

**EPINEPHRINE AUTO-INJECTOR TRAINING MODULE  
Pennsylvania Department of Health  
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This is a general outline for the basic EMT or continuing education training on the primary use of epinephrine auto-injectors. All EMTs who wish to administer primary use epinephrine auto-injectors are required to attend a didactic and practice session prior to using one carried by an ambulance service or QRS. Epinephrine is a sympathomimetic drug. It is indicated in the emergency treatment of allergic reactions from insect stings or bites, foods, drugs, other allergens and idiopathic anaphylaxis. It can be administered subcutaneous or intramuscularly. The following provides a general curriculum for training:

**1) Introduction**

**A) Discussion of allergic reactions.**

**a) Definition**

(1) An exaggerated immune response to any substance

**b) Possible causes**

- (1) Insect bites/stings -bees, wasps, etc.
- (2) Food -nuts, crustaceans, peanuts, etc.
- (3) Plants
- (4) Medications
- (5) Others

**B) Discussion of physical findings**

**a) Skin**

- (1) Patient may state he has a warm tingling feeling in the face, mouth, chest, feet and hands.
- (2) Itching
- (3) Hives
- (4) Red skin (flushing)
- (5) Swelling to face, neck, hands, feet and/or tongue

**b) Respiratory (Findings of respiratory distress may indicate a severe allergic reaction.)**

- (1) Patient may state he feels tightness in his throat/chest.
- (2) Cough
- (3) Rapid breathing
- (4) Labored breathing
- (5) Noisy breathing
- (6) Hoarseness (losing the voice)
- (7) Stridor
- (8) Difficulty swallowing
- (9) Wheezing (audible without stethoscope)

**c) Cardiac and/or shock (Findings of shock may indicate a severe allergic reaction.)**

- (1) Increased heart rate
- (2) Irregular heart rhythm
- (3) Decreased blood pressure

**d) General findings**

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- (1) Itchy, watery eyes
  - (2) Headache
  - (3) Sense of impending doom
  - (4) Runny nose
- e) Mental status
- (1) Decreasing level of consciousness

### C) Emergency assessment and treatment

**NOTE:** Statewide BLS treatment protocols represent the most current standard approved by the Department for the treatment of anaphylaxis including the use of epinephrine auto-injectors by EMTs. EMTs and ambulance or QRS services are required to make sure they are using the most up-to-date version of the protocol available from the Department. They will supercede any training guidelines outlined in this section.

- a) Initial assessment
- b) Focused history and physical exam
  - (1) History of allergies
  - (2) What was patient exposed to
  - (3) How were they exposed?
  - (4) What affects
  - (5) Progression
  - (6) Interventions
- c) Supportive airway care
  - (1) Administer high flow oxygen if available
- d) Baseline vital signs and SAMPLE history
- e) If an epinephrine auto-injector is not available -transport immediately -call for ALS
- f) Medical command physician contact
  - (1) Follow directions provided by medical command physician
  - (2) If unable to contact medical command and
    - (a) Patient has severe generalized hives or swelling to face, neck, hands, feet, tongue
    - (b) And/or hoarseness or stridor or wheezing or tightness in throat/chest
    - (c) And/or decreased mental status
    - (d) And/or an assessment that reveals shock (hypoperfusion) or respiratory compromise;
  - (3) **PROCEED WITH ADMINISTRATION OF EPINEPHRINE AUTO-INJECTOR**
    - (a) Patient weighing less than 30 kg. (65 lbs.)  
0.15mg=0.3mL of 1:2000 solution of epinephrine (1.7 mL will remain in the auto-injector after use.)
    - (b) Patients weighing more than 30 kg. (65 lbs.)  
0.30 mg=0.3 mL of 1: 1000 solution of epinephrine (1.7 mL will remain in the auto-injector after use.)
  - (4) Repeat physical assessment at least every five (5) minutes ~
  - (5) Continue to attempt medical command contact every 5 minutes
- g) Documentation
  - (1) Documentation of appropriate indication for use
  - (2) Documentation of adverse events
  - (3) Documentation of dosage, route and response

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### **(4) Documentation of repeat assessments and treatment of adverse outcomes**

#### **D) Discussion of immediate use:**

##### **a) Mild versus severe reactions**

- (1) Patient has contact with substance that causes allergic reaction without signs of respiratory distress or shock (hypoperfusion).**
  - (a) Continue with focused assessment**
  - (b) Reassess every five minutes**
  - (c) Contact medical command**
- (2) A patient not wheezing or without signs of respiratory compromise or hypoperfusion should not receive epinephrine. .**
  - (a) Repeat dosing**
  - (b) As ordered by medical command**

#### **2) Pharmacology**

**A) Review actions of sympathomimetic drug. Sympathomimetic drugs mimic or stimulate the response of the sympathetic nervous system.**

- a) Adrenaline, a hormone produced by the body, is released when the body is stressed, resulting in an increased heart rate and the transfer of glycogen into glucose-- fuel the body can use during the stress episode. This defense mechanism is often called "fight or flight" and prepares the body for strenuous activity.**

**B) Examples of medication names are epinephrine (generic) or Adrenalin1 (trade).**

- a) Rapid onset administered SQ or IM**
- b) Short duration of action**
- c) Mechanism of action**
  - (1) Dilates bronchioles**
  - (2) Constricts blood vessels**

#### **C) Indications**

- a) Emergency medical care for the treatment of the patient exhibiting the assessment findings of an allergic reaction which include:**
  - (1) Severe generalized hives or swelling to face, neck, hands, feet, tongue**
  - (2) Difficulty swallowing**
  - (3) Difficulty breathing**
  - (4) Hoarseness**
  - (5) Stridor**
  - (6) Wheezing**
  - (7) Tightness in throat/chest**
  - (8) Decreased mental status or assessment that reveals shock (hypoperfusion) or respiratory compromise.**

#### **D) Side Effects of Epinephrine**

- (1) Increases heart rate**
- (2) Palpitations**
- (3) Pallor**

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- (4) Dizziness**
- (5) Chest pain (6) Headache**
- (7) Nausea/vomiting**
- (8) Excitability, anxiousness**
- (9) Sweating**
- (10) Dilated pupils**

### **E) Contraindications for Epinephrine**

- a) No contraindications when used in life-threatening situation.**

### **F) Relative contraindications concerns**

- a) Stroke or heart attack may occur in elderly patients or patients with a history of heart disease or hypertension.**

### **G) Incompatibilities**

- a) Prolonged light exposure**
- b) Low temperatures**

### **H) Medication Form**

- a) Injectable sterile solution packaged in a disposable delivery system featuring spring activation and a concealed needle.**

### **I) Dosage/Packaging**

- a) EpiPen Auto-injector 0.3mg/0.3 mL delivered --2mL volume in syringe**
- b) EpiPen Jr. Auto-injector 0.15mg/0.3 mL delivered--2mL volume in syringe**

**Note: Although a single manufacturer in the US currently provides epinephrine auto-injectors under the brand name of EpiPen®, the Department does not endorse or approve any particular device and reserves the right to approve additional devices as they become available.**

### **J) Care and Storage**

- a) Store in a dark place at room temperature (59-86 degrees F).**
- b) Do NOT refrigerate.**
- c) Do NOT expose to extreme cold or heat.**
- d) Note expiration date on the unit (month and year). Replace before expiration date.**
- e) Examine contents in clear window of the auto-injector monthly.**
- f) Replace the unit if the solution is discolored or contains solid particles (precipitate).**
- g) Plastic carrying tube provides added UV protection.**

### **K) Administration of medication**

- a) Attempt to obtain medical command**
- b) Continue to attempt contact every five (5) minutes if initial contact fails**
- c) Obtain epinephrine auto-injector carried by the ambulance service or QRS**

**NOTE: Practitioner may use patient's own prescribed auto-injector, if the medication is more readily available than the ambulance service or QRS auto-injector**

- d) Examine medication for cloudiness, discoloration, syringe damage and expiration date, drug name, drug dose, and route**

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### e) Prepare medication for administration

- (1) Remove safety cap from the auto-injector
- (2) Identify proper site for injection
  - (a) Place tip of auto-injector against the patient's thigh
  - (b) Lateral portion of the thigh
  - (c) Midway between the waist and the knee

### f) Injection technique

- (1) Push the injector firmly against the thigh until the injector activates
- (2) Hold the injector in place until the medication is injected (5-10 seconds)
- (3) Documentation of site, response and side effects
- (4) Record activity and time
- (5) Waste disposal
- (6) Dispose of auto-injector in sharps disposal container

**NOTE:** Sharps disposal containers should be of sufficient thickness or construction design to be durable, leak resistant, and puncture resistant under normal use and stresses imposed during storage, handling, installation, use, closure, and transport by the user before final disposal.

### g) Reassessment strategies

- (1) Transport
- (2) Continue focused assessment of airway, breathing and circulatory status
  - ▶ Patient condition continues to worsen
    - Decreasing mental status
    - Increasing breathing difficulty.
    - Decreasing blood pressure
      - (a) Contact medical command physician
      - (b) Additional dose of epinephrine
      - (c) Treat for shock (hypoperfusion)
      - (d) Administer oxygen
      - (e) Prepare to initiate Basic Cardiac Life support measures
      - (f) CPR
      - (g) AED
  - ▶ Patient condition improves
    - (a) Provide supportive care
    - (b) Oxygen
    - (c) Treat for shock (hypoperfusion)

## 3) Incorporation into Protocol

This module generally follows the present epinephrine auto-injector EMT teaching module with the exception that the NSC module was written from a *patient-assisted* perspective. Because epinephrine auto-injectors may now be used by EMTs as a primary treatment option for acute anaphylaxis (within regulations described by the Department), an ambulance service or QRS may procure and stock the medication in a medical pack for the treatment of acute life-threatening allergic reactions. This would require a medical command order whenever possible. EMTs approved by their service medical director to administer epinephrine auto-injectors are required to maintain a current copy of and

## Epinephrine Auto-Injector Training Module (Course # 004124)

Follow the most current statewide BLS treatment protocols when administering epinephrine auto-injectors.

### 4) QA Guidelines

The EMS Patient Care Report (PCR) will be completed by the EMT and forwarded to the medical director for review. In addition to the usual documentation requirements for PCRs, authorized EMTs shall include the following information related to the use of epinephrine auto-injectors:

- Documentation of appropriate indication for use
- Documentation adverse events
- Documentation of effectiveness
- Documentation of dosage, route and response
- Documentation of repeat assessments and treatment of adverse outcomes
- Medical command physician contact

The service medical director should conduct a QA/QI review of all epinephrine auto-injector uses for:

- Response time( s )
- Recognition of anaphylaxis
- Appropriate indication for use
- Timeliness to administration
- Proper documentation
- Patient outcome

### 5) Practice Workshop

- Verbally review physical exam and assessment findings differentiating minor and severe allergic reactions.
- Verbally review steps required to appropriately administer the epinephrine auto-injector.
- Use various audio visual aids or materials to show physical findings of minor and major allergic reactions.
- Demonstrate actual epinephrine auto-injector.
- EMT practice physical exam and assessment of patient with allergic reaction.
- EMT practice correct administration of epinephrine auto- injector.
- EMT role-plays treatment of patient experiencing acute allergic reaction.
- EMT practice reassessment and documentation.

### 6) Questions

### 7) Evaluation

#### A) Practical - PERFORMANCE EVALUATION FORM

- a) Pass- student must complete at least 75% (11 of 14) general criteria; 100% of critical criteria
- b) Fail- One retest permitted after reviewing student's test performance. No additional training review should be provided.
  - (1) Continued failure requires remediation.

Epinephrine Auto-Injector Training Module (Course # 004124)

**EPINEPHRINE AUTO-INJECTOR  
PERFORMANCE EVALUATION FORM**

EMT name and certification number: \_\_\_\_\_ # \_\_\_\_\_  
Date: \_\_\_\_\_

**Yes**                      **No**

1. Performs initial assessment
2. Performs focused history and physical exam
3. Attempts medical command contact
4. Recognizes mild symptoms of allergic reaction
5. Recognizes severe symptoms of allergic reaction
6. Obtains auto-injector from patient or medical kit
7. Checks medication's expiration date and condition
8. Demonstrates proper handling and preparation of medication
9. Selects appropriate injection site
10. Demonstrates proper administration of medication
11. Verbalizes patient's response to treatment
12. Attempts to contact medical command if initial attempt failed
13. Properly discards auto-injector
14. Performs reassessment during transport

**Critical criteria:**

- \_\_\_ Did not attempt medical command contact
- \_\_\_ Did not recognize mild vs. severe reaction
- \_\_\_ Did not check auto-injector for date
- \_\_\_ Performed incorrect administration of medication
- \_\_\_ Failed to perform assessment after administration

Pass \_\_\_\_\_

Fail \_\_\_\_\_

Signature of reviewer \_\_\_\_\_

**PENNSYLVANIA DEPARTMENT OF HEALTH**  
**Epinephrine Auto-Injector**  
**Requirements and Recommendations for BLS Services**

**GOAL:** To reduce morbidity and mortality rates due to anaphylaxis through the primary use of an epinephrine auto-injectors by emergency medical technicians (EMTs) through collaborative relationships with regional EMS councils, local EMS agencies, and the PA Department of Health (Department).

**AUTHORITY:**

EMTs are authorized under regulations promulgated by the Department to assist a patient to administer drugs previously prescribed for the patient, as specified by the Statewide BLS treatment protocols. Those protocols permit EMTs to assist patients with the administration of epinephrine by auto-injector when the patient is carrying his or her own prescribed epinephrine.

The Statewide BLS protocols are written to permit an EMT with appropriate training, when functioning with an ambulance service or QRS that is recognized by the Department to carry epinephrine auto-injectors, and with the approval of the ambulance service or quick response service (QRS) medical director, to use an epinephrine auto-injector to administer epinephrine via subcutaneous or intramuscular routes in accordance with those protocols or medical command orders. The Department, pursuant to its responsibility under the EMS Act (35 p.S. § 6924) to guide and coordinate the development of emergency medical programs into a unified Statewide system and recognizing the importance of epinephrine auto-injectors to an effective emergency medical services system, has, through the Emergency Medical Services Office, drafted the following requirements and recommendations for ambulance services and QRSs that wish to carry and use epinephrine auto-injectors.

All aspects of the requirements are subject to inspection by the regional EMS council during scheduled or unscheduled inspections of a service that decides to carry and use epinephrine auto-injectors.

**QRS AND AMBULANCE SERVICE RECOGNITION:**

Ambulance services and QRSs that demonstrate compliance with these requirements will be permitted to carry epinephrine auto-injectors, and through their medical director, authorize qualified EMTs to use an epinephrine auto-injector to administer epinephrine via subcutaneous or intramuscular routes in accordance with the Department's regulations and the statewide medical treatment protocols or medical command orders.

# **Pennsylvania Epinephrine Auto-Injector Requirements and Recommendations for BLS Services**

## **A. SERVICE REQUIREMENTS**

### **1. Ambulance services and QRSs carrying epinephrine auto-injectors must:**

- a. Be recommended by the regional EMS council to the Department for approval to carry epinephrine auto-injectors.**
- b. Have a medical director who is willing to serve in an oversight capacity for the services use of epinephrine auto-injectors.**
- c. Ensure that authorized EMTs are trained in the proper module (course # 004124) for primary use of epinephrine auto-injectors. NOTE: The current EMT basic curriculum includes a patient-assisted module that is not as comprehensive and does not contain the objectives or skill verification requirements outlined in course # 004124.**
- d. Ensure reporting of device usage via the State- approved EMS patient care report (PCR**
- e. Participate in a quality assurance program, as defined by the regional EMS council.**
- f. Maintain a quantity of two (2) each of adult (0.3 mg/0.3 mL of 1: 1000 solution) and pediatric (0.15 mg/0.3 mL of 1:2000 solution) dose epinephrine auto-injectors with the required equipment for the ambulance service or QRS.**
- g. Maintain a monthly inspection log to verify that a visual examination of each epinephrine auto-injector has been accomplished.**

### **SAMPLE OF INSPECTION LOG:**

**a. Is attached**

- h. Maintain a roster of EMTs authorized for primary use of epinephrine auto- injectors.**
- i. Maintain a proper sharps disposal unit.**  
**NOTE: Sharps disposal containers should be of sufficient thickness or construction design to be durable, leak resistant, and puncture resistant under normal use and stresses imposed during storage, handling, installation, use, closure, and transport by the user before final disposal.**

## **Pennsylvania Epinephrine Auto-Injector Requirements and Recommendations for BLS Services**

- j. Comply with manufacturers care and storage requirements for epinephrine auto-injectors:
  - Store in a dark place at room temperature (59-86 degrees F'). .Do NOT refrigerates.
  - Do NOT expose to extreme cold or heat.
  - Note expiration date on the unit (month and year). Replace before expiration date.
  - Examine contents in clear window of the auto-injector monthly.
  - Replace the unit if the solution is discolored or contains solid particles (precipitate).
  - Protect from prolonged exposure to UV rays.
- k. Ensure that qualified EMTs have access to contact information for local medical command facilities.

### **B. PERSONNEL**

#### **1. Medical Director**

**NOTE:** BLS services may have one medical director who functions as a BLS service medical director or a physician who serves to provide oversight for the use of epinephrine auto-injectors only. The following requirements pertain to the oversight function of epinephrine auto-injectors.

#### **REQUIRED:**

- a. MD/DO with currently registered license to practice in Pennsylvania

#### **RECOMMENDED:**

- a. Board certified in emergency medicine or ACLS provider

#### **ROLES AND RESPONSIBILITIES:**

- a. Verify that the BLS service meets epinephrine auto-injector training requirements.
- b. Oversee all quality assurance requirements.
- c. Authorize EMTs for primary use of epinephrine auto-injectors and review the services roster of authorized EMTs.
- d. Identify skill maintenance requirements.
- e. QA review of EVERY case of epinephrine auto-injector use by an EMT.

#### **2. EMT authorized to administer epinephrine auto-injector**

#### **REQUIRED:**

- a. EMT certification.
- b. Successfully complete Department approved CE course # 004124 related to primary use of epinephrine auto-injectors.

## **Pennsylvania Epinephrine Auto-Injector Requirements and Recommendations for BLS Services**

- c. Authorized by the service's medical director for epinephrine auto- injectors.

### **ROLES AND RESPONSIBILITIES:**

- a. Follows current statewide BLS treatment protocols in the administration of an epinephrine auto-injector.
- b. Adheres to skill maintenance requirements established by the medical director.
- c. Complete EMS patient care report (PCR) and forward to the medical director for review. In addition to the usual documentation requirements for PCRs, authorized EMTs shall include the following information related to the use of epinephrine auto-injectors:
  - Documentation of appropriate indication for use .Documentation of adverse events
  - Documentation of dosage, route and response
  - Documentation of repeat assessments and treatment of adverse outcomes
  - Medical command physician contact (including actual contact or attempts to contact and physician orders.)

### **REGIONAL EMS COUNCIL**

1. Ensure that BLS services wishing to carry and use epinephrine auto- injectors comply with service and personnel requirements prescribed by the Department.
2. Recommend BLS services to the Department for approval to carry and use epinephrine auto-injectors.

**Note:** Although a single manufacturer currently provides epinephrine auto-injectors under the brand name of EpiPen the Department does not endorse or approve any particular device.