that, in general, protocols should direct the AED operator to continue delivering sets of three stacked shocks separated by 1 minute of CPR until shocks are no longer indicated. If transport times to ALS are short (<10 minutes), then it is reasonable to stop defibrillation after a specified number of shocks, for example, six shocks, and transport the patient as rapidly and safely as possible.

- e. After three (3) "no shock indicated" messages are given, repeat analysis every 1 to 2 minutes and if a shockable rhythm recurs after transiently converting, restart the treatment algorithm from the beginning.
  - (1) Note that some AEDs may be programmed to deliver all shocks after the first one or two at 360 J rather than restart at 200 J, this is acceptable.

## II. Troubleshooting, Safety and Special Situations

### A. Discuss appropriate responses to the following possibilities:

1. Patient has electrode contact problems.
  - a. Diaphoretic patients must be dried with the gauze pads carried in the AED pack or with a suitable wipe.
  - b. Excess hair on the chest under the pads must be removed prior to defibrillation.
  - c. Automated external defibrillation operators must have extra adhesive defibrillation pads.
2. Nitroglycerin patches or paste on the chest.
  - a. Place the defibrillation pads away from these patches.
  - b. Remove any paste with gauze pad or similar wipe.
3. A pacemaker or automatic defibrillator/cardioverter implanted in the patient's skin.
  - a. Place the defibrillator pad approximately 5 inches from this site.
4. Uncontrolled scene.
  - a. Haz Mat present
  - b. Danger from collapse
  - c. Severe weather
5. Hazards such as water, swimming pools, bathtubs, or the patient being on a metal surface.
6. "Disarming" / "Dumping" the defibrillator charge.
  - a. Different AEDs do this in different ways.
  - b. Explain the various methods.
  - c. Caution students not to turn the device off if possible, as this action may interfere with proper documentation of the call.
7. Overzealous bystanders.
  - a. Be especially careful with bystanders who have been helping with CPR. They may not be familiar with defibrillation procedures. Be sure that those in contact with the stretcher

are clear before you operate the AED.

III. Other Issues.

- A. Defibrillator maintenance checklist for AEDs.
  - 1. Provide and review AED maintenance checklist.
- B. Requirements for skills maintenance.
  - 1. Agency Medical Director requirements
  - 2. REMAC requirements
  - 3. Agency training records
- C. Review post-shock care of the cardiac arrest patient who regains spontaneous circulation.
  - 1. When to interrupt or stop CPR:
  - 2. Airway maintenance adjuncts and when to use each one in the protocol
  - 3. Preparation of the patient for transport.
  - 4. Rhythm analysis and defibrillation should not be done in a moving vehicle.
- D. Discuss the proper response and procedures for an unsuccessful resuscitation.

IV. Medications

- A. Nitroglycerin
  - 1. Medication name
    - a. Generic - nitroglycerin
    - b. Trade - Nitrostat™
  - 2. Indications - must have all of the following criteria:
    - a. Exhibits signs and symptoms of chest pain,
    - b. Has physician prescribed sublingual tablets, and
    - c. Has specific authorization by medical direction.
  - 3. Contraindications
    - a. Clinical indicators of Hypotension or blood pressure below 120 mmHg systolic.
    - b. Head injury
    - c. Infants and children
    - d. Patient has already met maximum prescribed dose prior to EMT-Basic arrival.
  - 4. Medication form - tablet, sub-lingual spray
  - 5. Dosage - one dose, repeat in 3-5 minutes if no relief, BP > 120, and authorized by medical direction up to a maximum of three doses.
  - 6. Administration
    - a. Obtain order from medical direction either on-line or off-line.
    - b. Perform focused assessment for cardiac patient.
    - c. Take blood pressure - proceed if above 120 mmHg systolic, see item "j" if < 120 mmHg systolic.
    - d. Contact medical control if no standing orders.
    - e. Assure right medication, right patient, right route, patient alert.

- f. Check expiration date of nitroglycerin.
  - g. Question patient on last dose administration, effects, and assures understanding of route of administration.
  - h. Ask patient to lift tongue and place tablet or spray dose under tongue (while wearing gloves) or have patient place tablet or spray under tongue.
  - i. Have patient keep mouth closed with tablet under tongue (without swallowing) until dissolved and absorbed.
  - j. Recheck blood pressure within 2 minutes.
  - k. Record activity and time.
  - l. Perform reassessment.
7. Actions
- a. Relaxes blood vessels
  - b. Decreases workload of heart
8. Side effects
- a. Hypotension
  - b. Headache
  - c. Pulse rate changes
9. Reassessment strategies
- a. Monitor blood pressure.
  - b. Ask patient about effect on pain relief.
  - c. Seek medical direction before re-administering.
  - d. Record reassessments.
- B. Aspirin
1. Indications
- a. Unstable angina
  - b. Acute Myocardial Infarction/Acute Coronary Syndrome
  - c. Non-traumatic chest pain/discomfort not relieved by nitroglycerin or lasting >15 minutes
2. Contraindications
- a. Patient is unable to chew or swallow
  - b. Allergy to aspirin or aspirin products
  - c. History of active bleeding disorder
  - d. Recent or current ulcer or gastrointestinal bleeding
  - e. Taken aspirin within the last 24 hours
  - f. Patient prescribed anticoagulation therapy
  - g. Possible aortic aneurysm
3. Medication form – tablet, nonenteric chewable
4. Dosage – 160 – 325 mg (2 – 4 chewable children’s aspirin tablets) by mouth and chewed
5. Administration
- a. Perform focused assessment for cardiac patient.
  - b. Begin transport (aspirin may be administered prior to initiation of transport as long as this does not delay transport)
  - c. Determine there are no contraindications for aspirin administration.

- d. Assure medication is not expired or in an unuseable condition.
  - e. Explain procedure to patient including that they will need to chew and not swallow the aspirin.
  - f. Assure correct dosage of 160 – 325 mg.
  - g. Allow patient to self administer the aspirin if they are able to do so. If they are not able to self administer, assure BSI precautions and place the tablets in the patient's mouth.
  - h. Instruct patient to chew the tablets until they are dissolved.
  - i. Do not give fluids by mouth.
  - j. Record activity and time.
  - k. Perform reassessment.
6. Side Effects
- a. Gastrointestinal distress.
  - b. May exacerbate bleeding or bleeding disorders.
  - c. Gastrointestinal bleeding.
  - d. Low-grade toxicity may cause ringing in the ears, headache, dizziness, flushing, tachycardia.
7. Reassessment strategies
- a. Monitor airway patency.
  - b. Ask patient if any side effects occur.
  - c. Monitor for any bleeding problems.
  - d. Record reassessments.

V. Disorders affecting the brain

A. Cerebrovascular Accident (Stroke)

- 1. A sudden interruption of blood flow to a portion of the brain that results in tissue death.
- 2. Signs and symptoms may include:
  - a. Severe headache
  - b. Lack of speech
  - c. Difficulty swallowing
  - d. Facial droop
  - e. Unequal pupil size
  - f. Paralysis / tingling Sensation
  - g. Incontinence
  - h. Bounding pulse
  - i. Hypertension
  - j. Altered mental status / coma
- 3. Emergency medical care
  - a. Perform initial assessment
  - b. Perform focused history and physical exam
  - c. Place patient in position of comfort or coma position
  - d. Apply oxygen (high concentration)
  - e. Assist ventilations as necessary
  - f. Suction the airway as necessary
  - g. Assess vital signs
  - h. Monitor neurologic status frequently

# SUGGESTED APPLICATION

## Procedural (How)

1. Demonstrate the assessment and emergency medical care of a patient experiencing chest pain/discomfort.
2. Perform the steps in facilitating the use of nitroglycerin for chest pain using a substitute candy tablet and breath spray.
3. Demonstrate the assessment and documentation of patient response to nitroglycerin.
4. Demonstrate application and operation of the automated external defibrillator.
5. Demonstrate maintenance checks of the automated external defibrillator.
6. Demonstrate the assessment and documentation of patient response to the automated external defibrillator.
7. Demonstrate assessment, defibrillation, airway management, lifting and moving a patient, and transportation out of the training laboratory of a manikin in a simulated cardiac arrest situation in which a patient does not respond to defibrillation.
8. Demonstrate the assessment and emergency medical care of the patient with signs and symptoms of a Cerebrovascular Accident (Stroke).

## Contextual (When, Where, Why)

The EMT-Basic student must prepare to assess and manage patients with cardiac emergencies. The training laboratory must provide simulated cardiac situations, both on conscious and unconscious patients, for the student to practice demonstrated skills. The student must be able to integrate many single skills into one simulated cardiac arrest scenario in order to perform safe and effective practice after course completion.

## STUDENT ACTIVITIES

### Auditory (Hear)

1. The student should hear computer voice simulations made by automated external defibrillators giving instructions on protocols or shocks.
2. The student should hear of actual cases where cardiac arrest resuscitation efforts were successful and unsuccessful and the reasons for the outcomes.

### Visual (See)

1. The student should see an instructor team appropriately resuscitate a simulated cardiac arrest patient using an automated external defibrillator.
2. The student should see re-enactments of cardiac arrest resuscitation efforts by EMT-Basics using automated external defibrillators.
3. The student should see an instructor team appropriately administer a small candy or breath spray sublingually to a simulated patient presenting with chest pain.
4. The student should see re-enactments of EMS calls where a patient has been assessed and assisted in the administration of nitroglycerin.

### Kinesthetic (Do)

1. The student should practice the assessment and emergency medical care of a patient experiencing chest pain/discomfort.
2. The student should practice the application and operation of the automated external defibrillator.
3. The student should practice maintenance checks of the automated external defibrillator.
4. The student should practice performing the steps in facilitating the use of nitroglycerin for chest pain using a suitable candy tablet and breath spray.
5. The student should practice the assessment and documentation of patient response to the automated external defibrillator.
6. The student should practice the assessment and documentation of patient response to nitroglycerin.
7. The student should practice assessment, defibrillation, airway management, lifting and moving a patient, and transportation out of the training laboratory of a manikin in a simulated cardiac arrest situation in which a patient does not respond to defibrillation.
8. The student should practice the assessment and emergency medical care of the patient with signs and symptoms of a Cerebrovascular Accident (Stroke).
9. The student should practice completing a prehospital care report for a patient with a cardiac emergency.

### INSTRUCTOR ACTIVITIES

Supervise student practice.

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

Redirect students having difficulty with content (complete remediation forms).

## EVALUATION

Written: Develop evaluation instruments, e.g., examinations, verbal reviews, handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

Practical: Evaluate the actions of the EMT-Basic 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.

## REMEDIATION

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

# SUGGESTED ENRICHMENT

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



Medical / Behavioral and  
Obstetrics / Gynecology

Lesson 4-4  
Diabetic Emergencies /  
Altered Mental Status

# 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 EMT-Basic student will be able to:

- 4-4.1 List causes of Altered Mental Status.
- 4-4.2 Describe the general steps for emergency care of a patient with altered mental status.
- 4-4.3 Identify the patient taking diabetic medications with altered mental status and the implications of a diabetes history.
- 4-4.4 State the steps in the emergency medical care of the patient taking diabetic medicine with an altered mental status and a history of diabetes.(C-1)
- 4-4.5 Establish the relationship between airway management and the patient with altered mental status.(C-3)
- 4-4.6 State the generic and trade names, medication forms, dose, administration, action, and contraindications for oral glucose.(C-1)
- 4-4.7 Explain the relationship between insulin and glucose.
- 4-4.8 Evaluate the need for medical direction in the emergency medical care of the diabetic patient.(C-3)
- 4-4.9 Define seizures
- 4-4.10 Identify possible causes of a seizure.
- 4-4.11 State the emergency care of a seizure.

### AFFECTIVE OBJECTIVES

- 4-4.12 Explain the rationale for administering oral glucose.(A-3)

### PSYCHOMOTOR OBJECTIVES

- 4-4.13 Demonstrate the steps in the emergency medical care for the patient taking diabetic medicine with an altered mental status and a history of diabetes.(P-1,2)
- 4-4.14 Demonstrate the steps in the administration of oral glucose.(P-1,2)
- 4-4.15 Demonstrate the assessment and documentation of patient response to oral glucose.(P-1,2)
- 4-4.16 Demonstrate how to complete a prehospital care report for patients with diabetic emergencies.(P-2)

# PREPARATION

Motivation: Diabetes is a prevalent disease in American society with estimates between 2-5% of the total population having either diagnosed or undiagnosed diabetes mellitus.

Prerequisites: BLS, Preparatory, Airway and Patient Assessment.

## MATERIALS

AV Equipment: Utilize various audio-visual materials relating to diabetic emergencies. The continuous design and 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 assure meeting the objectives of the curriculum.

EMS Equipment: Exam gloves, stethoscope (6:1), blood pressure cuff (6:1), penlight, tube of glucose, suitable glucose substitute.

## PERSONNEL

Primary Instructor: One EMT-Basic instructor knowledgeable in treatment of diabetic emergencies.

Assistant Instructor: The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in diabetic emergencies.

Recommended Minimum  
Time to Complete: Two hours

# PRESENTATION

## Declarative (What)

- I. Signs and symptoms associated with a patient with altered mental status with a history of diabetes controlled by medication.
  - A. Rapid onset of altered mental status.
    1. After missing a meal on a day the patient took prescribed insulin.
    2. After vomiting a meal on a day the patient took prescribed insulin.
    3. After an unusual exercise or physical work episode.
    4. May occur with no identifiable predisposing factor.
  - B. Intoxicated appearance, staggering, slurred speech to complete unresponsiveness
  - C. Elevated heart rate
  - D. Cold, clammy skin
  - E. Hunger
  - F. Seizures
  - G. Insulin in refrigerator or other medications found at scene.
    1. Diabinese™
    2. Orinase™
    3. Micronase™
  - H. Uncharacteristic behavior
  - I. Anxious
  - J. Combative
- II. Emergency medical care of altered mental status with a history of diabetes.
  - A. Perform initial assessment.
  - B. Perform focused history and physical exam.
    1. Onset
    2. Duration
    3. Associated symptoms
    4. Evidence of trauma
    5. Seizures
    6. Fever
  - C. Performs baseline vital signs and SAMPLE history.
  - D. Determine history of diabetes (medical identification tags) Assure known history of diabetes (medical identification tags), etc.
  - E. Determine if patient can swallow.
  - F. Administer oral glucose in accordance with local or state medical direction or protocol.
- III. Altered Mental Status
  - A. Caused by a variety of conditions
    1. Hypoglycemia
    2. Poisoning
    3. Post seizure
    4. Infection
    5. Head trauma

6. Decreased oxygen levels
  - B. Emergency medical care
    1. Assure patency of airway.
    2. Be prepared to artificially ventilate/suction.
    3. Transport.
    4. Consider trauma, trauma can cause altered mental status.
- IV. Seizures - Seizures are a sudden change in sensation, behavior or movement, usually related to brain malfunction that can be the result of disease, infection or injury to brain tissue. The more severe form of seizures are characterized by violent muscle contractions called convulsions. Epilepsy is a medical disorder characterized by episodic or sudden onset attacks of unconsciousness, with or without convulsions. Status epilepticus occurs when the patient has two or more convulsive seizures without regaining full consciousness.
- A. Chronic Seizures Disorders in children are rarely life-threatening. Seizures of unknown origin, however, including febrile, should be considered life-threatening by the EMT.
  - B. May be brief or prolonged.
  - C. Caused by fever, infections, poisoning, hypoglycemia, trauma, decreased levels of oxygen or could be idiopathic in children.
  - D. Emergency medical care
    1. Assure patency of airway.
    2. Position patient on side if no possibility of cervical spine trauma. Protect patient from injury.
    3. Have suction ready.
    4. If cyanotic, assure airway and artificially ventilate.
    5. Transport.
      - a. Although brief seizures are not harmful, there may be a more dangerous underlying condition.
      - b. Rule out trauma, head injury can cause seizures.
- V. Relationship to Airway Management  
Assure that the patient's airway is open and that breathing and circulation are adequate and suction as necessary.
- VI. Medication
- A. Oral Glucose
    1. Medication Name
      - a. Generic - Glucose, Oral
      - b. Trade - Glucose, Insta-glucose
    2. Indications - patients with altered mental status with a known history of diabetes controlled by medication.
    3. Contraindications
      - a. Unresponsive.
      - b. Unable to swallow.
    4. Medication form - Gel, in toothpaste type tubes
    5. Dosage - one tube

6. Administration
  - a. Obtain order from medical direction either on-line or off-line.
  - b. Assure signs and symptoms of altered mental status with a known history of diabetes.
  - c. Assure patient is conscious and can swallow and protect their airway.
  - d. Administer glucose.
  - e. Perform ongoing assessment.
7. Actions - increases blood sugar
8. Side effects - none when given properly. May be aspirated by the patient without a gag reflex.
9. Administer Oxygen

## SUGGESTED APPLICATION

### Procedural (How)

1. Demonstrate the steps in emergency care for the patient with altered mental status and a history of diabetes who is on diabetic medication.
2. Demonstrate the steps in the administration of oral glucose.
3. Demonstrate the assessment and documentation of patient response.

### Contextual (When, Where, Why)

Diabetes is a common disease affecting a large population. As the population ages, the number of people affected by diabetes will increase. Oral glucose given to a patient with an altered mental status and a known history of diabetes can make a difference between development of coma (unconsciousness) and ability to maintain consciousness.

## STUDENT ACTIVITIES

### Auditory (Hear)

None identified for this lesson.

### Visual (See)

1. The student should see audio-visual aids or materials of patients with altered mental status with a known history of diabetes mellitus in the prehospital setting.
2. The student should see the administration of oral glucose (as a simulated paste) to a simulated patient.

### Kinesthetic (Do)

1. The student will practice the steps in emergency care for the patient with an altered mental status and a history of diabetes and taking diabetic medication.
2. The student will practice the steps in the administration of oral glucose.
3. The student will practice documentation of assessment, treatment, and patient response to oral glucose.
4. The student will practice completing a prehospital care report for patients with diabetic emergencies.

## INSTRUCTOR ACTIVITIES

Supervise student practice.

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

Redirect students having difficulty with content (complete remediation forms).

## EVALUATION

Written: Develop evaluation instruments, e.g., examinations, verbal reviews, handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

Practical: Evaluate the actions of the EMT-Basic 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.

## REMEDIATION

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

## SUGGESTED ENRICHMENT

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



Medical / Behavioral and  
Obstetrics / Gynecology

Lesson 4-5  
Allergies

# 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 EMT-Basic student will be able to:

- 4-5.1 Recognize the patient experiencing an allergic reaction.(C-1)
- 4-5.2 Describe the emergency medical care of the patient with an allergic reaction.(C-1)
- 4-5.3 Establish the relationship between the patient with an allergic reaction and airway management.(C-3)
- 4-5.4 Describe the mechanisms of allergic response and the implications for airway management.(C-1)
- 4-5.5 State the generic and trade names, medication forms, dose, administration, action, and contraindications for the epinephrine auto-injector.(C-1)
- 4-5.6 Evaluate the need for medical direction in the emergency medical care of the patient with an allergic reaction.(C-3)
- 4-5.7 Differentiate between the general category of those patients having an allergic reaction and those patients having an severe allergic reaction requiring immediate medical care, including immediate use of epinephrine auto-injector.(C-3)

### AFFECTIVE OBJECTIVES

- 4-5.8 Explain the rationale for administering epinephrine using an auto-injector.(A-3)

### PSYCHOMOTOR OBJECTIVES

- 4-5.9 Demonstrate the emergency medical care of the patient experiencing an allergic reaction.(P-1,2)
- 4-5.10 Demonstrate the use of epinephrine auto-injector.(P-1,2)
- 4-5.11 Demonstrate the assessment and documentation of patient response to an epinephrine injection.(P-1,2)
- 4-5.12 Demonstrate proper disposal of equipment.(P-1,2)
- 4-5.13 Demonstrate completing a prehospital care report for patients with allergic emergencies.(P-2)

# PREPARATION

Motivation: The ability to recognize and manage a severe allergic reaction (anaphylaxis) is possibly the only thing standing between a patient and imminent death.

Prerequisites: BLS, Preparatory, Airway and Patient Assessment.

## MATERIALS

AV Equipment: Utilize various audio-visual materials relating to allergic emergencies. The continuous design and 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 assure meeting the objectives of the curriculum.

EMS Equipment: Epinephrine auto-injector, epinephrine auto-injector trainer, synthetic skin mannequin for injection.

## PERSONNEL

Primary Instructor: One EMT-Basic instructor knowledgeable in the physiology of severe allergic reactions and the use of epinephrine auto-injectors.

Assistant Instructor: The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in allergic emergencies.

Recommended Minimum

Time To Complete: Two hours

# PRESENTATION

## Declarative (What)

- I. Allergic Reactions
  - A. Definition - an exaggerated immune response to any substance.
  - B. Possible causes
    1. Insect bites/stings -e.g., bees, wasps
    2. Food - e.g., nuts, seafood, peanuts
    3. Plants
    4. Medications
    5. Others
  - C. Assessment findings may include:
    1. Skin
      - a. Patient may state he has a warm tingling feeling in the face, mouth, chest, feet and hands.
      - b. Itching
      - c. Hives
      - d. Flushed skin
      - e. Swelling to face, neck, hands, feet and/or tongue
    2. Respiratory system
      - a. Patient may state he feels a tightness in his throat/chest.
      - b. Cough
      - c. Rapid breathing
      - d. Labored breathing
      - e. Noisy breathing
        - (1) Stridor
        - (2) Wheezing
      - f. Hoarseness
    3. Cardiac
      - a. Increased heart rate
      - b. Decreased blood pressure
    4. Generalized findings
      - a. Itchy, watery eyes
      - b. Headache
      - c. Sense of impending doom
      - d. Runny nose
    5. Decreasing mental status
    6. Assessment findings that reveal shock (hypoperfusion) or respiratory distress indicate the presence of a severe allergic reaction.

**Note: Anaphylaxis can be a potentially life threatening situation most often associated with history of exposure to an inciting agent/allergen (bee sting or other insect venom, medications/drugs, or foods such as peanuts, seafood, etc.) and physical reactions ranging from mild skin rashes to catastrophic multisystem failure and/or death. The presence of respiratory distress (upper airway obstruction, lower airway disease/severe bronchospasm) and/or cardiovascular**

**collapse/hypotensive shock characterize the clinical findings that authorize and require treatment according to this protocol.**

- A. Emergency medical care of severe allergic reactions (anaphylaxis).
1. Determine that the patient's history includes a history of anaphylaxis, severe allergic reactions **and/or** recent exposure to an allergen or inciting agent.
    - a. Perform initial assessment.
    - b. Perform focused history and physical exam.
      - (1) History of allergies.
      - (2) What was patient exposed to.
      - (3) How were they exposed.
      - (4) What effects.
      - (5) Time of onset.
      - (6) Progression.
      - (7) Interventions.
    - c. Assess baseline vital signs and SAMPLE history.
  2. Administer high concentration oxygen.
  3. Assess the cardiac and respiratory status of the patient.
    - a. If **both** the cardiac and respiratory status of the patient are normal, transport the patient, reassessing the patient's condition frequently during the transport.
    - b. If **either** the cardiac or respiratory status of the patient is **abnormal** proceed as follows:
      - (1) If the patient is having severe respiratory distress **or** shock **and** has been prescribed an epinephrine auto-injector, assist the patient in administering the epinephrine. If the patient's auto-injector is not available or expired, and the EMS agency carries an epinephrine auto-injector, administer the epinephrine as authorized by the agency's medical director.
      - (2) If the patient has not been prescribed an epinephrine auto-injector, begin transport and contact medical control for authorization to administer the epinephrine auto-injector, if available.
- (a) In the event that you are unable to make contact with medical control (radio failure, no communications) and the patient is under 35 years of age, you may administer the epinephrine auto injector as indicated. The incident should be reported to Medical Control or your Agency Medical Director as soon as possible.**

**(b) The pediatric dose for epinephrine is 0.01 mg/kg, up to 0.3 mg. For patients under 9 years of age or weighing less than 30 kg (66 lbs.) the pediatric epinephrine auto-injector (0.15 mg) should be used.**

- (3). If the patient has already received a dose of epinephrine, begin transport and contact medical control for authorization for a second administration of the epinephrine auto-injector, if needed.
- (4). Refer immediately to the appropriate Respiratory Arrest, Respiratory Distress, Obstructed Airway or Shock protocol.

3. If cardiac arrest occurs, perform CPR according to AHA/ARC standards.
4. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report.

#### I. Relationship to Airway Management

- A. These patients may initially present with airway/respiratory compromise or airway/respiratory compromise may develop as the allergic reaction progresses.
- B. The airway should be managed according to the principles identified in the airway management lesson presented earlier.

#### II. Medications

- A. Epinephrine auto-injector
  1. Medication name
    - a. Generic - Epinephrine
    - b. Trade - Adrenalin
  2. Indications - must meet the following three criteria:
    - a. Emergency medical cares for the treatment of the patient exhibiting the assessment findings of a severe allergic reaction (anaphylaxis).
    - b. Medication is prescribed for this patient by their physician, you are directed to administer the medication by Medical Control or you are unable to contact Medical Control and epinephrine is indicated.
    - c. Administration of medication is authorized by the Regional Medical Advisory Committee or a physician (Emergency Health Care Provider).
  3. Contraindications - no contraindications when used in a life-threatening situation involving an anaphylactic reaction with respiratory distress or shock.
  4. Medication form - liquid administered via an automatically injectable needle and syringe system.

5. Dosage
  - a. Adult - one adult auto-injector (0.3 mg)
  - b. Infant and child - under 9 years old or less than 30 kg (66 lbs.) one infant/child auto-injector (0.15 mg)
6. Administration
  - a. Obtain order from medical direction either on-line or protocol.
  - b. Obtain patient's prescribed auto-injector if available.
    - (1) Ensure that the prescription is written for the patient experiencing allergic reaction.
    - (2) Ensure that the medication is not discolored.

**Note: If the patient's auto-injector is not available and the EMS unit has an epinephrine auto-injector, administer the epinephrine as authorized by the Agency's Medical Director.**
  - c. Remove safety cap from the auto-injector.
  - d. Place tip of auto-injector against the patient's thigh.
    - (7) Lateral portion of the thigh.
    - (8) Midway between the waist and the knee.
  - e. Push the injector firmly against the thigh until the injector activates.
  - f. Hold the injector in place until the medication is injected.
  - g. Record activity and time.
  - h. Dispose of injector in biohazard container.
7. Actions
  - a. Dilates the bronchioles.
  - b. Constricts blood vessels.
8. Side effects
  - a. Increases heart rate
  - b. Pallor
  - c. Dizziness
  - d. Chest pain / Sudden Death
  - e. Headache
  - f. Nausea
  - g. Vomiting
  - h. Excitability, anxiousness
9. Re-assessment strategies
  - a. Transport.
  - b. Continue focused assessment of airway, breathing and circulatory status.
    - (1) Patient condition continues to worsen.
      - (a) Decreasing mental status
      - (b) Increasing breathing difficulty
      - (c) Decreasing blood pressure
      - (d) Obtain medical direction
      - (e) Prepare to initiate Basic Cardiac Life support measures.

- CPR
  - AED
  - ACLS intercept
- (2) Provide supportive care.
- (a) Oxygen
  - (b) Treat for shock (hypoperfusion).

## SUGGESTED APPLICATION

### Procedural (How)

The instructor will demonstrate the following steps using an epinephrine auto-injector trainer and appropriate synthetic skin mannequin:

1. Obtain medical direction.
2. Obtain patient's prescribed auto injector. Ensure:
  - a. Prescription is written for the patient experiencing allergic reactions.
  - b. Medication is not discolored, if visible.
3. Remove safety cap from the auto-injector.
4. Place tip of auto-injector against the patient's thigh.
  - a. Lateral portion of the thigh.
  - b. Midway between the waist and the knee.
5. Push the injector firmly against the thigh until the injector activates.
6. Hold the injector in place until the medication is injected.
7. Dispose of injector in biohazard container.

### Contextual (When, Where, Why)

The EMT-Basic will now be able to assist patients with the administration of epinephrine auto-injectors. This will make a significant difference in those patients exposed to an allergic agent.

The administration of the epinephrine should be performed as soon as possible following appropriate identification of the allergic reaction.

## STUDENT ACTIVITIES

### Auditory (Hear)

1. The student should hear the assessment findings differentiating minor and severe allergic reactions.
2. The student should hear the steps required to appropriately administer epinephrine using an auto-injector.

### Visual (See)

1. The student should see various audio-visual aids or materials showing the assessment findings relative to minor allergic reactions.
2. The student should see an actual epinephrine auto-injector.

3. The student should see the instructor demonstrate the appropriate steps in using an auto-injector.
4. The student should see various audio-visual aids or materials showing the assessment findings of major allergic reactions and the appropriate use of the auto-injector.

#### Kinesthetic (Do)

1. The student should practice the correct way to use an epinephrine auto-injector.
2. The student should practice role play treatment of a patient experiencing an allergic reaction.
3. The student should practice re-assessment and documentation relative to the use of a epinephrine auto-injector.

### INSTRUCTOR ACTIVITIES

Supervise student practice.

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

Redirect students having difficulty with content (complete remediation forms).

## EVALUATION

Written: Develop evaluation instruments, e.g., examinations, verbal reviews, handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

Practical: Evaluate the actions of the EMT-Basic 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.

## REMEDIATION

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

## SUGGESTED ENRICHMENT

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

**Medical / Behavioral and  
Obstetrics / Gynecology**

**Lesson 4-6  
Poisoning / Overdose**

# 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 EMT-Basic student will be able to:

- 4-6.1 List various ways that poisons enter the body.(C-1)
- 4-6.2 List signs/symptoms associated with poisoning.(C-1)
- 4-6.3 Discuss the emergency medical care for the patient with possible overdose.(C-1)
- 4-6.4 Describe the steps in the emergency medical care for the patient with suspected poisoning.(C-1)
- 4-6.5 Establish the relationship between the patient suffering from poisoning or overdose and airway management.(C-3)
- 4-6.6 State the generic and trade names, indications, contraindications, medication form, dose, administration, actions, side effects and re-assessment strategies for activated charcoal. (C-1)
- 4-6.7 State the generic and trade names, indications, contraindications, medication form, dose, administration, actions, side effects and re-assessment strategies for Syrup of Ipecac.
- 4-6.8 Recognize the need for medical direction in caring for the patient with poisoning or overdose.(C-3)

### AFFECTIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-6.9 Explain the rationale for administering activated charcoal. (A-3)
- 4-6.10 Explain the rationale for administering Syrup of Ipecac.
- 4-6.11 Explain the rationale for contacting medical direction early in the prehospital management of the poisoning or overdose patient.(A-3)

### PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-6.12 Demonstrate the steps in the emergency medical care for the patient with possible overdose.(P-1,2)
- 4-6.13 Demonstrate the steps in the emergency medical care for the patient with suspected poisoning.(P-1,2)
- 4-6.14 Perform the necessary steps required to provide a patient with activated charcoal. (P-2)
- 4-6.15 Perform the necessary steps required to provide a patient with Syrup of Ipecac.
- 4-6.16 Demonstrate the assessment and documentation of patient response.
- 4-6.17 Demonstrate proper disposal of the equipment for the administration of activated charcoal. (P-1,2)
- 4.6.18 Demonstrate completing a prehospital care report for patients with

poisoning/overdose emergency. (P-1,2)

## PREPARATION

Motivation: Thousands of children are poisoned every year as they explore their environments. Many adults also overdose on medication, either accidentally or deliberately. With early prehospital management, the vast majority of these patients have better outcomes.

Prerequisites: BLS, Preparatory, Airway and Patient Assessment.

### MATERIALS

AV Equipment: Utilize various audio-visual materials relating to poisoning/overdose emergencies. The continuous design and 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 assure meeting the objectives of the curriculum.

EMS Equipment: Suction equipment.

### PERSONNEL

Primary Instructor: One EMT-Basic instructor knowledgeable in this area.

Assistant Instructor: None required.

Recommended Minimum  
Time to Complete: Two hours

## PRESENTATION

Declarative (What)

- I. Emergency Medical Care of Poisoning/Overdose
  - A. Important questions to consider asking patient
    - 1. What substance?
    - 2. When did you ingest/become exposed?
    - 3. If an ingestion, how much did you ingest?
    - 4. Over what time period?
    - 5. Patient interventions?
    - 6. How much do you weigh?
  - B. Ingested
    - 1. Signs and symptoms
      - a. Nausea
      - b. Vomiting
      - c. Diarrhea
      - d. Altered mental status
      - e. Abdominal pain
      - f. Chemical burns around the mouth
      - g. Different breath odors
      - h. Difficulty breathing
    - 2. Emergency medical care
      - a. Remove pills, tablets or fragments with gloves from patient's mouth, as needed, without injuring oneself.
      - b. Consult medical direction
      - c. Bring all containers, bottles, labels, etc. of poison agents to receiving facility.
  - C. Inhaled
    - 1. Signs and symptoms
      - a. Difficulty breathing
      - b. Chest pain
      - c. Cough
      - d. Hoarseness
      - e. Dizziness
      - f. Headache
      - g. Confusion
      - h. Seizures
      - i. Altered mental status
    - 2. Emergency medical care
      - a. Have trained rescuers remove patient from poisonous environment.
      - b. Give oxygen, if not already done in the initial assessment.
      - c. Bring all containers, bottles, labels, etc. of poison agents to receiving facility.
  - D. Toxic injection
    - 1. Signs and symptoms
      - a. Weakness
      - b. Dizziness
      - c. Chills

- d. Fever
- e. Nausea
- f. Vomiting
- 2. Emergency medical care
  - a. Airway and oxygen.
  - b. Be alert for vomiting.
  - c. Bring all containers, bottles, labels, etc. of poison agents to receiving facility.
- E. Absorbed
  - 1. Signs and symptoms
    - a. Liquid or powder on patient's skin
    - b. Burns
    - c. Itching
    - d. Irritation
    - e. Redness
    - f. Difficulty breathing
  - 2. Emergency medical care
    - a. Skin - remove contaminated clothing while protecting oneself from contamination.
      - (1) Powder - brush powder off patient, then irrigate.
      - (2) Liquid - irrigate with clean water for at least 20 minutes (and continue en route to facility if possible).
    - b. Eye - irrigate with clean water away from affected eye for at least 20 minutes and continue en route to facility if possible.

NOTE: Be alert for contact lenses.

## II. Relationship to Airway Management

- A. Use information and skills learned in airway section of course to manage airway difficulties.
- B. A patient's condition may deteriorate, so continue to assess patient for airway difficulties and manage as learned previously.

## III. Medications

- A. Activated charcoal
  - 1. Medication name
    - a. Generic - Activated charcoal
    - b. Trade
      - (1) SuperChar
      - (2) InstaChar
      - (3) Actidose
      - (4) LiquiChar
      - (5) Others
  - 2. Indications - poisoning by mouth
  - 3. Contraindications
    - a. Altered mental status
    - b. Ingestion of acids or alkalis

- c. Unable to swallow
  - 4. Medication form
    - a. Pre-mixed in water, frequently available in plastic bottle containing 12.5 grams activated charcoal.
    - b. Powder - should be avoided in field.
  - 5. Dosage
    - a. Adults and children: 1 gram activated charcoal/kg of body weight.
    - b. Usual adult dose: 25-50 grams
    - c. Usual infant/child dose: 12.5-25 grams
  - 6. Administration
    - a. Obtain order from medical direction either on-line or off-line.
    - b. Container must be shaken thoroughly.
    - c. Since medication looks like mud, patient may need to be persuaded to drink it.
    - d. A covered container and a straw may improve patient compliance since the patient cannot see the medication this way.
    - e. If patient takes a long time to drink the medication, the charcoal will settle and will need to be shaken or stirred again.
    - f. Record activity and time.
  - 7. Actions
    - a. Binds to certain poisons and prevents them from being absorbed into the body.
    - b. Not all brands of activated charcoal are the same; some bind much more poison than others, so consult medical direction about the brand to use.
  - 8. Side effects
    - a. Black stools
    - b. Some patients, particularly those who have ingested poisons that cause nausea, may vomit.
    - c. If patient vomits, the dose should be repeated once.
  - 9. Re-assessment strategies - the EMT-Basic should be prepared for the patient to vomit or further deteriorate.
- B. Syrup of Ipecac
- 1. Medication name
    - a. Generic -
    - b. Trade
  - (1)
  - 2. Indications - poisoning by mouth
  - 3. Contraindications
    - a. Altered mental status
    - b. Ingestion of acids or alkalis
    - c. Unable to swallow
  - 4. Medication form

5. Dosage - See local protocol
6. Administration
  - a. Obtain order from medical direction either on-line or off-line.
  - b. Record activity and time.
7. Actions
8. Side effects
9. Re-assessment strategies - the EMT-Basic should be prepared for the patient to vomit or further deteriorate.

## SUGGESTED APPLICATION

### Procedural (How)

1. Show the student examples of poisoning by ingestion.
2. Show the student examples of poisoning by inhalation.
3. Show the student examples of poisoning by injection.
4. Show the student examples of poisoning by absorption.
5. Show the student how to care for a patient with suspected poisoning or overdose.

### Contextual (When, Where, Why)

The EMT-Basic can also prevent loss of life by ensuring the patient who has overdosed has his airway protected.

## STUDENT ACTIVITIES

### Auditory (Hear)

None identified for this lesson.

### Visual (See)

1. The student should see audio-visuals aids or materials of examples of poisoning by ingestion.
2. The student should see audio-visuals aids or materials of examples of poisoning by inhalation.
3. The student should see audio-visuals aids or materials of examples of poisoning by injection.
4. The student should see audio-visuals aids or materials of examples of poisoning by absorption.
5. The student should see a demonstration of how to care for a patient with suspected poisoning or overdose.

### Kinesthetic (Do)

1. The student should practice caring for a patient with suspected poisoning or overdose.
2. The student should practice completing a prehospital care report for patients with poisoning/overdose emergencies.

## INSTRUCTOR ACTIVITIES

Supervise student practice.

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

Redirect students having difficulty with content (complete remediation forms).

## EVALUATION

Written: Develop evaluation instruments, e.g., examinations, verbal reviews, handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

## REMEDIATION

Practical: Evaluate the actions of the EMT-Basic 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. Identify students or groups of students who are having difficulty with this subject content. Complete remediation sheet from the instructor's course guide.

## SUGGESTED ENRICHMENT

What is unique in the local area concerning this topic? Complete enrichment sheets from the instructor's course guide and attach with lesson plan. If there are local resources, for example, Poison Control Centers, utilize them.

Medical / Behavioral and  
Obstetrics / Gynecology

Lesson 4-7  
Environmental Emergencies

# 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 EMT-Basic student will be able to:

- 4-7.1 Describe the various ways that the body loses heat.(C-1)
- 4-7.2 List the signs and symptoms of exposure to cold.(C-1)
- 4-7.3 Explain the steps in providing emergency medical care to a patient exposed to cold.(C-1)
- 4-7.4 List the signs and symptoms of exposure to heat.(C-1)
- 4-7.5 Explain the steps in providing emergency care to a patient exposed to heat.(C-1)
- 4-7.6 Recognize the signs and symptoms of water-related emergencies.(C-1)
- 4-7.7 Describe the complications of near drowning.(C-1)
- 4-7.8 Describe the emergency medical care of near drowning/drowning.
- 4-7.9 Discuss the emergency medical care of bites and stings.(C-1)

### AFFECTIVE OBJECTIVES

No affective objectives identified.

### PSYCHOMOTOR OBJECTIVES

- 4-7.10 Demonstrate the assessment and emergency medical care of a patient with exposure to cold.(P-1,2)
- 4-7.11 Demonstrate the assessment and emergency medical care of a patient with exposure to heat.(P-1,2)
- 4-7.12 Demonstrate the assessment and emergency medical care of a near drowning patient.(P-1,2)
- 4-7.13 Demonstrate completing a prehospital care report for patients with environmental emergencies.(P-2)

# PREPARATION

Motivation:

Environmental emergencies include exposure to both heat and cold. The key to effective management is recognizing the signs and symptoms and providing prompt emergency medical care.

Cold emergencies are found in varied groups of individuals, including hunters, sailors, skiers, climbers, swimmers, military personnel, and all others in the wilderness, rural, and

urban setting. The greatest number of hypothermia cases are reported in the urban setting, many involving the elderly patient.

Likewise, heat emergencies are also prevalent in a large number of groups of individuals in many different settings. Heat emergencies range from very minor effects to life threatening conditions. Heat emergencies may occur during any season of the year. Because of the increased popularity of water sports, there is a subsequent increase in the incidence of aquatic emergencies. Aquatic emergencies most frequently managed by the EMT-Basic will involve near drowning. The EMT-Basic must be prepared to assess and manage the patient experiencing these types of emergencies.

Prerequisites: BLS, Preparatory, Airway and Patient Assessment.

#### MATERIALS

AV Equipment: Utilize various audio-visual materials relating to environmental emergencies. The continuous design and 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 assure meeting the objectives of the curriculum.

EMS Equipment: Exam gloves, stethoscopes, blood pressure cuffs, penlight.

#### PERSONNEL

Primary Instructor: One EMT-Basic instructor knowledgeable in heat, cold and aquatic emergencies.

Assistant Instructor: None required.

Recommended Minimum

Time to Complete: Two hours

# PRESENTATION

## Declarative (What)

- I. Temperature Regulation
  - A. Based on heat loss versus heat gained.
    1. Heat loss exceeds heat gained - hypothermia (low body temperature)
      - a. Heat loss occurs by:
        - (1) Radiation
        - (2) Convection
        - (3) Conduction
        - (4) Evaporation
        - (5) Breathing
      - b. EMT-Basic must be aware of methods of heat loss when treating patients with hypothermia to prevent further heat loss.
    2. Heat gained exceeds heat loss - hyperthermia (high body core temperature)
- II. Important Questions to Ask Patients Exposed to the Environment
  - A. Source
  - B. Environment
  - C. Loss of consciousness
  - D. Effects
    1. General
    2. Local
- III. Exposure to Cold
  - A. Generalized cold emergency - generalized hypothermia
    1. Predisposing factors
      - a. Cold environment
        - (1) Immersion
        - (2) Non-immersion
      - b. Age
        - (1) Very old
        - (2) Very young
          - (a) Infants and young children are small with large surface area.
          - (b) Small muscle mass, so shivering is poor in children and not at all in infants.
          - (c) Less body fat
          - (d) Younger children need help to protect self. Cannot put on or take off clothes.
      - c. Medical conditions
        - (1) Shock (hypoperfusion)
        - (2) Head injury

- (3) Burns
- (4) Generalized infection
- (5) Injuries to the spinal cord
- (6) Diabetes and hypoglycemia
- d. Drugs/poisons
- 2. Signs and symptoms of generalized hypothermia
  - a. Environmental conditions of cold exposure
    - (1) Obvious exposure
    - (2) Subtle exposure
      - (a) Ethanol ingestion
      - (b) Underlying illness
      - (c) Overdose/poisoning
      - (d) Major trauma
      - (e) Outdoor resuscitation
      - (f) Ambient temperature decreased (e.g. home of elderly patient)
  - b. Cool/cold skin temperature - the EMT-Basic should place the back of his hand between the clothing and the patient's abdomen to assess the general temperature of the patient. The patient experiencing a generalized cold emergency will present with cool abdominal skin temperature.
  - c. Decreasing mental status or motor function - correlates with the degree of hypothermia.
    - (1) Poor coordination
    - (2) Memory disturbances
    - (3) Reduced or loss of sensation - to touch
    - (4) Mood changes
    - (5) Less communicative
    - (6) Dizziness
    - (7) Speech difficulty
  - d. Stiff or rigid posture
  - e. Muscular rigidity
  - f. Shivering may be present or absent.
  - g. Breathing variations
    - (1) Early - rapid breathing
    - (2) Late - shallow, slow or even absent breathing
  - h. Slowly responding pupils
  - i. Pulse
    - (1) Early - rapid
    - (2) Late - slow and barely palpable and/or irregular, or completely absent
  - j. Low to absent blood pressure
  - k. Poor judgement - patient may actually remove clothing.
  - l. Complaints of joint/muscle stiffness.
  - m. Skin
    - (1) Red - early

- (2) Pale
  - (3) Cyanotic
  - (4) Stiff/hard
3. Emergency medical care for generalized hypothermia
- a. Remove the patient from the environment - protect the patient from further heat loss.
  - b. Remove wet clothing and cover with blanket.
  - c. Handle the patient extremely gently. Avoid rough handling.
  - d. Do not allow the patient to walk or exert himself.
  - e. Administer oxygen if not already done as part of the initial assessment - oxygen administered should be warmed and humidified, if possible.
  - f. Assess pulses for 30-45 seconds before starting CPR.
  - g. If the patient is alert and responding appropriately, actively rewarm.
    - (1) Warm blankets
    - (2) Heat packs or hot water bottles to the groin, axillary and cervical regions.
    - (3) Turn the heat up high in the patient compartment of the ambulance.
  - h. If the patient is unresponsive or not responding appropriately, rewarm passively:
    - (1) Warm blankets
    - (2) Turn the heat up high in the patient compartment of the ambulance.
  - i. Do not allow the patient to eat or drink stimulants.
  - j. Do not massage extremities.
  - k. Be prepared for cardiac arrest, have the defibrillator nearby
- B. Local cold injuries - localized to specific area of body
- 1. Predisposing factors
  - 2. Tend to occur on the extremities and exposed ears, nose, and face.
  - 3. Signs and symptoms of local cold injuries
    - a. Local injury with clear demarcation.
    - b. Early or superficial injury
      - (1) Blanching of the skin - palpation of the skin in which normal color does not return.
      - (2) Loss of feeling and sensation in the injured area.
      - (3) Skin remains soft.
      - (4) If rewarmed, tingling sensation
    - c. Late or deep injury
      - (1) White, waxy skin
      - (2) Firm to frozen feeling upon palpation
      - (3) Swelling may be present.
      - (4) Blisters may be present.
      - (5) If thawed or partially thawed, the skin may appear flushed with areas of purple and blanching or mottled

and cyanotic.

4. Emergency medical care for local cold injuries
  - a. Remove the patient from the environment.
  - b. Protect the cold injured extremity from further injury.
  - c. Administer oxygen if not already done as part of the initial assessment.
  - d. Remove wet or restrictive clothing.
  - e. If early or superficial injury
    - (1) Splint extremity.
    - (2) Cover the extremity.
    - (3) Do not rub or massage.
    - (4) Do not re-expose to the cold.
  - f. If late or deep cold injury
    - (1) Remove jewelry.
    - (2) Cover with dry clothing or dressings.
    - (3) Do not:
      - Break blisters
      - Rub or massage area
      - Apply heat
      - Rewarm
    - (4) Allow the patient to walk on the affected extremity
- a. When an extremely long or delayed transport is inevitable, then active rapid rewarming should be done.
  - (1) Immerse the affected part in warm water bath.
  - (2) Ensure the water does not cool from the affected part.
  - (3) Continuously stir water.
  - (4) Continue until the part is soft and color and sensation return.
  - (5) Dress the area with dry sterile dressings. If hand or foot, place dry sterile dressings between fingers or toes.
  - (6) Protect against refreezing the warmed part.
  - (7) Expect the patient to complain of severe pain.

#### IV. Exposure to Heat

- A. Predisposing factors
  1. Climate
    - a. High ambient temperature reduces the body's ability to lose heat by radiation.
    - b. High relative humidity reduces the body's ability to lose heat through evaporation.
  2. Exercise and activity
    - a. Can lose more than 1 liter of sweat per hour.
    - b. Loss of electrolytes (sodium, chloride and fluid through sweat).

3. Age
    - a. Elderly
      - (1) Poor thermoregulation
      - (2) Medications
      - (3) Lack mobility - can not escape hot environment.
    - b. Newborn/infants
      - (1) Poor thermoregulation
      - (2) Cannot remove own clothing
  4. Pre-existing illness and/or conditions
    - a. Heart disease
    - b. Dehydration
    - c. Obesity
    - d. Fever
    - e. Fatigue
    - f. Diabetes
  5. Drugs/medications
- B. Signs and symptoms
1. Muscular cramps
  2. Weakness or exhaustion
  3. Dizziness or faintness
  4. Skin
    - a. Moist, pale, normal to cool temperature
    - b. Hot, dry or moist - dire emergency
  5. Rapid heart rate
  6. Altered mental status to unresponsive
- C. Emergency medical care of heat emergencies - patient with moist, pale, normal to cool temperature skin.
1. Remove the patient from the hot environment and place in a cool environment (back of air conditioned ambulance).
  2. Administer oxygen if not already done during the initial assessment.
  3. Loosen or remove clothing.
  4. Cool patient by fanning.
  5. Put in supine position with legs elevated.
  6. If patient is responsive and is not nauseated, have the patient drink water.
  7. If the patient is unresponsive or is vomiting, transport to the hospital with patient on his left side.
- D. Emergency medical care of heat emergencies - patient with hot, dry or moist skin.
1. Remove the patient from the hot environment and place in a cool environment (back of air conditioned ambulance with air conditioner running on high).
  2. Remove clothing.
  3. Administer oxygen if not already done during the initial assessment.
  4. Apply cool packs to neck, groin and armpits.
  5. Keep the skin wet by applying water by sponge or wet towels.

6. Fan aggressively.
7. Transport immediately.

V. Water-Related Emergencies

A. Near drowning/drowning

1. Ensure the safety of the rescue personnel.
2. Suspect possible spine injury if diving accident is involved or unknown.
3. Consider length of time in cold water drowning. Any pulseless, non-breathing patient who has been submerged in cold water should be resuscitated.
4. Complications of near drowning can include:
  - a. Airway obstruction
  - b. Hypothermia
  - c. Cardiac Arrest
5. Emergency medical care:
  - a. In-line immobilization and removal from water with backboard if spine injury is suspected and patient is responsive.
  - b. If there is no suspected spine injury, place patient on left side to allow water, vomitus and secretions to drain from upper airway.
  - c. Suction as needed.
  - d. Administer oxygen if not already done during the initial assessment.
  - e. If gastric distention interferes with artificial ventilation, the patient should be placed on his left side. With suction immediately available, the EMT-Basic should place his hand over the epigastric area of the abdomen and apply firm pressure to relieve the distention. This procedure should only be done if the gastric distention interferes with the ability of the EMT-Basic to artificially ventilate the patient effectively.
  - f. For warm water drownings requiring resuscitation - see cardiac module.

VI. Bites and Stings

A. Signs and symptoms

1. History of bite (spider, snake) or sting (insect, scorpion, marine animal)
2. Pain
3. Redness
4. Swelling
5. Weakness
6. Dizziness
7. Chills

8. Fever
  9. Nausea
  10. Vomiting
  11. Bite marks
  12. Stinger
- B. Emergency medical care
1. If stinger present, remove it.
    - a. Scrape stinger out; e.g., with edge of card.
    - b. Avoid using tweezers or forceps as these can squeeze venom from the venom sac into the wound.
  2. Wash area gently.
  3. Remove jewelry from injured area before swelling begins, if possible.
  4. Place injection site slightly below the level of the patient's heart.
  5. Do not apply cold to snake bites.
  6. Consult medical direction regarding constricting band for snakebite.
  7. Observe for development of signs and symptoms of an allergic reaction; treat as needed.

## SUGGESTED APPLICATION

### Procedural (How)

1. Show illustrations of signs and symptoms of cold injuries.
2. Demonstrate the steps in providing emergency medical care to a patient exposed to the cold.
3. Describe the various ways that the body loses heat.
4. Show illustrations of the signs and symptoms heat emergencies.
5. Demonstrate the assessment and emergency medical care of a patient with exposure to heat.
6. Demonstrate the assessment and emergency medical care of a patient with exposure to cold.
7. Demonstrate the assessment and emergency medical care of a near drowning patient.
8. Demonstrate how to remove a patient from the water who has a suspected spine injury.

### Contextual (When, Where, Why)

Patients suffering from heat and cold emergencies or those involved in water related emergencies must be promptly recognized through assessment of signs and symptoms. Patients with heat and cold emergencies must be rapidly moved to the ambulance to remove them from the environment. Warming of the cold-exposed patient and cooling of the heat-exposed patient is necessary to reduce the incidence of morbidity and mortality. Immediate resuscitation of the water-related patient may require rapid intervention to prevent death.

## STUDENT ACTIVITIES

### Auditory (Hear)

1. The student should hear simulations involving the assessment, recognition and emergency medical care of cold, heat and water-related emergencies.

### Visual (See)

1. The student should see audio-visual aids or materials of signs and symptoms of cold injuries.
2. The student should see a demonstration of the steps in providing emergency medical care to a patient exposed to cold.
3. The student should see an illustration or demonstration of the various ways that the body loses heat.
4. The student should see audio-visual aids or materials of the signs and symptoms of heat emergencies.
5. The student should see a demonstration of the assessment and emergency medical care of a patient with exposure to heat.
6. The student should see a demonstration of the assessment and emergency medical care of a patient with exposure to cold.
7. The student should see a demonstration of the assessment and emergency medical care of a near drowning patient.
8. The student should see a demonstration of how to remove a patient from the water who has a suspected spinal injury.

### Kinesthetic (Do)

1. The student should practice the steps in providing emergency medical care to a patient exposed to cold.
2. The student should practice the assessment and emergency medical care of a patient with exposure to heat.
3. The student should practice the assessment and emergency medical care of a patient with exposure to cold.
4. The student should practice the assessment and emergency medical care of a near drowning patient.
5. The student should practice the skills involved in removing a patient from the water who has a suspected spinal injury.
6. The student should practice completing a prehospital report for patients with environmental emergencies.

## INSTRUCTOR ACTIVITIES

Supervise student practice.

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

Redirect students having difficulty with content (complete remediation forms).

## EVALUATION

Written: Develop evaluation instruments, e.g., examinations, verbal reviews,

handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

Practical: Evaluate the actions of the EMT-Basic 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.

## REMEDIATION

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

## SUGGESTED ENRICHMENT

What is unique in the local area concerning this topic? Complete enrichment sheets from the instructor's course guide and attach with lesson plan. Use floating backboards and CPR techniques in water rescue.

Medical / Behavioral and  
Obstetrics / Gynecology

Lesson 4-8  
Behavioral Emergencies

# 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 EMT-Basic student will be able to:

- 4-8.1 Define behavioral emergencies.(C-1)
- 4-8.2 Discuss the general factors that may cause an alteration in a patient's behavior.(C-1)
- 4-8.3 State the various reasons for psychological crises.(C-1)
- 4-8.4 Discuss the characteristics of an individual's behavior which suggests that the patient is at risk for suicide.(C-1)
- 4-8.5 Discuss special medical/legal considerations for managing behavioral emergencies.(C-1)
- 4-8.6 Discuss the special considerations for assessing a patient with behavioral problems. (C-1)
- 4-8.7 Discuss the general principles of an individual's behavior which suggests that he is at risk for violence.(C-1)
- 4-8.8 Discuss methods to calm behavioral emergency patients.(C-1)

### AFFECTIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-8.9 Explain the rationale for learning how to modify your behavior toward the patient with a behavioral emergency.(A-3)

### PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-8.10 Demonstrate the assessment and emergency medical care of the patient experiencing a behavioral emergency.(P-1,2)
- 4-8.11 Demonstrate various techniques to safely restrain a patient with a behavioral problem.(P-1,2)

# PREPARATION

Motivation:

The EMT-Basic will respond to many situations involving behavioral emergencies. Some of these result from an injury or acute illness of the patient. Others are the result of mental illness or the use of mind altering substances. Restraints are the best LAST option in a behavioral emergency.

Prerequisites: BLS, Preparatory, Airway and Patient Assessment.

#### MATERIALS

AV Equipment: Utilize various audio-visual materials relating to behavioral emergencies. The continuous design and 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 assure meeting the objectives of the curriculum.

EMS Equipment: Stretcher, restraints.

#### PERSONNEL

Primary Instructor: One EMT-Basic instructor knowledgeable in behavioral emergencies.

Assistant Instructor: None required.

Recommended Minimum  
Time to Complete: One and a half hours

# PRESENTATION

## Declarative (What)

- I. Behavior
  - A. Behavior - manner in which a person acts or performs; any or all activities of a person, including physical and mental activity.
  - B. Behavioral Emergency - a situation where the patient exhibits abnormal behavior within a given situation that is unacceptable or intolerable to the patient, family or community. This behavior can be due to extremes of emotion leading to violence or other inappropriate behavior or due to a psychological or physical condition such as lack of oxygen or low blood sugar in diabetes.
  
- II. Behavioral Change
  - A. General factors that may alter a patient's behavior - the number of factors which may alter a patient's behavior include situational stresses, medical illnesses, psychiatric problems and alcohol or drugs. Below is a list of common causes for behavior alteration.
    - 1. Low blood sugar
    - 2. Lack of oxygen
    - 3. Inadequate blood flow to the brain
    - 4. Head trauma
    - 5. Mind altering substances
    - 6. Psychogenic - resulting in psychotic thinking, depression or panic.
    - 7. Excessive cold
    - 8. Excessive heat
  
- III. Psychologic Crises
  - A. Panic
  - B. Agitation
  - C. Bizarre thinking and behavior
  - D. Danger to self - self destructive behavior, suicide
  - E. Danger to others - threatening behavior, violence
  
- IV. Assessment for Suicide Risk
  - A. Depression
    - 1. Sad, tearful
    - 2. Thoughts of death or taking one's life
  - B. Suicidal gestures - the EMT-Basic must recognize and intervene in self-destructive behavior before the patient commits the act of suicide. Risk factors may include:
    - 1. Individuals over 40, single, widowed or divorced, alcoholic, depressed.
    - 2. A defined lethal plan of action which has been verbalized.
    - 3. Unusual gathering of articles which can cause death such as purchase of a gun, large volumes of pills, etc.

4. Previous history of self-destructive behavior.
  5. Recent diagnosis of serious illness.
  6. Recent loss of significant loved one.
  7. Arrest, imprisonment, loss of job
- C. Assessment findings
1. Patient in an unsafe environment or with unsafe objects in hands.
  2. Displaying of self-destructive behavior during initial assessment or prior to emergency response.
  3. Important questions to be considered
    - a. How does the patient feel
    - b. Determine suicidal tendencies
    - c. Is patient a threat to self or others
    - d. Is there a medical problem
    - e. Interventions
- D. Emergency medical care
1. Scene size-up, personal safety
  2. Patient assessment
  3. Calm the patient - do not leave patient alone
  4. Restrain if necessary. Consider need for law enforcement.
  5. Transport
  6. If overdose, bring medications or drugs found to medical facility.
- V. Medical/Legal Considerations
- A. Emotionally disturbed patient who consents to care - legal problems greatly reduced.
- B. How to handle the patient who resists treatment
1. Emotionally disturbed patient will often resist treatment.
  2. May threaten EMT-Basics and others
  3. To provide care against patient's will, you must show a reasonable belief the patient would harm himself or others.
  4. If a threat to self or others, patient may be transported without consent after contacting medical direction.
  5. Usually law enforcement is required.
- C. Avoiding unreasonable force
1. Reasonable force depends on what force was necessary to keep patient from injuring himself or others.
  2. Reasonableness is determined by looking at all circumstances involved.
    - a. Patients size and strength
    - b. Type of abnormal behavior
    - c. Sex of patient
    - d. Mental state of patient
    - e. Method of restraint
  3. Be aware after a period of combativeness and aggression some calm patients may cause unexpected and sudden injury to self and others.

4. Avoid acts or physical force that may cause injury to the patient.
  5. EMS personnel may use reasonable force to defend against an attack by emotionally disturbed patients.
- D. Police and medical direction involvement
    1. Seek medical direction when considering restraining a patient.
    2. Ask for police assistance if during scene size-up the patient appears or acts aggressive or combative.
  - E. Protection against false accusations
    1. Documentation of abnormal behavior exhibited by the patient is very important.
    2. Have witnesses in attendance especially during transport, if possible.
    3. Accusing EMT-Basics of sexual misconduct is common by emotionally disturbed patients - have help, same sex attendants, and third party witnesses.
- VI. Principles for Assessing Behavioral Emergency Patients
- A. Identify yourself and let the person know you are there to help.
  - B. Inform him of what you are doing.
  - C. Ask questions in a calm, reassuring voice.
  - D. Allow the patient to tell what happened without being judgmental.
  - E. Show you are listening by rephrasing or repeating part of what is said.
  - F. Acknowledge the patient's feelings.
  - G. Assess the patient's mental status.
    1. Appearance
    2. Activity
    3. Speech
    4. Orientation for time, person, and place
- VII. Assessment of Potential Violence
- A. Scene size-up
  - B. History - the EMT-Basic should check with family and bystanders to determine if the patient has a known history of aggression or combativeness.
  - C. Posture - stands or sits in a position which threatens self or others. May have fists clinched or lethal objects in hands.
  - D. Vocal activity - is yelling or verbally threatens harm to self or others.
  - E. Physical activity - moves toward caregiver, carries heavy or threatening objects, has quick irregular movements, muscles tense.
- VIII. Methods to Calm Behavioral Emergency Patients
- A. Acknowledge that the person seems upset and restate that you are there to help.
  - B. Inform him of what you are doing.
  - C. Ask questions in a calm, reassuring voice.
  - D. Maintain a comfortable distance.

- E. Encourage the patient to state what is troubling him.
  - F. Do not make quick moves.
  - G. Respond honestly to patient's questions.
  - H. Do not threaten, challenge or argue with disturbed patients.
  - I. Tell the truth, do not lie to the patient.
  - J. Do not "play along" with visual or auditory disturbances of the patient.
  - K. Involve trusted family members or friends.
  - L. Be prepared to stay at scene for a long time. Always remain with the patient.
  - M. Avoid unnecessary physical contact. Call additional help if needed.
  - N. Use good eye contact.
- IX. Restraining Patients - restraint should be avoided unless patient is a danger to self and others. When using restraints have police present, if possible, and get approval from medical direction. If restraints must be used, do the following:
- A. Be sure to have adequate help.
  - B. Plan your activities.
  - C. Use only the force necessary for restraint.
  - D. Estimate range of motion of patients arms and legs and stay beyond range until ready.
  - E. Once decision has been made - act quickly.
  - F. Have one EMT-Basic talk to patient throughout restraining.
  - G. Approach with four persons, one assigned to each limb all at the same time.
  - H. Secure limbs together with equipment approved by medical direction.
  - I. Position patient appropriately.
  - J. Secure to stretcher with multiple straps.
  - K. Cover face with surgical mask if spitting on EMT-Basics.
  - L. Reassess circulation frequently.
  - M. Document indication for restraining patients and technique of restraint.
  - N. Avoid unnecessary force.
- X. Other Behavioral Problems
- A. Always try to talk patient into cooperation.
  - B. Do not belittle or threaten patients.
  - C. Be calm and patient in your attitude.
  - D. Do not agree with disturbed thinking.
  - E. Be reassuring.
  - F. Avoid arguing with irrational patients.
  - G. Suggest appropriate steps to take.
  - H. Lower distressing stimuli.
  - I. Avoid restraints unless necessary.
  - J. Treat with respect.

# SUGGESTED APPLICATION

## Procedural (How)

1. Demonstrate the assessment and emergency medical care of the patient experiencing a behavioral emergency.
2. Demonstrate the method of restraint.

## Contextual (When, Where, Why)

The EMT-Basic will frequently handle behavioral emergencies since many people are aware these persons need help, but are unsure what to do in emergency situations. Because treatment of these emergencies usually requires long term management, little medical intervention can be done in the acute situation. The EMT-Basic must assure his own safety in these situations, consider the legal ramifications of his actions, and transport the patient in a safe and effective manner.

## STUDENT ACTIVITIES

### Auditory (Hear)

1. The student should hear audio tapes of patients with behavioral emergencies.

### Visual (See)

1. The student should see audio-visual aids or materials of behavioral conditions, patient interviewing, and use of restraints.

### Kinesthetic (Do)

1. The student should practice physically restraining another student who is simulating moderate resistance.

## INSTRUCTOR ACTIVITIES

Supervise student practice.

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

Redirect students having difficulty with content (complete remediation forms).

# EVALUATION

Written: Develop evaluation instruments, e.g., examinations, verbal reviews, handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

Practical: Evaluate the actions of the EMT-Basic 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.

## REMEDIATION

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

## SUGGESTED ENRICHMENT

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



Medical / Behavioral and  
Obstetrics / Gynecology

Lesson 4-9  
Obstetrics / Gynecology

# 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 EMT-Basic student will be able to:

- 4-9.1 Identify the following structures: Uterus, vagina, fetus, placenta, umbilical cord, amniotic sac, perineum.(C-1)
- 4-9.2 Identify and explain the use of the contents of an obstetrics kit.(C-1)
- 4-9.3 Identify predelivery emergencies.(C-1)
- 4-9.4 State indications of an imminent delivery.(C-1)
- 4-9.5 Differentiate the emergency medical care provided to a patient with predelivery emergencies from a normal delivery.(C-3)
- 4-9.6 State the steps in the predelivery preparation of the mother.(C-1)
- 4-9.7 Establish the relationship between body substance isolation and childbirth.(C-3)
- 4-9.8 State the steps to assist in the delivery.(C-1)
- 4-9.9 Describe care of the baby as the head appears.(C-1)
- 4-9.10 Describe how and when to cut the umbilical cord.(C-1)
- 4-9.11 Discuss the steps in the delivery of the placenta.(C-1)
- 4-9.12 List the steps in the emergency medical care of the mother post-delivery.(C-3)
- 4-9.13 Summarize neonatal resuscitation procedures.(C-1)
- 4-9.14 Describe the procedures for the following abnormal deliveries: Breech birth, prolapsed cord, limb presentation.(C-1)
- 4-9.15 Differentiate the special considerations for multiple births.(C-3)
- 4-9.16 Describe special considerations of meconium.(C-1)
- 4-9.17 Describe special considerations of a premature baby.(C-1)
- 4-9.18 Discuss the emergency medical care of a patient with a gynecological emergency.(C-1)

### AFFECTIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-9.19 Explain the rationale for understanding the implications of treating two patients (mother and baby).(A-3)

### PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-9.20 Demonstrate the steps to assist in the normal cephalic delivery.(P-1,2)
- 4-9.21 Demonstrate necessary care procedures of the fetus as the head appears.(P-1,2)

- 4-9.22 Demonstrate infant neonatal procedures.(P-1,2)
- 4-9.23 Demonstrate post delivery care of infant.(P-1,2)
- 4-9.24 Demonstrate how and when to cut the umbilical cord.(P-1,2)
- 4-9.25 Attend to the steps in the delivery of the placenta.(P-1,2)
- 4-9.26 Demonstrate the post-delivery care of the mother.(P-1,2)
- 4-9.27 Demonstrate the procedures for the following abnormal deliveries: vaginal bleeding, breech birth, prolapsed cord, limb presentation.(P-1,2)
- 4-9.28 Demonstrate the steps in the emergency medical care of the mother with excessive bleeding.(P-1,2)
- 4-9.29 Demonstrate completing a prehospital care report for patients with obstetrical/gynecological emergencies.(P-2)

## PREPARATION

Motivation: Childbirth in the prehospital setting does occur on rare occasions. Because of the infrequency, taking care of an anxious mother and newborn infant is a stressful emergency call for the EMT-Basic. Knowledge and practice in simulated situations can decrease stress and lead to better mother and child care.

Prerequisites: BLS, Preparatory, Airway and Patient Assessment.

### MATERIALS

AV Equipment: Utilize various audio-visual materials relating to obstetrics/gynecology. The continuous design and 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 assure meeting the objectives of the curriculum.

EMS Equipment: Childbirth kit, airway management equipment, eye protection, gloves.

### PERSONNEL

Primary Instructor: One EMT-Basic instructor familiar with childbirth who has either delivered a child in the out-of-hospital setting or has seen or assisted with a vaginal delivery within the hospital.

Assistant Instructor: The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in obstetric/gynecological emergencies.

Recommended Minimum  
Time to Complete: Two hours

# PRESENTATION

## Declarative (What)

- I. Reproductive anatomy and physiology
  - A. Fetus - developing unborn baby
  - B. Uterus - organ in which a fetus grows, responsible for labor and expulsion of infant.
  - C. Birth Canal - vagina and lower part of the uterus.
  - D. Placenta - fetal organ through which fetus exchanges nourishment and waste products during pregnancy.
  - E. Umbilical cord - cord which is an extension of the placenta through which fetus receives nourishment while in the uterus.
  - F. Amniotic sac (bag of water) - the sac that surrounds the fetus inside the uterus.
  - G. Vagina - lower part of the birth canal.
  - H. Perineum - skin area between vagina and anus, commonly torn during delivery.
  - I. Crowning - the bulging-out of the vagina which is opening as the fetus' head or presenting part presses against it.
  - J. "Bloody Show" - mucus and blood that may come out of the vagina as labor begins.
  - K. Labor - the time and process (defined in 3 or 4 stages) beginning with the first uterine muscle contraction until delivery of the placenta.
    - 1. Delivery is imminent
    - 2. Crowning
    - 3. In the process of delivering
  - L. Presenting Part - the part of the infant/fetus that comes first - usually the head.
  - M. Abortion - miscarriage - delivery of products of conception early in pregnancy.
  
- II. Contents of a childbirth delivery kit
  - A. Surgical scissors
  - B. Hemostats or cord clamps
  - C. Umbilical tape or sterilized cord
  - D. Bulb syringe
  - E. Towels
  - F. 2 x 10 gauze sponges
  - G. Sterile gloves
  - H. One baby blanket
  - I. Sanitary napkins
  - J. Plastic bag

- III. Emergency Medical Care - Predelivery Emergencies
  - A. Miscarriage - Spontaneous abortion - emergency medical care
    - 1. Size up
    - 2. Initial assessment
    - 3. History and physical exam
    - 4. Assess baseline vitals
    - 5. Treatment based on signs and symptoms
    - 6. Apply external vaginal pads
    - 7. Bring fetal tissues to hospital
    - 8. Support mother
  - B. Seizure during pregnancy - emergency medical care
    - 1. Size up
    - 2. Initial assessment
    - 3. History and physical exam
    - 4. Assess baseline vitals
    - 5. Treatment based on signs and symptoms
    - 6. Transport on left side
  - C. Vaginal bleeding - late pregnancy vaginal bleeding, with or without pain. Emergency medical care:
    - 1. Size up
    - 2. Initial assessment
    - 3. History and physical exam
    - 4. Assess baseline vitals
    - 5. Treatment based on signs and symptoms
    - 6. Apply external vaginal pads
    - 7. Transport
  - D. Trauma - emergency medical care - same as other trauma patients
    - 1. Size up
    - 2. Initial assessment
    - 3. History and physical exam
    - 4. Assess baseline vitals
    - 5. Treatment based on signs and symptoms
    - 6. Transport on left side

IV. Normal Delivery

- A. Predelivery considerations
  - 1. It is best to transport an expecting mother, unless delivery is expected within a few minutes based on assessment of:
    - a. Are you pregnant?
    - b. How long have you been pregnant?
    - c. Are there contractions or pain?
    - d. Any bleeding or discharge?
    - e. Is crowning occurring with contractions?
    - f. What is the frequency and duration of contractions?
    - g. Does she feel as if she is having a bowel movement with increasing pressure in the vaginal area?

- h. Does she feel the need to push?
  - i. Rock hard abdomen?
2. Precautions
- a. Use body substance isolation.
  - b. Do not touch vaginal areas except during delivery and when your partner is present.
  - c. Do not let the mother go to bathroom.
  - d. Do not hold mother's legs together.
  - e. Recognize your own limitations and transport even if delivery must occur during transport.
  - f. If delivery is eminent with crowning, contact medical direction for decision to commit to delivery on site. If delivery does not occur within 10 minutes, contact medical direction for permission to transport.
- B. Delivery procedures
1. Apply gloves, mask, gown, eye protection for infection control precautions.
  2. Have mother lie with knees drawn up and spread apart.
  3. Elevate buttocks - with blankets or pillow.
  4. Create sterile field around vaginal opening with sterile towels or paper barriers.
  5. When the infant's head appears during crowning, place fingers on bony part of skull (not fontanelle or face) and exert very gentle pressure to prevent explosive delivery. Use caution to avoid fontanelle.
  6. If the amniotic sac does not break, or has not broken, use a clamp to puncture the sac and push it away from the infant's head and mouth as they appear.
  7. As the infant's head is being born, determine if the umbilical cord is around the infant's neck; slip over the shoulder or clamp, cut and unwrap.
  8. After the infant's head is born, support the head, suction the mouth two or three times and the nostrils. Use caution to avoid contact with the back of the mouth.
  9. As the torso and full body are born, support the infant with both hands.
  10. As the feet are born, grasp the feet.
  11. Wipe blood and mucus from mouth and nose with sterile gauze, suction mouth and nose again.
  12. Wrap infant in a warm blanket and place on its side, head slightly lower than trunk.
  13. Keep infant level with vagina until the cord is cut.
  14. Assign partner to monitor infant and complete initial care of the newborn.
  15. Place a clamp or tie on the umbilical cord 8 to 10 inches from the baby.

16. Place a second clamp or tie approximately 4 fingers widths from baby.
  17. After pulsations cease, cut between the clamps or ties.
  18. Observe for delivery of placenta while preparing mother and infant for transport.
  19. When delivered, wrap placenta in towel and put in plastic bag; transport placenta to hospital with mother.
  20. Place sterile pad over vaginal opening, lower mother's legs, help her hold them together.
  21. Record time of delivery and transport mother, infant and placenta to hospital.
- C. Vaginal bleeding following delivery - up to 500 cc of blood loss is normal following delivery.
1. A 500 cc blood loss is well tolerated by the mother following delivery. The EMT-Basic must be aware of this loss so as not to cause undue psychological stress on himself or the new mother.
  2. With excessive blood loss, massage the uterus.
    - a. Hand with fingers fully extended.
    - b. Place on lower abdomen above pubis.
    - c. Massage (knead) over area.
    - d. Bleeding continues - check massage technique and transport immediately, providing oxygen and ongoing assessment.
  3. Regardless of estimated blood loss, if mother appears in shock (hypoperfusion), treat as such and transport prior to uterine massage. Massage en route.
- D. Initial care of the newborn
1. Position, dry, wipe, and wrap newborn in blanket and cover the head
  2. Repeat suctioning.
  3. Assessment of infant - normal findings
    - a. Appearance - color: no central (trunk) cyanosis
    - b. Pulse - greater than 100/min
    - c. Grimace - vigorous and crying
    - d. Activity - good motion in extremities
    - e. Respiratory - Breathing effort - normal, crying
  4. Stimulate newborn if not breathing.
    - a. Flick soles of feet.
    - b. Rub infant's back.
- E. Resuscitation of the newborn follows the inverted pyramid (See appendix) after assessment, if signs and symptoms require either cardiac or pulmonary resuscitation, do the following when appropriate:
1. Breathing effort - if shallow, slow or absent provide artificial ventilations:
    - a. 60/min
    - b. Reassess after 30 seconds.

- c. If no improvement, continue artificial ventilations and reassessments.
  - 2. Heart rate
    - a. If less than 100 beats per minute provide artificial ventilations:  
60/min  
Reassess after 30 seconds.  
If no improvement continue artificial ventilations and reassessments.
    - a. If less than 80 beats per minute and not responding to bag-valve-mask, start chest compressions.
    - b. If less than 60 beats per minute, start compressions and artificial ventilations.
  - 3. Color - if central cyanosis is present with spontaneous breathing and an adequate heart rate administer free flow oxygen - administer oxygen (10-15L) using oxygen tubing held as close as possible to the newborn's face.

#### V. Abnormal Deliveries

- A. Prolapsed Cord - condition where the cord presents through the birth canal before delivery of the head; presents a serious emergency which endangers the life of the unborn fetus.
  - 1. Size up
  - 2. Initial assessment
  - 3. Mother should have high flow oxygen
  - 4. History and physical exam
  - 5. Assess baseline vitals
  - 6. Treatment based on signs and symptoms
  - 7. Position mother with head down or buttocks raised using gravity to lessen pressure in birth canal.
  - 8. Insert sterile gloved hand into vagina pushing the presenting part of the fetus away from the pulsating cord.
  - 9. Rapidly transport, keeping pressure on presenting part, monitoring pulsations in the cord and keep the cord moist and warm.
- B. Breech birth presentation - breech presentation occurs when the buttocks or lower extremities are low in the uterus and will be the first part of the fetus delivered.
  - 1. Newborn at great risk for delivery trauma, prolapse cord more common, transport immediately upon recognition of breech presentation.
  - 2. Delivery does not occur within 10 minutes.
  - 3. Emergency medical care  
Immediate rapid transportation upon recognition.  
Place mother on oxygen.  
Place mother in head down position with pelvis elevated.
- A. Limb presentation - occurs when a limb of the infant protrudes from the

birth canal. Is more commonly a foot when infant is in breech presentation.

1. Immediate rapid transportation upon recognition.
2. Place mother on oxygen.
3. Place mother in head down position with pelvis elevated.

B. Multiple births

1. Be prepared for more than one resuscitation.
2. Call for assistance.

C. Meconium - amniotic fluid that is greenish or brownish-yellow rather than clear; an indication of possible fetal distress during labor.

1. Do not stimulate before suctioning oropharynx.
2. Suction.
3. Maintain airway.
4. Transport as soon as possible.

D. Premature

1. Always at risk for hypothermia.
2. Usually requires resuscitation, should be done unless physically impossible.

VI. Gynecological emergencies

A. Vaginal bleeding

1. Body substance isolation
2. Airway

Trauma - external genitalia - treat as other bleeding soft tissue injuries; never pack vagina, provide oxygen and on-going patient assessment.

Alleged sexual assault - criminal assault situations require initial and on-going assessment/management and psychological care. Emergency medical care:

Body substance isolation

Airway

Non-judgmental attitude during SAMPLE focused assessment.

Crime scene protection.

Examine genitalia only if profuse bleeding present.

Use same sex EMT-Basics for care when possible.

Discourage the patient to bathe, void, or clean wounds.

Reporting requirements.

## SUGGESTED APPLICATION

### Procedural (How)

1. Demonstrate the steps to assist in the normal delivery.
2. Demonstrate necessary care procedures of the fetus as the head appears.
3. Demonstrate neonatal resuscitation procedures.
4. Demonstrate how and when to cut the umbilical cord.
5. Discuss the steps in delivery of the placenta.

6. Demonstrate the post-delivery care of mothers and neonates.
7. Demonstrate the procedures for the following abnormal deliveries: Breech birth, prolapsed cord, limb presentation.
8. Demonstrate the steps in emergency medical care of the mother with excessive bleeding.
9. Demonstrate the steps in the emergency care of the female patient with gynecological disorders.

#### Contextual (When, Where, Why)

Care of patients with prehospital conditions involving reproductive organs are not common. This private condition to the patient requires the most professional, safe and effective care by the EMT-Basic. Knowledge and skills practice in the laboratory setting, particularly for out-of-hospital childbirth, help the student maintain professionalism, understand these uncommon emergency care situations and support the patient as they seek definitive care in the receiving facility.

#### STUDENT ACTIVITIES

##### Auditory (Hear)

1. The student should hear a video tape of a mother in the final stages of labor which provides samples of mother's actions during this painful process.

##### Visual (See)

1. The student should see audio-visual aids or materials of labor and delivery showing: Late stages of labor normal delivery, clamping and cutting umbilical cord, suctioning infant's mouth and nose during delivery, assessment and initial care of neonate, normal bleeding with delivery, delivery and care of placenta.

##### Kinesthetic (Do)

1. Student should practice the steps to assist in the normal delivery.
2. Student should practice necessary care procedures of the fetus as the head appears during delivery.
3. Student should practice neonatal resuscitation procedures.
4. Student should practice how and when to cut the umbilical cord using simple pieces of rope.
5. Student should practice the post-delivery care of mothers and neonates.
6. Student should practice completing a prehospital care report for patients with obstetrical/gynecological emergencies.

#### INSTRUCTOR ACTIVITIES

Supervise student practice.

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

Redirect students having difficulty with content (complete remediation forms).

## EVALUATION

- Written: Develop evaluation instruments, e.g., examinations, verbal reviews, handouts, to determine if the students have met the cognitive and affective objectives of this lesson.
- Practical: Evaluate the actions of the EMT-Basic 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.

## REMEDIATION

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

## SUGGESTED ENRICHMENT

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



Medical / Behavioral and  
Obstetrics / Gynecology

Lesson 4-10  
Practical Lab:

# OBJECTIVES

## COGNITIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- Demonstrate the cognitive objectives of Lesson 4-1: General Pharmacology.
- Demonstrate the cognitive objectives of Lesson 4-2: Respiratory Emergencies.
- Demonstrate the cognitive objectives of Lesson 4-3: Cardiovascular Emergencies.
- Demonstrate the cognitive objectives of Lesson 4-4: Diabetes/ Altered Mental Status.
- Demonstrate the cognitive objectives of Lesson 4-5: Allergies.
- Demonstrate the cognitive objectives of Lesson 4-6: Poisoning/Overdose.
- Demonstrate the cognitive objectives of Lesson 4-7: Environmental Emergencies.
- Demonstrate the cognitive objectives of Lesson 4-8: Behavioral Emergencies.
- Demonstrate the cognitive objectives of Lesson 4-9: Obstetrics/Gynecology.

## AFFECTIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- Demonstrate the affective objectives of Lesson 4-1: General Pharmacology.
- Demonstrate the affective objectives of Lesson 4-2: Respiratory Emergencies.
- Demonstrate the affective objectives of Lesson 4-3: Cardiovascular Emergencies.
- Demonstrate the affective objectives of Lesson 4-4: Diabetes/Altered Mental Status.
- Demonstrate the affective objectives of Lesson 4-5: Allergies.
- Demonstrate the affective objectives of Lesson 4-6: Poisoning/Overdose.
- Demonstrate the affective objectives of Lesson 4-8: Behavioral Emergencies.
- Demonstrate the affective objectives of Lesson 4-9: Obstetrics/Gynecology.

## PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- Demonstrate the psychomotor objectives of Lesson 4-1: General Pharmacology.
- Demonstrate the psychomotor objectives of Lesson 4-2: Respiratory Emergencies.
- Demonstrate the psychomotor objectives of Lesson 4-3: Cardiovascular Emergencies.
- Demonstrate the psychomotor objectives of Lesson 4-4: Diabetes/Altered Mental Status.
- Demonstrate the psychomotor objectives of Lesson 4-5: Allergies.
- Demonstrate the psychomotor objectives of Lesson 4-6: Poisoning/Overdose.
- Demonstrate the psychomotor objectives of Lesson 4-7: Environmental Emergencies.
- Demonstrate the psychomotor objectives of Lesson 4-8: Behavioral Emergencies.

- Demonstrate the psychomotor objectives of Lesson 4-9: Obstetrics/Gynecology.

## PREPARATION

**Motivation:** The practical lesson is designed to allow the students additional time to perfect skills. It is of utmost importance that the students demonstrate proficiency of the skill, cognitive knowledge of the steps to perform a skill, and a healthy attitude towards performing that skill on a patient. This is an opportunity for the instructor and assistant instructors to praise progress and re-direct the students toward appropriate psychomotor skills. The material from all preceding lessons and basic life support should be incorporated into these practical skill sessions.

**Prerequisites:** BLS, Preparatory, Airway and Patient Assessment.

### MATERIALS

**AV Equipment:** Typically none required.

**EMS Equipment:** Equipment from the lists in Lessons 4-1 through 4-9.

### PERSONNEL

**Primary Instructor:** One proctor for the written evaluation.

**Assistant Instructor:** The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in medical/behavioral and obstetrics/gynecology.

**Recommended Minimum  
Time to Complete:** Eight hours

## SUGGESTED APPLICATION

### Procedural (How)

Instructor should demonstrate the procedural activities from Lesson 4-1: General Pharmacology.

Instructor should demonstrate the procedural activities from Lesson 4-2: Respiratory Emergencies.

Instructor should demonstrate the procedural activities from Lesson 4-3: Cardiovascular Emergencies.

Instructor should demonstrate the procedural activities from Lesson 4-4: Diabetic Emergencies/Altered Mental Status.

Instructor should demonstrate the procedural activities from Lesson 4-5: Allergies.

Instructor should demonstrate the procedural activities from Lesson 4-6: Poisoning/Overdose.

Instructor should demonstrate the procedural activities from Lesson 4-7: Environmental Emergencies.

Instructor should demonstrate the procedural activities from Lesson 4-8: Behavioral Emergencies.

Instructor should demonstrate the procedural activities from Lesson 4-9: Obstetrics/Gynecology.

#### Contextual (When, Where, Why)

Instructor should review contextual information from Lesson 4-1: General Pharmacology.

Instructor should review contextual information from Lesson 4-2: Respiratory Emergencies.

Instructor should review contextual information from Lesson 4-3: Cardiovascular Emergencies.

Instructor should review contextual information from Lesson 4-4: Diabetic Emergencies/Altered Mental Status.

Instructor should review contextual information from Lesson 4-5: Allergies.

Instructor should review contextual information from Lesson 4-6: Poisoning/Overdose.

Instructor should review contextual information from Lesson 4-7: Environmental Emergencies.

Instructor should review contextual information from Lesson 4-8: Behavioral Emergencies.

Instructor should demonstrate the procedural activities from Lesson 4-9: Obstetrics/Gynecology.

#### STUDENT ACTIVITIES

##### Auditory (Hear)

The students should hear the auditory information from Lesson 4-1: General Pharmacology.

The students should hear the auditory information from Lesson 4-2: Respiratory Emergencies.

The students should hear the auditory information from Lesson 4-3: Cardiovascular Emergencies.

The students should hear the auditory information from Lesson 4-5: Allergies.

The students should hear the auditory information from Lesson 4-6: Poisoning/Overdose.

The students should hear the auditory information from Lesson 4-7: Environmental Emergencies.

The students should hear the auditory information from Lesson 4-8: Behavioral Emergencies.

The students should hear the auditory information from Lesson 4-9: Obstetrics/Gynecology.

#### Visual (See)

The students should see the visual material from Lesson 4-1: General Pharmacology.

The students should see the visual material from Lesson 4-2: Respiratory Emergencies.

The students should see the visual material from Lesson 4-3: Cardiovascular Emergencies.

The students should see the visual material from Lesson 4-4: Diabetic Emergencies/Altered Mental Status.

The students should see the visual material from Lesson 4-5: Allergies.

The students should see the visual material from Lesson 4-6: Poisoning/Overdose.

The students should see the visual material from Lesson 4-7: Environmental Emergencies.

The students should see the visual material from Lesson 4-8: Behavioral Emergencies.

The students should see the visual material from Lesson 4-9: Obstetrics/Gynecology.

#### Kinesthetic (Do)

The students should practice the kinesthetic activities from Lesson 4-1: General Pharmacology.

The students should practice the kinesthetic activities from Lesson 4-2: Respiratory Emergencies.

The students should practice the kinesthetic activities from Lesson 4-3: Cardiovascular Emergencies and use of the AED.

**NOTE:** Time should be reserved for the students to practice. The instructors give two-person provider teams several scenarios during which they perform a simulated response. The clinical situations, rhythms, and patient response should be varied. During this session, the instructors should assess which students are proficient with the skills and which students will need more practice before final evaluation.

In addition to the scenarios described previously, the following scenarios should also be considered: shockable rhythm that remains shockable after six shocks; shockable rhythm that converts to a non-shockable rhythm after a shock; artifact troubleshooting; refrillation after a perfusing rhythm; patients who have to be moved from one location to another; cardiac arrest in various locations, (i.e., a physician's office, in a pool water or other hazards are present), cardiac arrest with various complications, (i.e, an electrode is displaced, nitroglycerin paste is on the patient's chest, the patient has an implantable pacemaker, patient has an implantable defibrillator/cardioverter).

The students should practice the kinesthetic activities from Lesson 4-4: Diabetic Emergencies/Altered Mental Status.

The students should practice the kinesthetic activities from Lesson 4-5: Allergies.

The students should practice the kinesthetic activities from Lesson 4-6: Poisoning/Overdose.

The students should practice the kinesthetic activities from Lesson 4-7: Environmental Emergencies.

The students should practice the kinesthetic activities from Lesson 4-8: Behavioral Emergencies.

The students should practice the kinesthetic activities from Lesson 4-9: Obstetrics/Gynecology.

#### INSTRUCTOR ACTIVITIES

Supervise student practice.

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

Redirect students having difficulty with content (complete remediation forms).

## EVALUATION

Practical: Evaluate the actions of the EMT-Basic students during role play, practice or other skills stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor 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.

## SUGGESTED ENRICHMENT

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



Medical / Behavioral and  
Obstetrics / Gynecology

Lesson 4-11  
Evaluation

# OBJECTIVES

## COGNITIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- Demonstrate knowledge of the cognitive objectives of Lesson 4-1: General Pharmacology.
- Demonstrate knowledge of the cognitive objectives of Lesson 4-2: Respiratory Emergencies.
- Demonstrate knowledge of the cognitive objectives of Lesson 4-3: Cardiovascular Emergencies.
- Demonstrate knowledge of the cognitive objectives of Lesson 4-4: Diabetes/ Altered Mental Status.
- Demonstrate knowledge of the cognitive objectives of Lesson 4-5: Allergies.
- Demonstrate knowledge of the cognitive objectives of Lesson 4-6: Poisoning/Overdose.
- Demonstrate knowledge of the cognitive objectives of Lesson 4-7: Environmental Emergencies.
- Demonstrate knowledge of the cognitive objectives of Lesson 4-8: Behavioral Emergencies.
- Demonstrate knowledge of the cognitive objectives of Lesson 4-9: Obstetrics/Gynecological.

## AFFECTIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- Demonstrate knowledge of the affective objectives of Lesson 4-1: General Pharmacology.
- Demonstrate knowledge of the affective objectives of Lesson 4-2: Respiratory Emergencies.
- Demonstrate knowledge of the affective objectives of Lesson 4-3: Cardiovascular Emergencies.
- Demonstrate knowledge of the affective objectives of Lesson 4-4: Diabetes/ Altered Mental Status.
- Demonstrate knowledge of the affective objectives of Lesson 4-5: Allergies.
- Demonstrate knowledge of the affective objectives of Lesson 4-6: Poisoning/Overdose.
- Demonstrate knowledge of the affective objectives of Lesson 4-8: Behavioral Emergencies.
- Demonstrate knowledge of the affective objectives of Lesson 4-9: Obstetrics/Gynecological.

## PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- Demonstrate knowledge of the psychomotor objectives of Lesson 4-1: General Pharmacology.
- Demonstrate knowledge of the psychomotor objectives of Lesson 4-2: Respiratory Emergencies.

- Demonstrate knowledge of the psychomotor objectives of Lesson 4-3: Cardiovascular Emergencies.
- Demonstrate knowledge of the psychomotor objectives of Lesson 4-4: Diabetes/Altered Mental Status.
- Demonstrate knowledge of the psychomotor objectives of Lesson 4-5: Allergies.
- Demonstrate knowledge of the psychomotor objectives of Lesson 4-6: Poisoning/Overdose.
- Demonstrate knowledge of the psychomotor objectives of Lesson 4-7: Environmental Emergencies.
- Demonstrate knowledge of the psychomotor objectives of Lesson 4-8: Behavioral Emergencies.
- Demonstrate knowledge of the psychomotor objectives of Lesson 4-9: Obstetrics/Gynecological.

## PREPARATION

**Motivation:** Evaluation of the students' attainment of the cognitive and affective knowledge and psychomotor skills is an essential component of the EMT-Basic educational process. The modules are presented in a "building block" format. Once the students have demonstrated their knowledge and proficiency, the next lesson should be built upon that knowledge. This evaluation will help to identify students or groups of students having difficulty with a particular area. This is an opportunity for the instructor to evaluate his performance, and make appropriate modification to the delivery of material.

**Prerequisites:** Completion of Lessons 4-1 through 4-9.

### MATERIALS

**AV Equipment:** Typically none required.

**EMS Equipment:** Equipment required to evaluate the students proficiency in the psychomotor skills of this module.

### PERSONNEL

**Primary Instructor:** One proctor for the written evaluation.

**Assistant Instructor:** One practical skills examiner for each 6 students.

**Recommended Minimum Time to Complete:** One hour

# PRESENTATION

## Declarative (What)

Purpose of the evaluation

Items to be evaluated

Feed back from evaluation

# SUGGESTED APPLICATION

## Procedural (How)

1. Written evaluation based on the cognitive and affective objectives of Lessons 4-1 through 4-9.
2. Practical evaluation stations based on the psychomotor objectives of Lessons 4-1 and 4-9.

## Contextual (When, Where and Why)

The final lesson in this module is designed to bring closure to the module, and to assure that students are prepared to move to the next module.

This modular evaluation is given to determine the effectiveness of the presentation of materials and how well students have retained the material. This is an opportunity for the students to make necessary adjustments in study habits or for the instructor to adjust the manner which material is presented.

## INSTRUCTOR ACTIVITIES

Supervise student evaluation.

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

Redirect students having difficulty with content (complete remediation forms).

# REMEDIATION

Identify students and/or groups of students who are having difficulty with this subject content. Complete a remediation sheet from the instructor's course guide. If students continue to have difficulty demonstrating knowledge of the cognitive and affective objectives, or demonstrating proficiency in psychomotor skills, the students should be counseled, remediated and re-evaluated. If improvements in cognitive, affective or psychomotor skills are not achieved, consideration regarding the ability of the student to progress in the program should be taken into account.