MODULE 4

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 are carried on board an ambulance licensed at the EMT-Basic level in Wisconsin. (C-1)
4-1.2 Identify the medications with which the EMT-Basic may assist the patient with administration at the EMT-Basic level in Wisconsin. (C-1)
4-1.3 List the components of a drug profile. (C-1)
4-1.4 Identify the different forms in which medications are found. (C-1)
4-1.5 Summarize the “6 R’s” in the administration of a medication. ((C-1)
4-1.6 Explain the importance of medical control involvement and medication administration. (C-1)
4-1.7 Describe how allergies to medications can affect patients. (C-1)
4-1.8 State the importance of determining the preexistence of a medication allergy. (C-1)
4-1.9 Differentiate between what is meant by a medication allergy versus medication intolerance. (C-2)
4-1.10 Identify the general steps in administering a medication to a patient. (C-2)
4-1.11 State the rationale for administering most medications to pediatric patients based upon weight. (C-1)
4-1.12 Define the concept of polypharmacy as it relates to geriatric patients. (C-1)

AFFECTIVE OBJECTIVES

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

4-1.13 Examine the importance of correctly administering medications to specific patients. (C-3)

PSYCHOMOTOR OBJECTIVES

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

4-1.14 Demonstrate general steps for assisting patient with self-administration of medications. (P-2)
4-1.15 Demonstrate general steps involved in administering a medication to a patient. (P-2)

4-1.16 Read the labels and inspect each type of medication that can be administered by the EMT-Basic. (P-2)

4-1.17 Create a drug profile for each of the medications that can be administered by the EMT-Basic. (P-1)

PREPARATION

Motivation: Later in this course the EMT-Basic student will be learning specific medications which may be administered to a patient, for a specific medical condition.

Administering medications is an important responsibility of the EMT. Giving medications to pediatric and geriatric patients requires special consideration. They must only be given following thorough evaluation and permission from medical control.

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.

PRESENTATION

Declarative (What)

I. Overview - the importance of medications and the concerns associated with their administration

II. Medications carried on board (*may be carried on board the EMT-Basic Service in Wisconsin, with required additional training and approval)
- A. Activated Charcoal
- B. Oral Glucose
- C. *Glucagon
- D. Oxygen
- E. Albuterol, nebulized
- F. *Atrovent, nebulized
- G. Aspirin
- H. *Epinephrine, auto-injector
- I. MARK 1 Kit (Atropine and 2-PAM Chloride)

III. Medications that are prescribed by a physician and the patient has in his/her possession. May assist patients, with approval by medical direction.
- A. Metered Dose Inhalers – Albuterol, Atrovent
- B. Nitroglycerin
- C. Epinephrine, auto-injector

IV. Drug Profile - information about medications that every EMT-Basic should be aware of prior to administering any medication
- A. Drug names-generic and trade
- B. Mechanism of action
- C. Indications
- D. Contraindications
- E. Medication forms
- F. Dose
- G. Route
- H. Side effects

V. 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. Not capitalized
  4. Examples include activated charcoal, albuterol, aspirin, glucose, epinephrine
- B. Trade
  1. Brand name is the name a manufacturer uses in marketing the drug
  2. Capitalized
  3. Examples include Super Char, Proventil, Bayer, Insta-glucose, Epi-pen Auto-injector

VI. Mechanism of Action-the desired effect that a particular medication has upon body systems and their function.

VII. Indications - the indication for a drug's use includes the most common uses of the drug in treating a specific illness

VIII. 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
IX. Medication Form
  A. Types:
    1. Compressed powders or tablets - nitroglycerin
    2. Liquids for injection – epinephrine and glucagon
    3. Gels – glucose
    4. Suspensions - activated charcoal
    5. Fine powder for inhalation – metered-dose inhaler
    6. Gases - oxygen
    7. Sublingual spray - nitroglycerin
    8. Liquid/vaporized nebulizers – alubterol and Atrovent
  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
X. Dose - state how much of the drug should be given
XI. Routes of Administration - state route by which the medication is administered as
  A. Oral – swallowed
  B. Sublingual - absorbed through mucous membranes
  C. Intramuscular injection - injected into muscle
  D. Subcutaneous injection - injected into subcutaneous tissue
  E. Intravenous - administered into veins (not an EMT B skill)
  F. Endotrachial - administered into an ET tube (not an EMT B skill)
XII. Side Effects
  A. Actions of a drug other than those desired
  B. Some side effects may be predictable
  C. Intolerance - the severity of side effects may outweigh expected benefits of the medication
  D. Allergy
    1. Can occur with medication administration if patient is hypersensitive to that medication
    2. If severe, may cause swelling of airway tissues
    3. Be alert for signs and symptoms of severe allergic reaction (see section on Severe Allergic Reactions)
    4. Identify preexisting allergies during patient history to avoid potentially adverse or fatal response to medications
  E. Involve medical control in medication administration
    1. Adequate consideration of indications and contraindications
    2. Adequate consideration of potential medication interaction
    3. Possible adjustment of usual dose based on age, weight and relative contraindications
XIII. The “6 Rs” of medication administration
  A. Right patient
  B. Right drug

C. Right dose
D. Right time
E. Right route
F. Right documentation

XIV. Re-assessment strategies
A. Repeat baseline vital signs
B. Must be done as part of the on-going patient assessment
C. Documentation of response to intervention

XV. Weight-based administration of medications for pediatrics
A. Safe dosing
B. 1 kg = 2.2 lbs
C. Predetermined dose – eg. Epi-Pen Jr

XVI. Polypharmacy and the geriatric patient
A. Drug interactions
B. Serious side effects
C. Sensitivity to normal dose
D. Provide relevant examples

APPLICATION

Procedural (How)

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

Contextual (When, Where, Why)

1. For years the primary medication used by the EMT was oxygen.
2. The EMT-Basic will have activated charcoal and oral glucose on the unit to administer with medical direction.
3. In addition, the EMT-Basic will be able to assist patients with several medications, again under the supervision of medical direction.
4. This pharmacology lesson will assist you in understanding basic components for each of the medications, as well as introduce special considerations for pediatric and geriatric patients.
5. 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 be allowed to administer as an EMT-Basic, under the supervision of medical control.

Visual (See)

1. The student will see the instructor pick up 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.
2. The student will create a drug profile for each medication discussed for use at the EMT-Basic level.

INSTRUCTOR ACTIVITIES

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content (complete remediation forms).

EVALUATION

Written: Develop evaluation instruments, e.g., quizzes, 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.

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.

MODULE 4

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 key structures, and their function, of the respiratory system. (C-1)
4-2.2 List signs and symptoms of adequate air exchange. (C-1)
4-2.3 List signs and symptoms of inadequate air exchange. (C-1)
4.2-4 Differentiate between upper airway obstruction and a lower airway disease in the adult patient. (C-3)
4-2.5 Differentiate between upper airway obstruction and airway diseases in the pediatric patient. (C-3)
4-2.6 Recognize the need for medical direction to assist in the emergency medical care of the patient with breathing difficulty. (C-3)
4-2.7 Establish the relationship between airway management and the patient with breathing difficulty. (C-3)
4-2.8 Identify appropriate treatment and management for the adult patient in respiratory distress due to a common respiratory disease. (C-1)
4-2.9 Identify appropriate treatment and management for the pediatric patient in respiratory distress due to a common respiratory disease. (C-1)
4-2.10 List common trade names, action, indications, contraindications, forms, dose, route and side effects of albuterol. (C-1)
4-2.11 List common trade names, action, indications, contraindications, forms, dose, route and side effects of ipratropium bromide (Atrovent). (C-1)
4-2.12 Distinguish between the emergency medical care of the infant, child and adult patient with signs of respiratory distress.(C-3)
4-2.13 Identify common respiratory diseases of the adult patient. (C-1)
4-2.14 Identify common respiratory diseases of the pediatric patient. (C-1)

AFFECTIVE OBJECTIVES

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

4-2.15 Defend EMT-Basic treatment regimens for various respiratory emergencies.(A-1)
4-2.16 Explain the rationale for administering albuterol.(A-3)
4-2.17 Explain the rationale for administering Atrovent. (A-3)

PSYCHOMOTOR OBJECTIVES

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

4-2.18 Demonstrate the emergency medical care for a patient in respiratory distress. (P-2)
4-2.19 Perform the steps in assisting a patient with the use of their metered dose inhaler. (P-2)
4-2.20 Perform the steps in administering a nebulizer treatment, via hand-held and mask, to a patient in respiratory distress. (P-2)
4-2.21 Create a management plan to properly evaluate and treat an adult patient in respiratory distress. (P-3)
4-2.22 Create a management plan to properly evaluate and treat a pediatric patient in respiratory distress. (P-3)

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.

A child with severe respiratory distress will deteriorate into respiratory failure and circulatory collapse, eventually resulting in respiratory arrest. The use of oxygen can block this progression and may even reverse it to some degree. When possible, deliver humidified oxygen and allow the child to remain in the parent's lap. A more comfortable, secure child will require less oxygen. Have the parent accompany the child in the ambulance. There is no contraindication to high concentration oxygen in the infant or child patient.

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: Metered-dose and hand-held nebulizers 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.

PRESENTATION

Declarative (What)

I. Anatomy
  A. Respiratory
    1. Nasal cavity (humidify, filter and warm) and oral cavity (air passage)
    2. Pharynx - air passage
      a) Nasopharynx
      b) Oroopharynx
    3. Epiglottis - a leaf-shaped structure that prevents food and liquid from entering the trachea during swallowing
    4. Trachea – air passage
    5. Larynx
      a) Thyroid cartilage – cartilage forming the upper portion of the larynx, providing protection for vocal cords
      b) Cricoid cartilage - cartilage ring forming the lower portion of the larynx
    6. Bronchi, right and left main stem - two major branches of the trachea, passing air into the lungs
    7. Bronchioles - subdivisions of the bronchi, responsible for continued air passage
    8. Alveoli – single celled structures within the lung where gas exchange occurs
    9. Diaphragm and intercostals muscles
      a) Inhalation (active phase)
        (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 (relaxation phase)
        (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

10. Respiratory physiology
a) Alveolar/capillary exchange
(1) Oxygenated air enters the alveoli during each inspiration
(2) Carbondioxide from the capillaries passes into the alveoli and is eliminated during each expiration
(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

11. Infant and child anatomy considerations
a) Mouth and nose - in general: All structures are smaller and more easily obstructed than in adults.
b) Pharynx - infants' and children's tongues take up proportionally more space in the mouth than adults
c) Trachea
(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 (adequate tidal volume)
b) The rate is sufficient, approximately 12 per minute for adults and 20 times per minute for children and infants
c) Heart rate and skin condition return to normal with successful artificial ventilation
2. Artificial ventilation is inadequate when:
a) The chest does not rise and fall with artificial ventilation (inadequate tidal volume)
b) The rate is too slow or too fast
c) Heart rate does 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 (blue-gray)
b) Pale
c) Flushed (red)
7. Noisy breathing

a) Crowing-upper airway compromise
b) Audible wheezing-lower airway compromise
c) Gurgling-upper airway compromise
d) Snoring-upper airway compromise
e) Stridor-upper airway compromise
(1) A harsh sound heard during breathing
(2) Upper airway obstruction

8. Inability to speak due to breathing efforts
9. Retractions - use of accessory muscles
10. Shallow or slow breathing may lead to altered mental status (with fatigue or obstruction)
11. Abdominal breathing (diaphragm only)
12. Coughing
13. Irregular breathing rhythm
14. Patient position
a) Tripod position
b) Sitting with feet dangling, leaning forward
15. Unusual anatomy (barrel chest)
16. Nasal flaring
17. Pursed-lip breathing

III. Common respiratory diseases – adults

A. Reactive Airway Disease (RAD)

1. Asthma – occurs in acute episodes and is triggered by exposure to an irritant, resulting in inflammation and swelling of the airways, tightening of the muscles surrounding bronchi and bronchioles (bronchoconstriction) and production of mucus. Triggers include cold air, dust, strong fumes, exercise, inhaled irritants, emotional upsets and smoke.
a) Signs and symptoms
(1) Wheezing
(2) Coughing
(3) Shortness of breath
(4) Anxiety
(5) Tightness of the chest
(6) Fever is rarely present
(7) Tripod position
(8) Inability to speak full sentences
(9) Pursed-lip breathing
b) Patient management/treatment
(1) Monitor ABCs
(2) Oxygen
(3) Position of comfort
(4) Respiratory medication administration with approval from medical direction (albuterol, Atrovent, etc.)

2. Pneumonia – an inflammation of the lungs caused by bacteria or viral infection, usually triggered by a simple upper respiratory tract infection or flu; associated with fever, cough and excess production of sputum. Fluid accumulation separates alveoli from surrounding capillary beds, inhibiting gas exchange
   a) Signs and symptoms
      (1) Dyspnea
      (2) Increased respiratory rate
      (3) Increased pulse rate
      (4) Fever, chills
      (5) Low blood pressure
      (6) Pale or cyanotic skin
      (7) Altered LOC (advanced stage)
      (8) Coughing up sputum
      (9) Fatigue
   b) Patient management/treatment
      (1) Monitor ABCs
      (2) Oxygen
      (3) Transport

B. Chronic Obstructive Pulmonary Disease (COPD) – chronic respiratory diseases that are characterized by obstruction to airflow that severely interferes with normal breathing and the gas exchange process. Chronic bronchitis and emphysema typically co-exist. Smoking, second-hand smoke, industrial pollutants and history of childhood respiratory infections are commonly attributed to the development of COPD.
   1. Chronic Bronchitis – chronic inflammation and scarring of the lining of the bronchioles, associated with a heavy mucus build up that restricts gas exchange.
      a) Signs and symptoms
         (1) Shortness of breath
         (2) Fatigue
         (3) Coughing
         (4) Fever possible
         (5) Production of sputum
         (6) Cyanosis
      b) Patient management/treatment
         (1) Monitor ABCs
         (2) Oxygen
         (3) Respiratory medications may be advised by medical direction
         (4) Transport
   2. Emphysema – chronic disease process resulting in the destruction of alveoli and loss of elasticity of the lungs, making adequate gas exchange difficult
      a) Signs and symptoms

(1) Shortness of breath
(2) Barrel-shaped chest
(3) Thin appearance
(4) Wheezing
(5) Fatigue

b) Patient management/treatment

3. Monitor ABCs
4. Oxygen
5. Respiratory medications may be advised by medical direction
6. Transport

C. Hyperventilation Syndrome – rapid, shallow breathing usually brought on by anxiety or emotional upset, that results in an imbalance in normal levels of carbondioxide.

1. Signs and symptoms
   a) Shortness of breath
   b) Numbness and tingling around the mouth and hands
   c) Lightheadedness
   d) Spasms of the hand and feet
   e) Fainting
2. Patient management/treatment
   a) Coach patient to slow breathing rate and relax
   b) Transport for evaluation of underlying cause if needed

IV. Common respiratory diseases – pediatrics

A. Asthma-bronchioles spasm and constrict, swelling bronchial membrane, reducing airway size, and producing mucus (see previous discussion on asthma)

B. Croup-viral infection that results in swelling and inflammation of the lining of the upper airways, occurring mostly in winter months

1. Signs and symptoms (occurring mostly at night or when the child is upset or crying)
   a) Loud cough, sounding like a seal's bark
   b) Difficulty breathing
   c) Grunting
   d) Wheezing
   e) Cold-like symptoms
   f) Stridor (high-pitched, squeaking noise)
   g) Pale or cyanosis
   h) Retractions
   i) Nasal flaring
   j) Sick appearance
   k) Drooling
2. Patient management/treatment
   a) Monitor ABCs
   b) Oxygen, blow-by
   c) Position of comfort
   d) Transport

C. Epiglottitis - condition that resembles croup, caused by bacterial infection that inflames and swells the epiglottis, closing off air passage; a true medical emergency that may result in death if not treated rapidly; typically occurs in children ages 2-4 (can occur in adults)
   1. Signs and symptoms
      a) Fever
      b) Sore throat
      c) Difficulty breathing
      d) Drooling
      e) Difficulty swallowing
      f) Stridor
      g) Hoarseness
      h) Chills
      i) Cyanosis
   2. Patient management/treatment
      a) Gentle, calm, reassuring care
      b) Oxygen, blow-by
      c) Position of comfort (usually sitting on parent's lap)
      d) Rapid transport

D. Cardiac arrest-almost all result from airway obstruction or respiratory arrest; or traumatic injury

V. Emergency Medical Care-Initial Assessment
   A. Establish an open airway
   B. Begin positive pressure ventilations with oxygen if unconscious, administer high flow oxygen if patient is responsive
   C. High priority and rapid transport

VI. Emergency Medical Care - Focused History and Physical Exam
   A. Important questions to ask
      1. Onset
      2. Provocation
      3. Quality
      4. Radiation
      5. Severity
      6. Time
      7. Interventions
   B. SAMPLE History
   C. Baseline Vital Signs
   D. Effort of Breathing
      1. Complains of trouble breathing
         a) Apply oxygen if not already done
         b) Assess baseline vital signs
      2. Consult medical direction
         a) Assist patient with metered dose inhaler or administration of nebulizer
            (1) Repeat as directed
            (2) Continue focused assessment

(3) Document administration and effect of medication

VII. Relationship to Airway Management - should be prepared to intervene with appropriate oxygen administration and artificial ventilation support

VIII. Medications

A. Metered dose inhalers (MDI)

1. Medication name (most commonly used)
   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) Specific authorization by medical direction
3. Contraindications
   a) Inability of patient to use device
   b) Inhaler is not prescribed for the patient
   c) No permission from medical direction
   d) Patient has already met maximum prescribed dose prior to EMT-Basic arrival
   e) Possible allergic reactions would have previously been ruled out by the patient's physician prior to writing a prescription
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 - inhaled
   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) Assure the inhaler is at room temperature or warmer
   f) Shake the inhaler vigorously several times
   g) Remove oxygen nonrebreather mask from patient
   h) Have the patient exhale deeply
   i) Have the patient put his lips around the opening of the inhaler
   j) Have the patient depress the handheld inhaler as he begins to inhale deeply
   k) Instruct the patient to hold his breath for as long as he comfortably can (so medication can be absorbed)
   l) Replace oxygen on patient
   m) Allow patient to breathe a few times and repeat second dose per medical direction

n) 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. Action - beta agonist bronchodilator - dilates bronchioles reducing airway resistance
8. Side effects
   a) Increased pulse rate
   b) Tremors
   c) Nervousness
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) Retractions are more commonly seen in children than adults.
   c) Cyanosis (blue-gray) 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
11. Other MDI medications may be allowed as an assisted respiratory medication (e.g. Atrovent). Contact medical control for advice regarding assisted administration.

B. Hand-held and mask nebulizers
1. Medication names
   a) Albuterol (generic); Proventil, Ventolin (trade names)
   b) Ipratropium bromide (generic); Atrovent (trade name)
2. Indications - meets all of the following criteria:
   a) Exhibits signs and symptoms of respiratory emergency,
   b) Specific authorization by medical direction
3. Contraindications
   a) Inability of patient to use device
   b) Known allergy – NOTE: patients with allergy to soybeans or peanuts should not be administered Atrovent
   c) Adverse effects of administration – NOTE: patients on beta-blockers may be advised against being administered albuterol
   d) No permission from medical direction
4. Medication form - liquid for nebulizing
5. Dosage –
   a) Albuterol - 2.5 mg/3ml
   b) Atrovent – 0.5mg/3ml

6. Route - inhaled
7. Administration-
   a) Contact medical control
   b) Report assessment findings, including a thorough medical history
   c) Rule out allergies and contraindications for use
   d) Report prior interventions and use of inhaler or nebulizer
   e) Request implementation of protocol
   f) Confirm orders from medical control
   g) Explain procedure and solicit patient consent
   h) Check expiration date
   i) Confirm right medication, right patient, right route
   j) Confirm dosage
   k) Assemble nebulizer
   l) Add pre-measured medication dosage to nebulizer
   m) Remove oxygen supply from existing patient adjunct and connect to medication canister. Provide additional oxygen to patient via nasal cannula at 4-6 lpm
   n) Adjust liter flow to 4-6 liters
   o) Instruct patient to place the mouthpiece in their mouth and to inhale slowly and deeply (if utilizing a mask nebulizer, place mask appropriately on patient's face)
   p) Have patient attempt to hold their breath for 1-2 seconds before exhaling
   q) Continue in this manner until the medication canister is depleted
   r) Continue to monitor patient status
   s) Resume oxygen therapy
   t) Document administration data and time, drug name, dose and route of medication
      (1) Patient's tolerance of procedure
      (2) Name of medical control physician authorizing administration
      (3) Name of EMT administering medication
8. Action
   a) Albuterol - beta agonist bronchodilator - dilates bronchioles, by relaxing surrounding smooth muscles to reduce airway resistance.
   b) Atrovent – anticholinergic agent - has a timed-release effect and work on the smaller sections of bronchioles to reduce airway resistance
9. Side effects
   a) Increased pulse rate
   b) Tremors
   c) Nervousness
10. Re-assessment strategies

a) Gather vital signs and focused reassessment
b) Evaluate patient response to medication administration
c) Patient may deteriorate and need positive pressure artificial ventilation

11. Document administration
12. Infant and child considerations
    a) Use of handheld inhalers is very common in children
    b) Retractions are more commonly seen in children than adults
    c) Cyanosis (blue-gray) 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.

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.
4. Show students how to use a handheld and mask nebulizer.

Contextual (When, Where, Why)

1. Very few situations are more frightening to a patient than not being able to breathe. By giving oxygen and helping the patient use his/her inhaler or administering a nebulizer treatment, 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 and nebulizer.

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.
4. The student should practice role play situations where appropriate and inappropriate assistance of the usage of handheld and mask nebulizers occurs.

INSTRUCTOR ACTIVITIES

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content (complete remediation forms).

EVALUATION

Written: Develop evaluation instruments, e.g., quizzes, 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.

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.

MODULE 4

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 key anatomical structures and function of the cardiovascular system. (C-1)
4-3.2 List common causes of cardiac compromise in the adult patient. (C-1)
4-3.3 List common causes of cardiac emergencies in the pediatric patient. (C-1)
4-3.4 Outline the major signs and symptoms of a patient experiencing cardiac compromise. (C-1)
4-3.5 Describe the emergency medical care of the patient experiencing chest pain/discomfort. (C-1)
4-3.6 Analyze the indications for automated external defibrillation (AED). (C-3)
4-3.7 List the contraindications for automated external defibrillation. (C-1)
4-3.8 Define the role of EMT-B in the emergency cardiac care system. (C-1)
4-3.9 Explain the impact of age and weight on defibrillation. (C-1)
4-3.10 Discuss the position of comfort for patients with various cardiac emergencies. (C-1)
4-3.11 Establish the relationship between airway management and the patient with cardiovascular compromise.(C-3)
4-3.12 Predict the relationship between the patient experiencing cardiovascular compromise and basic life support. (C-2)
4-3.13 Discuss the fundamentals of early defibrillation. (C-1)
4-3.14 Discuss the use of the AED for pediatric patients. (C-1)
4-3.15 Explain the rationale for early defibrillation. (C-1)
4-3.16 Explain that not all chest pain patients result in cardiac arrest and do not need to be attached to an automated external defibrillator. (C-1)
4-3.17 Explain the importance of prehospital ACLS intervention if it is available. (C-1)
4-3.18 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)
4-3.19 Discuss the various types of automated external defibrillators. (C-1)
4-3.20 Differentiate between the fully automated and the semi-automated defibrillator. (C-3)

4-3.21 Discuss the procedures that must be taken into consideration for standard operations of the various types of automated external defibrillators. (C-1)
4-3.22 State the reasons for assuring that the patient is pulseless when using the automated external defibrillator. (C-1)
4-3.23 Differentiate between apnea and agonal respirations as it pertains to the patient who is pulseless. (C-1)
4-3.24 Discuss the circumstances which may result in inappropriate shocks. (C-1)
4-3.25 Explain the considerations for interruption of CPR and importance of minimizing any interruption, when using the automated external defibrillator. (C-1)
4-3.26 Discuss the advantages and disadvantages of automated external defibrillators. (C-1)
4-3.27 Summarize the speed of operation of automated external defibrillation. (C-1)
4-3.28 Discuss the use of remote defibrillation through adhesive pads. (C-1)
4-3.29 Discuss the special considerations for rhythm monitoring. (C-1)
4-3.30 List the steps in the operation of the automated external defibrillator. (C-1)
4-3.31 Discuss the standard of care that should be used to provide care to a patient with a persistent shockable rhythm and no available ACLS. (C-1)
4-3.32 Differentiate between the single rescuer and multi-rescuer care with an automated external defibrillator. (C-3)
4-3.33 Explain the reason for pulses not being checked between shocks with an automated external defibrillator. (C-1)
4-3.34 Discuss the importance of coordinating ACLS trained providers with personnel using automated external defibrillators. (C-1)
4-3.35 Discuss the importance of post-resuscitation care. (C-1)
4-3.36 List the components of post-resuscitation care. (C-1)
4-3.37 Explain the importance of frequent practice with the automated external defibrillator. (C-1)
4-3.38 Discuss the need to complete the Automated Defibrillator: Operator's Shift Checklist. (C-1)
4-3.39 Define the function of all controls on an automated external defibrillator, and describe event documentation and battery defibrillator maintenance. (C-1)
4-3.40 Discuss the role of the American Heart Association (AHA) in the use of automated external defibrillation.(C-1)
4-3.41 Explain the role medical direction plays in the use of automated external defibrillation. (C-1)
4-3.42 State the reasons why a case review should be completed following the use of the automated external defibrillator. (C-1)
4-3.43 Discuss the components that should be included in a case review. (C-1)

4-3.44 Discuss the goal of quality improvement in automated external defibrillation. (C-1)
4-3.45 Recognize the need for medical direction of protocols to assist in the emergency medical care of the patient with chest pain. (C-3)
4-3.46 List the indications for the use of aspirin. (C-1)
4-3.47 State the contraindications and side effects for the use of aspirin. (C-1)
4-3.48 List the indications for the use of nitroglycerin. (C-1)
4-3.49 State the contraindications and side effects for the use of nitroglycerin. (C-1)

AFFECTIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:
4-3.50 Defend the reasons for obtaining initial training in automated external defibrillation and the importance of continuing education. (A-3)
4-3.51 Defend the reason for maintenance of automated external defibrillators. (A-3)
4-3.52 Explain the rationale for administering nitroglycerin to a patient with chest pain or discomfort. (A-3)

PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:
4-3.53 Demonstrate the assessment and emergency medical care of a patient experiencing chest pain/discomfort. (P-1,2)
4-3.54 Demonstrate the application and operation of the automated external defibrillator. (P-1,2)
4-3.55 Demonstrate the maintenance of an automated external defibrillator. (P-1,2)
4-3.56 Demonstrate the assessment and documentation of patient response to the automated external defibrillator. (P-1,2)
4-3.57 Create a management plan to include evaluation and management for an adult patient in cardiac arrest. (P-3)
4-3.58 Create a management plan to include evaluation and management for a pediatric patient in cardiac arrest. (P-3)
4-3.59 Demonstrate the skills necessary to complete the Automated Defibrillator: Operator's Shift Checklist. (P-1,2)
4-3.60 Perform the steps in administering aspirin for chest pain or discomfort. (P-2)
4-3.61 Demonstrate the assessment and documentation of patient response to aspirin. (P-1,2)
4-3.62 Perform the steps in facilitating the use of nitroglycerin for chest pain or discomfort. (P-2)
4-3.63 Demonstrate the assessment and documentation of patient response to nitroglycerin. (P-1,2)
4-3.64 Create a management plan to include evaluation and management for an adult patient experiencing cardiac compromise. (P-3)

4-3.65 Practice completing a prehospital care report for patients with cardiac emergencies. (P-2)

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, aspirin and NTG placebos, defibrillation manikin.

PERSONNEL

Primary Instructor: One advanced-level provider 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.

PRESENTATION

<u>Declarative (What)</u>

I. 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 blood to the lungs
(b) Left - pumps blood to the body
(3) Valves prevent backflow of blood

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 with 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 lower hand
(b) Pulsations can be palpated at the wrist thumbside

(7) Brachial
(a) An 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 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 to 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 composition
a) Red blood cells
(1) Give the blood its color
(2) Carry oxygen to organs
(3) Carry carbon dioxide away from organs
b) White blood cells - part of the body's defense against infections
c) Plasma - fluid that carries the blood cells and nutrients
d) Platelets - essential for the formation of blood clots
8. Physiology
a) 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

b) 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

II. Causes of cardiac compromise in adults
A. Overview
1. Arteriosclorosis
2. Risk factors-modifiable and unmodifiable
3. Congenital defects
4. Acute coronary syndromes
B. Conditions causing cardiac emergencies
1. Angina pectoris – chest pain that occurs when the heart muscle does not get enough oxygenated blood
2. Acute Myocardial Infarction (AMI) – heart attack occurs when the heart muscle is without oxygen for an extended period of time (ischemia), resulting in permanent damage (necrosis)
3. Congestive Heart Failure (CHF) – an imbalance in the hearts ability to pump properly, resulting in a back up of fluids in either the lungs, extremities, or both
C. Cardiogenic Shock - A state of profound depression of the vital processes of the body, due to cardiac insufficiency, resulting in inadequate circulation

III. Causes of cardiac emergencies in pediatrics
A. Airway obstruction
B. Respiratory arrest
C. Trauma
D. Congenital defects

IV. Cardiac Compromise - signs and symptoms may include some or all of the following:
A. Squeezing, dull pressure, chest pain commonly radiating down the arms or to the jaw
B. Sudden onset of sweating (this in and of itself is a significant finding)
C. Difficulty breathing (dyspnea)
D. Rapid and shallow breathing

E. Restlessness, anxiety or irritability
F. Feeling of impending doom
G. Abnormal pulse rate (may be irregular or rapid)
H. Abnormal blood pressure
I. Cool, clammy skin
J. Pale or cyanotic
K. Epigastric pain
L. Nausea and vomiting
M. Insomnia
N. Atypical presentations occur among certain patients (e.g. females)

V. Emergency Medical Care - Initial Patient Assessment Review
A. Circulation - pulse absent
1. Medical patient > one year old - CPR with AED and transport
2. Medical patient < one year old - CPR and transport, AED is contraindicated
B. Responsive patient with a known history - cardiac
1. Perform initial assessment
2. Perform focused history and physical exam
3. Place patient in position of comfort
4. Cardiac
a) Complains of chest pain or discomfort
(1) Apply oxygen if not already done
(2) Assess baseline vital signs
b) Important questions to ask
(1) SAMPLE history
(2) O-P-Q-R-S-T
c) Has been prescribed nitroglycerin (NTG) and nitro is with the patient
(1) Blood pressure greater than 100 systolic
(a) One dose, repeat in 3-5 minutes if no relief and authorized by medical direction up to a maximum of three doses
(b) Reassess vital signs and chest pain after each dose
(2) Blood pressure < 100 systolic - continue with focused assessment
d) Does not have prescribed nitroglycerin (NTG) - continue with focused assessment
e) Transport promptly

VI. 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 for infections when necessary
i) Interviewing bystanders/family to obtain facts related to arrest events
j) Technique of performing proper compressions
k) Technique involved with delivering appropriate ventilations

VII. Automated External Defibrillation
A. Importance of automated external defibrillation to the EMT-Basic
1. Fundamentals of early defibrillation - successful resuscitation of out-of-hospital arrest depends on a series of critical interventions which the American Heart Association calls the Chain of Survival
a) Early access
b) Early CPR
c) Early defibrillation
d) Early ACLS
2. Rationale for early defibrillation
a) Many EMS systems have demonstrated increased survival outcomes of cardiac arrest patients experiencing ventricular fibrillation
b) This increased survival was after early defibrillation programs were implemented and when all of the links in the chain of survival were present
B. AED usage for pediatric patients
1. AHA guidelines support AED for patients over 1 year of age in cardiac arrest
2. Pediatric defibrillation pads are preferred
3. Adult defibrillation pads may be bused if pediatric pads are not available – use anterior/posterior placement of pads if patient's chest is small
4. AED is contraindicated in patients < 1 year old
C. Overview of automated external defibrillators
1. Types of automated external defibrillators
a) Fully automated - defibrillator operates without action by EMT-Basic, except to turn on power

b) Semi-automated - defibrillator uses a computer voice synthesizer to advise EMT-Basic as to the steps to take based upon its analysis of the patient's cardiac rhythm

2. Analysis of cardiac rhythms
   a) Attach defibrillator to only unresponsive, pulseless, non-breathing patients to avoid delivering inappropriate shocks
   b) Patients in cardiac arrest may present with agonal respirations – do not delay defibrillation
   c) Defibrillator computer microprocessor evaluates the patient's rhythm and confirms the presence of a rhythm for which a shock is indicated
   d) Accuracy of devices in rhythm analysis has been high both in detecting rhythms needing shocks and rhythms that do not need shocks
   e) Analysis is dependent on properly charged defibrillator batteries
3. Inappropriate delivery of shocks
   a) Human error
   b) Mechanical error
4. Pulseless ventricular tachycardia
   a) Pulselessness must be determined before attaching AED to avoid shocking inappropriately
   b) Attach defibrillator to only unresponsive, pulseless, non-breathing patients to avoid delivering inappropriate shocks
   c) Defibrillator advises shocks for ventricular tachycardia when the rate exceeds a certain value, for example, above 180 beats per minute
5. Interruption of CPR
   a) No CPR performed at times shocks are delivered
   b) No person should be touching patient when rhythm is being analyzed and when shocks are delivered

D. Advantages of automated external defibrillation
1. Initial training and continuing education
   a) Easier to learn than CPR, however, must memorize treatment sequence
   b) EMS delivery system should have:
      (1) Necessary links in chain of survival
      (2) Medical direction
      (3) EMS system with audit and/or quality improvement program in place
      (4) Mandatory continuing education with skill competency review for EMS providers
   c) Continuing competency skill review consistent with State and local requirements

2. Remote defibrillation through adhesive pads
   a) Defibrillation is "hands-off"
   b) Safer method
   c) Better electrode placement
   d) Has larger pad surface area
   e) Provokes less anxiety in EMT-Basic

E. Use of automated external defibrillators during resuscitation attempts
1. Follow current AHA guidelines, State approved sample protocol, State Standards and Procedures and local protocols for AED use
2. Coordination of ALS personnel or EMT-Paramedics when EMT-Basics are using automated external defibrillators
   a) EMS system design establishes protocols
   b) AED usage does not require ALS on scene
   c) ALS should be notified of arrest events as soon as possible
   d) Considerations for EMT-Basic transporting the patient or waiting for ALS to arrive on the scene to transport should be in local protocols established by medical direction
3. Safety considerations – water or rain

F. Post resuscitation care
1. After automated external defibrillation protocol is completed, patient may:
   a) Have pulses
   b) Have no pulse with machine indicating "no shock indicated"
   c) Have no pulse with machine indicating shock
2. If pulses return
   a) Monitor ABCs
   b) Oxygen
   c) Reevaluate vital signs
   d) ACLS intercept
   e) Rapid transportation
   f) Keep defibrillator device powered on and pads on patient en route in case patient re-fibrillates, and to create electronic record of the entire event
   g) Perform focused assessment and on-going assessment en route

G. Defibrillator maintenance
1. Regular maintenance for defibrillators is necessary
2. Operators Shift Checklist for AEDs must be completed as required by local protocol and quality assurance programs
3. Defibrillator failure is most frequently related to improper device maintenance. Older models may have rechargeable batteries which can be a common cause of AED failure. Newer models have disposable batteries which must be replaced as needed.

H. Training and sources of information - the American Heart Association publishes a variety of guidelines and additional information on automated external defibrillation
I. Maintenance of skills - practice drills to reassess competency must be completed in compliance with protocol
J. Medical Direction
1. Successful completion of AED training in an EMT-Basic course does not permit usage of the device without approval by state laws/rules and local medical direction authority
2. Every event in which an AED is used must be reviewed by the medical director or his designated representative
3. Reviews of events using AEDs may be accomplished by:
a) Written report
b) Review of voice-ECG tape recorders attached to AED's
c) Solid-state memory modules and magnetic tape recordings stored in device
d) Quality improvement - involves both individuals using AEDs and the EMS system in which the AEDs are used

VIII. Medications
A. Aspirin
1. Medication name
a) Generic - aspirin
b) Trade – Bayer, St. Joseph's
2. Indications - must have all of the following criteria:
a) Exhibits signs and symptoms of chest pain
b) Has specific authorization by medical direction
3. Contraindications
a) Stomach ulcers
b) Allergy (e.g. patients with aspirin-induced asthma)
c) Patient unable to protect own airway
d) Patient has already met maximum prescribed dose prior to EMT-Basic arrival
4. Medication form – chewable tablet
5. Dosage – 162-324mg dose (2-4, 81mg), and authorized by medical direction
6. Administration
a) Obtain order from medical direction either on-line or off-line
b) Perform focused assessment for cardiac patient
c) Assess vital signs
d) Contact medical control if no standing orders
e) Assure right medication, right patient, right route, patient alert
f) Check expiration date of aspirin
g) Question patient on last dose administration, effects, and assures understanding of route of administration

h) Ask patient to chew, not swallow whole, tablets
i) Record activity and time
j) Perform reassessment and evaluate effect of medication

7. Actions
   a) Anticoagulant (thrombolytic) “blood thinner”
   b) Decreases workload of heart
   c) Mild analgesic
8. Side effects
   a) Stomach upset
9. Reassessment strategies
   a) Monitor blood pressure
   b) Seek medical direction before re-administering
   c) Record reassessment findings

B. Nitroglycerin
1. Medication name
   a) Generic - nitroglycerin
   b) Trade – Nitrostat
2. Indications - must have all of the following criteria:
   a) Patient exhibits signs and symptoms associated with cardiac compromise (e.g. chest pain, pressure or discomfort)
   b) Patient has physician prescribed nitroglycerin
   c) EMT has authorization by medical direction
3. Contraindications
   a) History of hypotension
   b) Blood pressure below 100 mmHg systolic
   c) Head injury
   d) Infants and children
   e) 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 > 100, 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) Evaluate blood pressure - above 100 mmHg systolic
   d) Contact medical control if no standing orders exist
   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
k) Record activity and time
l) Perform reassessment and evaluate patient for effect of drug

7. Actions
   a) Relaxes blood vessels
   b) Decreases workload of heart
8. Side effects
   a) Hypotension
   b) Headache
   c) Pulse rate changes
   d) Burning or stinging sensation under the tongue
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

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 aspirin for chest pain using a substitute candy tablet.
3. Perform the steps in facilitating the use of nitroglycerin for chest pain using a substitute candy tablet and breath spray.
4. Demonstrate the assessment and documentation of patient response to nitroglycerin.
5. Demonstrate application and operation of the automated external defibrillator.
6. Demonstrate maintenance checks of the automated external defibrillator.
7. Demonstrate the assessment and documentation of patient response to the automated external defibrillator.
8. 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.

Contextual (When, Where, Why)

1. The EMT-Basic student must prepare to assess and manage patients with cardiac emergencies.
2. The training laboratory must provide simulated cardiac situations, both on conscious and unconscious patients, for the student to practice demonstrated skills.
3. 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 aspirin.
5. 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 on both pediatric and adult patients.
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 aspirin for chest pain using a suitable candy tablet.
5. The student should practice performing the steps in facilitating the use of nitroglycerin for chest pain using a suitable candy tablet and breath spray.
6. The student should practice the assessment and documentation of patient response to the automated external defibrillator.
7. The student should practice the assessment and documentation of patient response to aspirin and nitroglycerine.

8. 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.
9. The student should practice completing a prehospital care report for a patient with a cardiac emergency.

INSTRUCTOR ACTIVITIES

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content (complete remediation forms).

EVALUATION

Written: Develop evaluation instruments, e.g., quizzes, 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.

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.

MODULE 4

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 Identify types of diabetes mellitus. (C-1)
4-4.2 Interpret the relationship between insulin and glucose in the production of energy within the body's cells. (C-3)
4-4.3 List the major signs and symptoms associated with hyperglycemia (diabetic coma). (C-1)
4-4.4 List the major signs and symptoms associated with hypoglycemia (insulin shock). (C-1)
4-4.5 Differentiate between signs and symptoms associated with hypoglycemia from those of hyperglycemia (C-3)
4-4.6 Discuss metabolic shock as it related to diabetic emergencies. (C-1)
4-4.7 Discuss the signs and symptoms of a patient taking diabetic medications, with altered mental status and the implications of a diabetes history. (C-3)
4-4.8 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)
4-4.9 Establish the relationship between airway management and the patient with altered mental status. (C-3)
4-4.10 Establish the normal blood glucose range. (C-1)
4-4.11 List the steps in obtaining a blood glucose reading. (C-1)
4-4.12 State the generic and trade names, medication forms, dose, administration, action, and contraindications for oral glucose. (C-1)
4-4.13 State the generic and trade names, medication forms, dose, administration, action, and contraindications for glucagon. (C-1)
4-4.14 Recognize when to administer oral glucose to a hypoglycemic patient. (C-2)
4-4.15 Recognize when to administer glucagon to a hypoglycemic patient. (C-2)
4-4.16 Explain the need to contact medical control prior to administering medications to a diabetic patient with an altered mental status. (C-1)
4-4.17 Explain the need for body substance isolation when providing prehopsital care for the diabetic patient. (C-1)
4-4.18 Outline the management steps in caring for a hypoglycemic patient. (C-2)

4-4.19 List other causes of altered levels of consciousness besides diabetic emergencies. (C-1)
4-4.20 Discuss causes, signs and symptoms and management of seizures. (C-1)
4-4.21 Discuss causes, signs and symptoms and management of cerebral vascular accidents (CVA). (C-1)
4-4.22 Discuss assessment and management of a geriatric patient exhibiting signs and symptoms of neurological emergencies including dementia. (C-1)

AFFECTIVE OBJECTIVES

4-4.23 Explain the rationale for obtaining a blood glucose reading in patients with altered levels of consciousness. (A-3)
4-4.24 Explain the rationale for administering oral glucose. (A-3)
4-4.25 Explain the rationale for administering glucagon. (A-3)
4-4.26 Explain the importance of understanding why some geriatric patients may exhibit inappropriate behavior due to an underlying medical condition such as stroke, dementia, or delirium. (A-3)

PSYCHOMOTOR OBJECTIVES

4-4.27 Demonstrate the steps in the emergency medical care, including a management plan, assessment and treatment, for the patient taking diabetic medicine with an altered mental status and a history of diabetes. (P-1,2)
4-4.28 Demonstrate the steps in obtaining a blood glucose reading. (P-2)
4-4.29 Demonstrate the steps in the administration of oral glucose. (P-1,2)
4-4.30 Demonstrate the assessment and documentation of patient response to oral glucose. (P-1,2)
4-4.31 Demonstrate the proper technique in reconstituting glucagon and preparing for its administration. (P-2)
4-4.32 Demonstrate the steps in administering an IM injection of glucagon to a diabetic patient. (P-2)
4-4.33 Demonstrate the assessment and documentation of patient response to glucagon. (P-2)
4-4.34 Demonstrate the proper disposal of sharps.
4-4.35 Demonstrate creating a management plan for a patient exhibiting signs and symptoms of seizure. (P-2)
4-4.36 Demonstrate creating a management plan for a patient exhibiting signs and symptoms of stroke. (P-2)
4-4.37 Demonstrate creating a management plan for a patient exhibiting signs and symptoms of dementia. (P-2)
4-4.38 Demonstrate how to complete a prehospital care report for patients with diabetic emergencies. (P-2)

PREPARATION

Motivation: Neurological emergencies, resulting in an altered level of consciousness, include diabetes, seizure, stroke and dementia. Diabetes is a prevalent disease in American society with estimates between 2-5% of the total population having either diagnosed or undiagnosed diabetes mellitus. Strokes can causes devastating changes in a patient's quality of life. Current AHA research recommends rapid management by prehospital caregivers for patient's exhibiting signs and symptoms of stroke. Dementia and delirium are debilitating diseases of the brain that effect geriatric patients.

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, vials of normal saline, syringes, gloves, sharps containers, injection practice devices, 2x2 gauze pads, bandaids, glucometers, test strips, and lancets.

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.

PRESENTATION

Declarative (What)

I. Diabetes Mellitus
   A. Defined
      1. Autoimmune disorder

2. Caused by a decrease in the amount of insulin being produced
3. Result is an imbalance between glucose available in the bloodstream and the cell's need for the sugar
4. Inability to metabolize glucose

B. Types
1. Type I - Juvenile onset – insulin dependent
2. Type II – adult onset, non-insulin dependent; inadequate amounts of insulin produced; patient may be on oral medications that stimulate the pancreas to produce more insulin (glyburide, Diabinase, Orinase)

C. Insulin and glucose
1. Insulin-pancreatic hormone responsible for opening cell gates that allow glucose to enter
2. Glucose-simple sugar that provides all living cells of the body with energy, for metabolism

D. Signs and symptoms associated with hyperglycemia (diabetic coma)-condition where there is plenty of glucose available in the blood stream, but insufficient insulin to allow sugar to pass into the cells
1. Gradual onset
2. Altered LOC – could be unresponsive or comatose
3. Rapid, weak pulse
4. Warm, flushed, dehydrated skin
5. Thirst
6. Deep, rapid respirations (Kussmaul)
7. Sweet, fruity odor to breath
8. Uncharacteristic behavior
9. Abdominal pain, vomiting

E. Signs and symptoms associated with hypoglycemia (insulin shock) – low blood sugar. Condition results when there is a low level of glucose in the blood stream. Insulin levels being adequate.
1. Sudden onset
2. Altered LOC – confusion, irritability, combative
3. Seizures and coma possible
4. Full, rapid pulse
5. BP, normal
6. Normal to rapid respirations
7. Intense hunger, drooling, and headache

F. Metabolic Shock – caused by an imbalance between production and elimination of acids, causing fluid imbalances and weakened vessel of the vascular system. Patients with diabetes are susceptible to metabolic acidosis and shock.

G. Normal blood glucose levels
1. 70 – 120 mg/dl
2. Measurement obtained by use of a glucometer

H. Emergency care for a patient experiencing a diabetic emergency
1. Assess LOC and ABC's

2. High priority, rapid transport, and consider ALS intercept
3. Maintain an open airway and provide oxygen
4. If blood glucose is low and patient is conscious, administer oral glucose
5. If blood glucose is low and patient is unresponsive, administer glucagons

I. Blood glucose measurement
1. Contact medical control, if protocol necessitates
2. Explain procedure and obtain consent, when possible
3. Select site for obtaining sample
4. Cleanse site with alcohol prep-pad and allow to dry
5. Turn glucometer on, following digital prompts for directions
6. Using sterile lancet, pierce the skin
7. Properly dispose of lancet
8. "Milk" the finger to obtain a small sample of blood
9. Wipe away initial blood droplet with sterile gauze
10. Deposit second blood sample on glucometer test strip
11. Process the blood sample
12. Bandage site as appropriate
13. Obtain reading and record data
14. Properly dispose of all biohazard materials
15. Continue to monitor patient status

J. Medications
1. Oral Glucose
a) Medication Name
(1) Generic - Glucose, Oral
(2) Trade - Glutose, Insta-glucose
b) Indications - patients with altered mental status with a known history of diabetes controlled by medication
c) Contraindications
(1) Unresponsive
(2) Unable to swallow
d) Medication form - Gel, in toothpaste type tubes
e) Dosage – 15-25 g
f) Administration
(1) Obtain order from medical direction either on-line or off-line
(2) Assure signs and symptoms of altered mental status with a known history of diabetes
(3) Assure patient is conscious and can swallow and protect their airway
(4) Administer glucose
(a) Between cheek and gum
(b) Place on tongue depressor between cheek and gum
(5) Perform ongoing assessment

g) Actions - increases blood sugar
h) Side effects - none when given properly. May be aspirated by the patient without a gag reflex.
i) Re-assessment strategies - if patient loses consciousness or seizes, remove tongue depressor from mouth

2. Glucagon
   a) Medication Name
      (1) Generic - glucagon
      (2) Trade - Glucagon
   b) Indications – unresponsive patients with a known history of diabetes controlled by medication
   c) Contraindications
      (1) allergy to drug
   d) Medication form – powdered tablet, reconstituted in 1ml of diluent
   e) Dosage – 1mg/ml
   f) Administration
      (1) Contact medical control
      (2) Report assessment findings including signs and symptoms of hypoglycemia and blood glucose measurement
      (3) Report prior interventions
      (4) Request implementation of glucagon protocol
      (5) Confirm orders from medical control
      (6) Obtain consent and explain procedure, if possible
      (7) Confirm right patient
      (8) Reconstitute glucagon
         (a) Inspect package and both vials insuring right medication, dose and expiration date
         (b) Remove “flip-off” seals from vials
         (c) Wipe rubber stoppers with alcohol prep-pad
         (d) Using sterile 3 ml IM syringe, remove needle protector from syringe
         (e) Draw plunger back to 1ml (cc) mark (syringe now contains 1ml of air)
         (f) Pierce the center of the stopper of the vial containing the diluting solution with the needle of the syringe
         (g) Turn the vial upside down and inject the 1 ml of air from the syringe into the vial (this procedure makes it easier to withdraw fluid from vial)
         (h) Keeping the tip of the needle in the diluent, withdraw fluid from vial into the syringe

(i) Remove syringe from vial and pierce the center of the stopper of the vial, containing 1mg powdered glucagon, with the syringe
(j) Inject all of the diluent into the glucagons
(k) Remove the diluent syringe from the vial and dispose of in sharps container
(l) Shake the vial gently until the glucagon dissolves and the solution becomes clear. Note: glucagons should be clear and water-like in consistency. It should be utilized immediately after reconstituting.
(m) Using a new syringe and appropriately sized needle, pierce the center of the rubber stopper and withdraw slightly more of the medication than the ordered dose
(n) Remove the needle and syringe from the vial
(o) With the needle pointing upward, gently tap the syringe to move any air bubbles to the top. Gently advance the syringe to the 1 ml mark. (Children less than 20 kg (44 lbs) a dose of 0.5 mg is used). Note: Dosage established by medical control must be administered

(9) Perform the IM injection
(a) Cleanse the injection site using an alcohol prep-pad
(b) Raise the injection site by pinching or stretching the flesh
(c) Insert the needle into the selected and cleansed injection site at a 90 degree angle
(d) Aspirate slightly by attempting to withdraw the plunger of the syringe. If no blood is seen to aspirate into the syringe, use light pressure to depress the plunger and inject all the medication. If blood is seen to aspirate, a second site must be used
(e) Depress the plunger to administer the injection
(f) Withdraw the needle from the injection site
(g) Wipe the injection site with an alcohol prep-pad
(h) Properly dispose of the syringe and needle assembly in an appropriate sharps container and place a band-aid over the injection site

(10) Continue to monitor patient status
(11) Continue oxygen therapy
(12) Repeat dosage per medical direction, if requested
(13) Document administration data and time
(a) Time, name, dose, route of medication
(b) Patient's tolerance of procedure
(c) Name of medical control physician authorizing administration
(d) Name of EMT administering medication

g) Actions – triggers release of stored glucose from liver and skeletal muscles
h) Side effects -
i) Re-assessment strategies – monitor patient's LOC and vital signs, document and communicate patient response to medication administration

II. Causes of altered mental status, in addition to diabetic emergencies
A. Varied conditions
1. Syncopal episodes (fainting), also known as psychogenic shock – a self correcting episode of unresponsiveness, resulting from a sudden, temporary reduction in blood supply to the brain, induced by dilation of the blood vessels. Excessive grief, joy, fear or other emotion can cause this type of shock
2. Seizures
3. Stroke
4. Poisoning
5. Infection
6. Head trauma
7. Hypoxia
8. Dementia
a) Brain disorder with memory impairment
b) Multiple causes, including Alzheimer's disease
c) Gradual decline over several years

B. Emergency medical care
1. Assure patency of airway
2. Be prepared to artificially ventilate/suction
3. Transport
4. Consider trauma as possible cause of altered mental status

III. Seizures
A. Causes
1. Epilepsy
2. High fever
3. Infections
4. Poisonings
5. Hypoglycemia or hyperglycemia
6. Head trauma
7. Shock

8. Hypoxia
9. Stoke
10. Drug or alcohol withdrawal
11. Dysrhythmias
12. Hypertension
13. Pregnancy complications
14. Unknown origin (idiopathic)

B. Types
1. Simple partial seizures
   a) Muscle twitching localized to one part of the body
   b) Patient responsive and aware of occurrence
2. Complex partial seizures
   a) 1-2 minute duration
   b) Blank stare exhibited by patient
   c) No response to commands
3. Absence (petit mal) seizures
   a) Common in pediatrics
   b) Bland stare, blinking, chewing motion, lack of attention
4. Febrile seizure
   a) Most common in children; rarely life-threatening
   b) Caused by high fever
   c) Short in duration
5. Generalized Seizure-Tonic-clonic seizure
   a) Tonic-clonic seizures-phases
      (1) Aura
      (2) Tonic phase-muscle contraction for 15-30 sec.
      (3) Clonic phase-convulsions (muscles contract and relax; approximately 1-2 minutes)
      (4) Postictal Phase-last 15-30 minutes; patient difficult to arouse; incontinence may occur
   b) Status epilepticus-prolonged seizure activity without a state of meaningful consciousness; true emergency

C. Emergency medical care
1. Assure patency of airway
2. Position patient on side if no possibility of cervical spine trauma
3. Have suction ready
4. Assist ventilations if needed
5. Oxygen therapy
6. 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

IV. Stroke (Cerebral Vascular Accident (CVA))

A. Types/causes of stroke
1. Ischemic stroke
   a) Thrombosis

b) Embolism
2. Hemorrhagic stroke
3. Transient Ischemic Attack (TIA)-miniature stroke, usually occurring days prior to a thrombotic stroke

B. Emergency medical care for stroke
1. Perform initial assessment
a) Airway management
b) Breathing – supplemental oxygen versus assisted ventilations
c) Assess responsiveness carefully
d) Cincinnati Prehospital Stroke Scale
e) High priority patient

C. Perform focused history and physical exam
1. OPQRST evaluated
2. SAMPLE History
3. Baseline Vitals and repeated vitals
4. Obtain blood glucose reading

D. Rapid transport
1. AHA critical time frame to thrombolytic therapy-3 hours

V. The geriatric patient exhibiting signs and symptoms of neurological emergencies

A. Likely causes
1. Stroke and Transient Ischemic Attack
2. Delirium – sudden, rapid deterioration
3. Dementia – gradual progression
4. Head and spine trauma

B. Assessment
1. Determine level of consciousness – AVPU
2. Assure airway, breathing and circulation are adequate
3. Perform focused history and physical exam
a) Baseline vital signs
b) S.A.M.P.L.E. history
c) History of the present illness
d) Limited physical exam
4. More detailed assessment of mental status
a) Ask simple questions to determine if responses are logical and appropriate
5. Examine facial structures for symmetry
6. Assess pupils
7. Assess cranial nerve function for symmetry
a) Close eyes
b) Smile
c) Protrude tongue
8. Assess neurological function in the extremities

C. Management
1. Maintain ABCs

2. Protect against further injury or complications
3. Oxygen at 15 lpm by nonrebreather
4. Treat specific injuries
5. Communicate with medical control as needed
6. Transport to the closest appropriate hospital

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 obtaining a blood glucose reading.
3. Demonstrate the steps in the administration of oral glucose.
4. Demonstrate the steps in the administration of glucagon.
5. Demonstrate the assessment and documentation of patient response.

Contextual (When, Where, Why)

1. Diabetes is a common disease affecting a large population. As the population ages, the number of people affected by diabetes will increase.
2. Oral glucose, and/or glucagon, 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.
3. Evaluating blood glucose levels provides valuable information about the patient who has an altered level of 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 obtaining a blood glucose reading.
3. The student should see the administration of oral glucose (as a simulated paste) to a simulated patient.
4. The student should see the administration of glucagons (as a simulated liquid for injection) 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 obtaining a blood glucose reading.
3. The student will practice the steps in the administration of oral glucose.

4. The student will practice documentation of assessment, treatment, and patient response to oral glucose.
5. The student will practice the steps in the administration of glucagon.
6. The student will practice documentation of assessment, treatment, and patient response to glucagon.
7. The student will practice completing a prehospital care report for patients with diabetic emergencies.

INSTRUCTOR ACTIVITIES

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content (complete remediation forms).

EVALUATION

Written:	Develop evaluation instruments, e.g., quizzes, 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.

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.

MODULE 4

Medical/Behavioral and Obstetrics/Gynecology

Lesson 4-5

Severe Allergic Reactions

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 Define a severe allergic reaction (anaphylaxis). (C-1)
4-5.2 Describe the pathophysiology involved with hypersensitivity to the presence of an allergen. (C-1)
4-5.3 List possible causes of anaphylaxis. (C-1)
4-5.4 Recognize the patient experiencing an allergic reaction.(C-1)
4-5.5 Describe the emergency medical care of the patient with an allergic reaction. (C-1)
4-5.6 Establish the relationship between the patient with an allergic reaction and airway management. (C-3)
4-5.7 Describe the mechanisms of allergic response and the implications for airway management. (C-1)
4-5.8 State the generic and trade names, medication forms, dose, administration, action, and contraindications for the epinephrine auto-injector. (C-1)
4-5.9 Evaluate the need for medical direction in the emergency medical care of the patient with an allergic reaction. (C-3)
4-5.10 Differentiate between the general category of those patients having an allergic reaction and those patients having an allergic reaction and requiring immediate medical care, including immediate use of epinephrine auto-injector. (C-3)

AFFECTIVE OBJECTIVES

4-5.11 Explain the rationale for administering epinephrine using an auto-injector. (A-3)

PSYCHOMOTOR OBJECTIVES

4-5.12 Demonstrate the emergency medical care of the patient experiencing an allergic reaction. (P-1,2)
4-5.13 Demonstrate the use of epinephrine auto-injector. (P-1,2)
4-5.14 Demonstrate the assessment and documentation of patient response to an epinephrine injection. (P-1,2)
4-5.15 Demonstrate proper disposal of equipment. (P-1,2)

4-5.16 Create a management plan to include evaluation and treatment of an adult patient experiencing an anaphylactic reaction. (P-3)

4.5-17 Create a management plan to include evaluation and treatment of a pediatric patient experiencing an anaphylactic reaction. (P-3)

4-5.18 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, alcohol prep pads, and sharps container.

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.

PRESENTATION

Declarative (What)

I. Allergic Reactions
   - A. Definition - an exaggerated immune response to a foreign substance (allergen), resulting in a systemic release of histamines
   - B. Possible causes
     1. Insect bites/stings - bees, wasps, etc.

2. Food - nuts, crustaceans, peanuts, etc.
3. Plants
4. Medications
5. Latex
6. 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) Red skin (flushing)
      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
      f) Hoarseness (losing the voice)
      g) Stridor
      h) Wheezing (audible without stethoscope)
   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 or respiratory distress indicate the presence of a severe allergic reaction

D. Emergency medical care of allergic reactions
   1. Patient has come in contact with substance that caused past allergic reaction and complains of respiratory distress or exhibits signs and symptoms of shock.
      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) Progression
         (6) Interventions
      c) Assess baseline vital signs and SAMPLE history

d) Administer oxygen if not already done in the initial assessment
e) Determine if patient has prescribed preloaded epinephrine available. Facilitate administration of preloaded epinephrine.
f) Contact medical direction
g) Record and reassess in two minutes
h) Record reassessment findings
i) If patient does not have epinephrine auto-injector available - transport immediately

2. Patient has contact with substance that causes allergic reaction without signs of respiratory distress or shock
a) Continue with focused assessment
b) Patient not wheezing or without signs of respiratory compromise or hypotension should not receive epinephrine

II. 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

III. 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 care for the treatment of the patient exhibiting the assessment findings of an allergic reaction
b) Medication is prescribed for this patient by a physician
c) Medical direction authorizes use for this patient
3. Contraindications - no contraindications when used in a life-threatening situation
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 - one infant/child auto-injector (0.15 mg, up to #60)
6. Administration
a) Obtain order from medical direction either on-line or off-line
b) Obtain patient's prescribed auto-injector. Ensure:
(1) Prescription is written for the patient experiencing allergic reactions

(2) Medication is not discolored (if able to see)
c) Remove safety cap from the auto-injector
d) Place tip of auto-injector against the patient's thigh
(1) Lateral portion of the thigh.
(2) 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 sharps 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
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
(i) Additional dose of epinephrine
(ii) Treat for shock
(iii) Prepare to initiate Basic Cardiac Life support measures
CPR
AED
(2) Patient condition improves. Provide supportive care
(a) Oxygen
(b) Treat for shock

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)

1. 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.
2. 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

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content (complete remediation forms).

EVALUATION

Written: Develop evaluation instruments, e.g., quizzes, 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.

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.

MODULE 4

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 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:

4-6.8 Explain the rationale for administering activated charcoal. (A-3)
4-6.9 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:

4-6.10 Demonstrate the steps in the emergency medical care for the patient with possible overdose. (P-1,2)
4-6.11 Demonstrate the steps in the emergency medical care for the patient with suspected poisoning.(P-1,2)
4-6.12 Perform the necessary steps required to provide a patient with activated charcoal. (P-2)
4-6.13 Demonstrate the assessment and documentation of patient response. (P-1,2)
4-6.14 Demonstrate proper disposal of the equipment for the administration of activated charcoal. (P-1,2)

4-6.15 Demonstrate completing a prehospital care report for patients with a 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: Activated charcoal, suction equipment.

PERSONNEL

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

Assistant Instructor: None required.

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. Interventions?
     6. How much do you weigh?
   - B. Ingested
     1. Signs and symptoms
        - a) History of ingestion
        - b) Nausea

c) Vomiting
d) Diarrhea
e) Altered mental status
f) Abdominal pain
g) Chemical burns around the mouth
h) Different breath odors

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 and/or poison control center - activated charcoal
   c) Bring all containers, bottles, labels, etc. of poison agents to receiving facility

C. Inhaled
1. Signs and symptoms
   a) History of inhalation of toxic substance
   b) Difficulty breathing
   c) Chest pain
   d) Cough
   e) Hoarseness
   f) Dizziness
   g) Headache
   h) Confusion
   i) Seizures
   j) Altered mental status
2. Emergency medical care
   a) Have trained rescuers remove patient from poisonous environment. Be aware that fumes and gases can remain on clothing or skin.
   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) History of exposure
   b) Liquid or powder on patient's skin
   c) Burns
   d) Itching
   e) Irritation
   f) Redness
2. Emergency medical care
   a) Skin - remove contaminated clothing while protecting oneself from contamination
      (1) Powder - brush powder off patient, then continue as for other absorbed poisons
      (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

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 – refer to local protocols for prehospital use
   A. Activated charcoal
      1. Medication name
         a) Generic - Activated charcoal
         b) Trade
            (1) SuperChar
            (2) InstaChar
            (3) Actidose
            (4) LiquiChar
      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, available in containers of 12.5, 25 and 50 grams
         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, patient response to administration, complications 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 the patient vomits, the dose should be repeated per medical direction
9. Re-assessment strategies - the EMT-Basic should be prepared for the patient to vomit or further deteriorate

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 activated charcoal.
6. Show the student how to administer activated charcoal.
7. Show the student how to care for a patient with suspected poisoning or overdose.

Contextual (When, Where, Why)

1. The EMT-Basic can prevent injury and illness from ingested poisoning by administering activated charcoal. The sooner this happens, the more effect it will have.

2. 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 activated charcoal.
6. The student should see a demonstration of how to administer activated charcoal.
7. 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 the assessment and documentation of patient response to activated charcoal.
3. The student should practice completing a prehospital care report for patients with poisoning/overdose emergencies.

INSTRUCTOR ACTIVITIES

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content (complete remediation forms).

EVALUATION

Written: Develop evaluation instruments, e.g., quizzes, 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.

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.

MODULE 4

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 Discuss the emergency medical care of bites and stings.(C-1)

AFFECTIVE OBJECTIVES

No affective objectives identified.

PSYCHOMOTOR OBJECTIVES

4-7.9 Demonstrate the assessment and emergency medical care of a patient with exposure to cold.(P-1,2)
4-7.10 Demonstrate the assessment and emergency medical care of a patient with exposure to heat.(P-1,2)
4-7.11 Demonstrate the assessment and emergency medical care of a near drowning patient.(P-1,2)
4-7.12 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.

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
                (a) Low income may prohibit adequate heat in home
                (b) Elderly have less muscle mass and subcutaneous tissue
                (c) Elderly may have chronic illnesses and failing body systems
                (d) Many have poor diets
                (e) Many medications may contribute to hypothermia
                (f) Decreased activity
            (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
   (2) Head injury
   (3) Burns
   (4) Generalized infection
   (5) Injuries to the spinal cord
   (6) Diabetes and hypoglycemia
   (7) Altered mental status from any cause
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) Muscle 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 - blue-gray
(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

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:
(a) Break blisters
(b) Rub or massage area
(c) Apply heat
(d) Rewarm
(e) Allow the patient to walk on the affected extremity
g) 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. Do not let limb touch the sides or bottom of the container.
(2) Monitor the water to ensure it does not cool from the frozen 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. Muscle 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. Suspect possible hypothermic conditions if immersion in cold water or an open body of water
      4. Consider length of time in cold water drowning. Any pulseless, non-breathing patient who has been submerged in cold water should be resuscitated. Check pulses for a full 60 seconds.
      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
   B. Diving Accidents
      1. The Diver Alert Network (DAN) is a resource for care of diving accident patients
      2. Decompression sickness

a) Caused by ascending too quickly or flying within twelve hours of diving
b) Most often occurs within 3 hours of incident but may occur 1-48 hours
c) Signs and symptoms
(1) personality changes
(2) fatigue
(3) muscle and joint pain (the “bends”)
(4) skin blotching, mottling or rash
(5) numbness and paralysis
(6) choking
(7) labored breathing
(8) intoxicated appearance (e.g. staggering gait)
(9) chest pains
(10) collapse and unconsciousness

3. Air embolism
a) Caused by diver holding their breath due to inexperience, equipment failure, underwater emergencies, or to conserve air
b) Gases leave a damaged lung and enter the bloodstream
c) Signs and symptoms
(1) Blurred vision
(2) Chest pains
(3) Numbness and tingling
(4) Weakness/paralysis
(5) Frothy blood at mouth and nose
(6) Convulsions
(7) Unconsciousness occurs rapidly
(8) Respiratory or cardiac arrest

4. Emergency medical care:
a) Maintain an open airway
b) Consider need or spinal immobilization
c) Administer high concentration oxygen
d) Rapid transport. Consider transport to a hyperbaric chamber or consult medical control
e) Keep patient warm
f) Position patient supine or on side
g) Transport dive gear with patient

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 snakebites
   6. Consult medical direction regarding constricting band for snakebite
   7. Observe for development of signs and symptoms of an allergic reaction; treat as needed

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)

1. Patients suffering from heat and cold emergencies or those involved in water related emergencies must be promptly recognized through assessment of signs and symptoms.
2. Patients with heat and cold emergencies must be rapidly moved to the ambulance to remove them from the environment.

3. Warming of the cold-exposed patient and cooling of the heat-exposed patient is necessary to reduce the incidence of morbidity and mortality.
4. 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

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content (complete remediation forms).

EVALUATION

Written: Develop evaluation instruments, e.g., quizzes, 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.

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.

MODULE 4

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)
4-8.9 Discuss the risks for developing positional asphyxia. (C-1)

AFFECTIVE OBJECTIVES

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

4-8.10 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:

4-8.11 Demonstrate the assessment and emergency medical care of the patient experiencing a behavioral emergency. (P-1,2)
4-8.12 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.

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 patient’s 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 with equipment approved by medical direction
  1. Soft restraints are preferred

2. Rigid restraints, such as metal handcuffs, should only be applied by law enforcement officers, who must remain available at all times, should the restraints need adjustment

I. Place patient on stretcher. Refer to local protocol. Positioning a patient face down on stretcher may place them at risk for positional asphyxia. EMTs should not hobble or hog-tie any patients.

J. Secure to stretcher with multiple straps. Patient's position should in no way compromise breathing or circulation

K. Cover face with surgical mask if spitting on EMT-Basics

L. Reassess breathing and circulation frequently

M. Documentation
1. Reason for use of restraints
2. Time applied
3. Method of restraint
4. Position of the patient
5. Ongoing assessment findings, including LOC, airway, breathing and circulatory status
6. Other management and treatment

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

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)

1. 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.
2. Because treatment of these emergencies usually requires long term management, little medical intervention can be done in the acute situation.

3. 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 resist.

INSTRUCTOR ACTIVITIES

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content (complete remediation forms).

EVALUATION

Written: Develop evaluation instruments, e.g., quizzes, 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.

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.

MODULE 4

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 pre-delivery 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 pre-delivery emergencies from a normal delivery. (C-3)
4-9.6 State the steps in the pre-delivery 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, and shoulder dystocia. (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)
4-9.19 Discuss the emergency medical care of a patient who has been sexually assaulted. (C-1)
4-9.20 Discuss the process of preserving evidence of an alleged sexual assault. (C-1)

AFFECTIVE OBJECTIVES

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

4-9.21 Explain the rationale for understanding the implications of treating two patients (mother and baby). (A-3)

4-9.22 Appreciate the emotions that a sexual assault victim may be experiencing. (A-1)

PSYCHOMOTOR OBJECTIVES

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

4-9.23 Demonstrate the steps to assist in the normal cephalic delivery. (P-1,2)
4-9.24 Demonstrate necessary care procedures of the fetus as the head appears. (P-1,2)
4-9.25 Demonstrate infant neonatal procedures. (P-1,2)
4-9.26 Demonstrate post delivery care of infant. (P-1,2)
4-9.27 Demonstrate how and when to cut the umbilical cord. (P-1,2)
4-9.28 Attend to the steps in the delivery of the placenta. (P-1,2)
4-9.29 Demonstrate the post-delivery care of the mother. (P-1,2)
4-9.30 Demonstrate the procedures for the following abnormal deliveries: vaginal bleeding, breech birth, prolapsed cord, limb presentation. (P-1,2)
4-9.31 Demonstrate the steps in the emergency medical care of the mother with excessive bleeding. (P-1,2)
4-9.32 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.

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 deliver
   - 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. Clamp, tie and cut umbilical cord (between the clamps) as pulsations cease approximately 4 fingers width from infant
16. Observe for delivery of placenta while preparing mother and infant for transport
17. When delivered, wrap placenta in towel and put in plastic bag; transport placenta to hospital with mother
18. Place sterile pad over vaginal opening, lower mother's legs, help her hold them together
19. 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, 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) 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 K) - 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:
      (1) 60/min
      (2) Reassess after 30 seconds
      (3) If no improvement continue artificial ventilations and reassessments
   b) If less than 80 beats per minute and not responding to bag-valve-mask, start chest compressions
   c) 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 and monitoring pulsations in the cord

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
      a) Immediate rapid transportation upon recognition

b) Place mother on oxygen
c) Place mother in head down position with pelvis elevated

C. 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

D. Shoulder dystocia – occurs when the infant's shoulders get stuck in the birth canal but the head has delivered.
1. Immediate rapid transport
2. Place mother on oxygen
3. Support infant's airway
4. Keep pressure off the umbilical cord

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

F. 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

G. 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

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

VII. Alleged sexual assault - criminal assault situations require initial and on-going assessment/management and psychological care. Emergency medical care:
1. Body substance isolation
2. Airway management
3. Portray a non-judgmental attitude
4. Reassure patient of their safety
5. Crime scene protection
a) Minimize contamination of crime scene
b) Attempt to preserve evidence
c) Minimize number of rescue personnel entering the scene
d) Minimize "chain of evidence"
e) Enlist law enforcement assistance for evidence collection
6. Evidence preservation – discourage patient from:

a) Bathing
b) Voiding or defecating
c) Cleaning wounds
d) Drinking fluids or brushing teeth. If patient insists on brushing teeth, have them chew on gauze first and preserve by placing in a paper bag.
e) Changing clothes. If patient absolutely insists on changing clothes, have them stand on a clean or sterile sheet to undress. Save sheet and patient's clothing in a paper bag.

7. Examine genitalia only if profuse bleeding present
8. Use same gender EMT-Basic for care when possible
9. Follow crime reporting requirements

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)

1. Care of patients with prehospital conditions involving reproductive organs are not common.
2. This private condition to the patient requires the most professional, safe and effective care by the EMT-Basic.
3. 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 head 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

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content (complete remediation forms).

EVALUATION

Written: Develop evaluation instruments, e.g., quizzes, 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.

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.

MODULE 4

Medical/Behavioral and Obstetrics/Gynecology

Lesson 4-10

Acute Abdomen

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:

4-10.1 Describe the structures and function of the organs contained within the abdominal cavity. (C-1)
4-10.2 Define the term acute abdomen. (C-1)
4-10.3 Describe the assessment of a patient with acute abdominal pain. (C-1)
4-10.4 List the signs and symptoms of acute abdominal pain. (C-1)
4-10.5 Explain the steps in providing emergency care to a patient with acute abdominal pain. (C-1)
4-10.6 Discuss possible causes of acute abdominal pain. (C-1)

AFFECTIVE OBJECTIVES

4-10.7 Appreciate the high level of discomfort that a patient with acute abdominal pain will likely exhibit. (A-1)

PSYCHOMOTOR OBJECTIVES

4-10.8 Demonstrate assessment and examination techniques used for acute abdominal pain. (P-2)
4-10.9 Create a management plan to include assessment and treatment for a patient with acute abdominal pain (C-3)
4-10.10 Demonstrate completing a prehospital care report for patients with acute abdominal pain. (P-2)

PREPARATION

Motivation: Patients suffering from an acute abdomen should be thoroughly evaluated for the possible cause of their abdominal pain/discomfort. Providing appropriate pain management and transport is part of the prehospital care for patient's experiencing an acute abdomen.

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 acute abdominal emergencies.

Assistant Instructor: None required.

PRESENTATION

Declarative (What)

I. Structures and function of organs within the abdominal cavity
   - A. Solid organs-liver, spleen, pancreas, kidneys, ovaries
   - B. Hollow organs-esophagus, stomach, small intestines, large intestines, colon, ureters, urinary bladder, uterus, fallopian tubes
   - C. Quadrants
     1. Right upper (RUQ)
     2. Left upper (LUQ)
     3. Right lower (RLQ)
     4. Left lower (LLQ)

II. Definition of acute abdomen - sudden onset of severe abdominal pain, associated with a wide variety of underlying causes

III. Possible causes of acute abdominal pain
   - A. Appendicitis
     1. Inflammation of the appendix
     2. Signs and symptoms
        - a) Nausea and vomiting
        - b) Fever and chills
        - c) Anorexia
        - d) Rebound tenderness
        - e) Radiating pain to the umbilicus
        - f) Abdominal guarding
   - B. Pancreatitis
     1. Inflammation of the pancreas
     2. Signs and symptoms
        - a) Nausea and vomiting

b) Abdominal tenderness and distention
c) Severe pain with radiation for the umbilicus to the back and shoulders
d) May have signs of shock

C. Abdominal aortic aneyrysm (AAA)
1. Weakened, ballooned, and enlarged area of the wall of the abdominal aorta
2. Signs and symptoms
a) Gradual onset of lower lumbar and abdominal pain. Rupture associated with sudden onset of severe, constant abdominal pain
b) Pain described as “tearing”, may radiate to lower back, flank and pelvis.
c) Nausea and vomiting possible
d) Signs of shock
e) Pulsating mass may be felt

D. Other causes of acute abdomen
1. Cholecystitis-inflammation of the gallbladder
2. Intestinal obstruction
3. Hernia
4. Ulcers
5. Esophageal varices

IV. Emergency management
A. Initial assessment - ABCs, look for guarded position, be alert for vomiting and aspiration, shock, prioritize patient
B. Focused History and Physical Exam - SAMPLE History, O-P-Q-R-S-T, baseline vital signs, gentle palpation of 4 quadrants (leaving most painful area for last), assess abdomen for rigidity, tenderness, or masses
C. Keep patient quiet and place in position of comfort, usually flexing the legs is most comfortable (fetal position)
D. Appropriate transport

APPLICATION

Procedural (How)

1. Show illustrations of signs and symptoms of an acute abdomen.
2. Demonstrate the steps in providing emergency medical care to a patient with an acute abdomen.

Contextual (When, Where, Why)

1. Acute abdominal pain is a common condition that EMTs will encounter.
2. Underlying causes vary greatly and may often signal a very serious medical condition.

3. Be certain to assess for life-threatening conditions, make the patient as comfortable, administer oxygen and transport.

STUDENT ACTIVITIES

Auditory (Hear)

1. The student should hear simulations involving the assessment, recognition and emergency medical care of an acute abdomen.

Visual (See)

1. The student should see audio-visual aids or materials of signs and symptoms of an acute abdomen.
2. The student should see a demonstration of the steps in providing emergency medical care to a patient with an acute abdomen.

Kinesthetic (Do)

1. The student should practice the steps in providing emergency medical care to a patient with an acute abdomen.
2. The student should practice completing a prehospital report for patients with an acute abdomen.

INSTRUCTOR ACTIVITIES

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty with content (complete remediation forms).

EVALUATION

Written: Develop evaluation instruments, e.g., quizzes, 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.

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.

MODULE 4

Medical/Behavioral and Obstetrics/Gynecology

Lesson 4-11

Practical Lab: Medical/Behavioral and 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:

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: Severe Allergic Reactions.
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.
Demonstrate the cognitive objectives of Lesson 4-10: Acute Abdomen.

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: Severe Allergic Reactions.
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.
Demonstrate the affective objectives of Lesson 4-10: Acute Abdomen.

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: Severe Allergic Reactions.
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.
Demonstrate the psychomotor objectives of Lesson 4-10: Acute Abdomen.

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 4-10.

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.

APPLICATION

Procedural (How)

1. Instructor should demonstrate the procedural activities from Lesson 4-1: General Pharmacology.
2. Instructor should demonstrate the procedural activities from Lesson 4-2: Respiratory Emergencies.
3. Instructor should demonstrate the procedural activities from Lesson 4-3: Cardiovascular Emergencies.
4. Instructor should demonstrate the procedural activities from Lesson 4-4: Diabetic Emergencies/Altered Mental Status.
5. Instructor should demonstrate the procedural activities from Lesson 4-5: Severe Allergic Reactions.
6. Instructor should demonstrate the procedural activities from Lesson 4-6: Poisoning/Overdose.
7. Instructor should demonstrate the procedural activities from Lesson 4-7: Environmental Emergencies.
8. Instructor should demonstrate the procedural activities from Lesson 4-8: Behavioral Emergencies.
9. Instructor should demonstrate the procedural activities from Lesson 4-9: Obstetrics/Gynecology.
10. Instructor should demonstrate the procedural activities from Lesson 4-10: Acute Abdomen.

Contextual (When, Where, Why)

1. Instructor should review contextual information from Lesson 4-1: General Pharmacology.
2. Instructor should review contextual information from Lesson 4-2: Respiratory Emergencies.
3. Instructor should review contextual information from Lesson 4-3: Cardiovascular Emergencies.
4. Instructor should review contextual information from Lesson 4-4: Diabetic Emergencies/Altered Mental Status.
5. Instructor should review contextual information from Lesson 4-5: Severe Allergic Reactions.
6. Instructor should review contextual information from Lesson 4-6: Poisoning/Overdose.
7. Instructor should review contextual information from Lesson 4-7: Environmental Emergencies.

8. Instructor should review contextual information from Lesson 4-8: Behavioral Emergencies.
9. Instructor should review contextual information from Lesson 4-9: Obstetrics/Gynecology.
10. Instructor should review contextual information from Lesson 4-10: Acute Abdomen.

STUDENT ACTIVITIES

Auditory (Hear)

1. The students should hear the auditory information from Lesson 4-1: General Pharmacology.
2. The students should hear the auditory information from Lesson 4-2: Respiratory Emergencies.
3. The students should hear the auditory information from Lesson 4-3: Cardiovascular Emergencies.
4. The students should hear the auditory information from Lesson 4-5: Severe Allergic Reactions.
5. The students should hear the auditory information from Lesson 4-6: Poisoning/Overdose.
6. The students should hear the auditory information from Lesson 4-7: Environmental Emergencies.
7. The students should hear the auditory information from Lesson 4-8: Behavioral Emergencies.
8. The students should hear the auditory information from Lesson 4-9: Obstetrics/Gynecology.
9. The students should hear the auditory information from Lesson 4-10: Acute Abdomen.

Visual (See)

1. The students should see the visual material from Lesson 4-1: General Pharmacology.
2. The students should see the visual material from Lesson 4-2: Respiratory Emergencies.
3. The students should see the visual material from Lesson 4-3: Cardiovascular Emergencies.
4. The students should see the visual material from Lesson 4-4: Diabetic Emergencies/Altered Mental Status.
5. The students should see the visual material from Lesson 4-5: Severe Allergic Reactions.
6. The students should see the visual material from Lesson 4-6: Poisoning/Overdose.
7. The students should see the visual material from Lesson 4-7: Environmental Emergencies.
8. The students should see the visual material from Lesson 4-8: Behavioral Emergencies.

9. The students should see the visual material from Lesson 4-9: Obstetrics/Gynecology.
10. The students should see the visual material from Lesson 4-10: Acute Abdomen.

Kinesthetic (Do)

1. The students should practice the kinesthetic activities from Lesson 4-1: General Pharmacology.
2. The students should practice the kinesthetic activities from Lesson 4-2: Respiratory Emergencies.
3. The students should practice the kinesthetic activities from Lesson 4-3: Cardiovascular Emergencies.
4. The students should practice the kinesthetic activities from Lesson 4-4: Diabetic Emergencies/Altered Mental Status.
5. The students should practice the kinesthetic activities from Lesson 4-5: Severe Allergic Reactions.
6. The students should practice the kinesthetic activities from Lesson 4-6: Poisoning/Overdose.
7. The students should practice the kinesthetic activities from Lesson 4-7: Environmental Emergencies.
8. The students should practice the kinesthetic activities from Lesson 4-8: Behavioral Emergencies.
9. The students should practice the kinesthetic activities from Lesson 4-9: Obstetrics/Gynecology.
10. The students should practice the kinesthetic activities from Lesson 4-10: Acute Abdomen.

INSTRUCTOR ACTIVITIES

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. 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.

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.

MODULE 4

Medical/Behavioral and Obstetrics/Gynecology

Lesson 4-12

Evaluation: Medical/Behavioral and 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:

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: Severe Allergic Reactions.
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.
Demonstrate knowledge of the cognitive objectives of Lesson 4-10: Acute Abdomen.

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: Severe Allergic Reactions.

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.
Demonstrate knowledge of the affective objectives of Lesson 4-10: Acute Abdomen.

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: Severe Allergic Reactions.
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.
Demonstrate knowledge of the psychomotor objectives of Lesson 4-10: Acute Abdomen.

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 4-10.

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.

PRESENTATION

Declarative (What)

I. Purpose of the evaluation
II. Items to be evaluated
III. Feed back from evaluation

APPLICATION

Procedural (How)

1. Written evaluation based on the cognitive and affective objectives of Lessons 4-1 through 4-10.
2. Practical evaluation stations based on the psychomotor objectives of Lessons 4-1 and 4-10.

Contextual (When, Where and Why)

1. 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.
2. This modular evaluation is given to determine the effectiveness of the presentation of materials and how well students have retained the material.
3. 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

1. Supervise student evaluation.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. 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.