Revised 03/29/00 Epinephrine auto-injector

Medical / Behavioral and Obstetrics / Gynecology

Lesson 4-5
Allergies

OBJECTIVES

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

COGNITIVE OBJECTIVES

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

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

AFFECTIVE OBJECTIVES

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

PSYCHOMOTOR OBJECTIVES

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

PREPARATION

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

Prerequisites: BLS, Preparatory, Airway and Patient Assessment.

MATERIALS

AV Equipment: Utilize various audio-visual materials relating to allergic emergencies. The continuous design and development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to assure meeting the objectives of the curriculum.

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

PERSONNEL

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

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

Recommended Minimum Time to Complete: Two hours

PRESENTATION

Declarative (What)

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

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

D. Emergency medical care of severe allergic reactions (anaphylaxis).

1. Determine that the patient's history includes a history of anaphylaxis, severe allergic reactions **and/or** recent exposure to an allergen or inciting agent.
    a. Perform initial assessment.
    b. Perform focused history and physical exam.
        (1) History of allergies.
        (2) What was patient exposed to.
        (3) How were they exposed.
        (4) What effects.
        (5) Time of onset.
        (6) Progression.
        (7) Interventions.
    c. Assess baseline vital signs and SAMPLE history.
2. Administer high concentration oxygen.
3. Assess the cardiac and respiratory status of the patient.
    a. If **both** the cardiac and respiratory status of the patient are normal, transport the patient, reassessing the patient's condition frequently during the transport.
    b. If **either** the cardiac or respiratory status of the patient is **abnormal** proceed as follows:
        (1) If the patient is having severe respiratory distress **or** shock **and** has been prescribed an epinephrine auto-injector, assist the patient in administering the epinephrine. If the patient's auto-injector is not available or expired, and the EMS agency carries an epinephrine auto-injector, administer the epinephrine as authorized by the agency's medical director.
        (2) If the patient has not been prescribed an epinephrine auto-injector, begin transport and contact medical control for authorization to administer the epinephrine auto-injector, if available.

(a) In the event that you are unable to make contact with medical control (radio failure, no communications) and the patient is <u>under</u> 35 years of age, you may administer the epinephrine auto injector as indicated. The incident should be reported to Medical Control or your Agency Medical Director as soon as possible.

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

(3). If the patient has already received a dose of epinephrine, begin transport and contact medical control for authorization for a second administration of the epinephrine auto-injector, if needed.

(4). Refer immediately to the <u>appropriate</u> Respiratory Arrest, Respiratory Distress, Obstructed Airway or Shock protocol.

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

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 cares for the treatment of the patient exhibiting the assessment findings of a severe allergic reaction (anaphylaxis).
   b. Medication is prescribed for this patient by their physician, you are directed to administer the medication by Medical Control or you are unable to contact Medical Control and epinephrine is indicated.
   c. Administration of medication is authorized by the Regional Medical Advisory Committee or a physician (Emergency Health Care Provider).
3. Contraindications - no contraindications when used in a life-threatening situation involving an anaphylactic reaction with respiratory distress or shock.
4. Medication form - liquid administered via an automatically injectable needle and syringe system.
5. Dosage
   a. Adult - one adult auto-injector (0.3 mg)
   b. Infant and child - under 9 years old or less than 30 kg (66 lbs.) one infant/child auto-injector (0.15 mg)
6. Administration
   a. Obtain order from medical direction either on-line or protocol.
   b. Obtain patient's prescribed auto-injector if available.
      (1) Ensure that the prescription is written for the patient experiencing allergic reaction.
      (2) Ensure that the medication is not discolored.

      Note: If the patient's auto-injector is not available and the EMS unit has an epinephrine auto-injector, administer the epinephrine as authorized by the Agency's Medical Director.

c. Remove safety cap from the auto-injector.
d. Place tip of auto-injector against the patient's thigh.
(7) Lateral portion of the thigh.
(8) Midway between the waist and the knee.
e. Push the injector firmly against the thigh until the injector activates.
f. Hold the injector in place until the medication is injected.
g. Record activity and time.
h. Dispose of injector in biohazard container.

7. Actions
a. Dilates the bronchioles.
b. Constricts blood vessels.

8. Side effects
a. Increases heart rate
b. Pallor
c. Dizziness
d. Chest pain / Sudden Death
e. Headache
f. Nausea
g. Vomiting
h. Excitability, anxiousness

9. Re-assessment strategies
a. Transport.
b. Continue focused assessment of airway, breathing and circulatory status.
(1) Patient condition continues to worsen.
(a) Decreasing mental status
(b) Increasing breathing difficulty
(c) Decreasing blood pressure
(d) Obtain medical direction
(e) Prepare to initiate Basic Cardiac Life support measures.
- CPR
- AED
- ACLS intercept
(2) Provide supportive care.
(a) Oxygen
(b) Treat for shock (hypoperfusion).

SUGGESTED APPLICATION

Procedural (How)

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

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

Contextual (When, Where, Why)

The EMT-Basic will now be able to administer epinephrine auto-injectors. This will make a significant difference in those patients exposed having a severe allergic reaction (anaphylaxis).

The administration of the epinephrine should be performed as soon as possible following appropriate identification of a severe allergic reaction (anaphylaxis).

STUDENT ACTIVITIES

Auditory (Hear)

1. The student should hear the assessment findings differentiating minor and severe allergic reactions (anaphylaxis).
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 a severe allergic reaction (anaphylaxis).
3. The student should practice re-assessment and documentation relative to the use of a epinephrine auto-injector.

INSTRUCTOR ACTIVITIES

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

EVALUATION

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

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

REMEDIATION

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

SUGGESTED ENRICHMENT

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