

TRAINING PROTOCOLS FOR THE EMERGENCY ADMINISTRATION OF EPINEPHRINE BY EMERGENCY MEDICAL RESPONDERS

INDIANA DEPARTMENT OF HOMELAND SECURITY, EMS DIVISION

INDIANAPOLIS, IN 47804

This document provides a model training standard for certified Emergency Medical Responders (EMRs) in the administration of epinephrine via auto-injector in accordance with the Indiana EMS Commission policy. This model is intended to provide guidelines for training certified individuals and the departments whose provider Medical Director has approved the use of auto-injector in that department for its EMSs.

I. INTRODUCTION

In 2014, the Indiana EMS Commission (the Commission) asked the Technical Advisory Committee (TAC) to develop a policy that addresses the administration of epinephrine via auto-injectors for EMSs. This request was subsequently directed to a sub-committee who presented a recommendation that under certain circumstances, EMSs be allowed to utilize auto-injectors (see Recommendation, Appendix A). The Commission accepted the recommendation in principle and asked the TAC to develop a model training program on behalf of the Commission for providers to utilize in adding this capability to EMR providers and departments.

ii TAC RECOMMENDATIONS

After careful consideration of the studying sub-committee of the TAC, it is the recommendation of that sub-committee that for current EMR provider Organizations:

1. The TAC recommend the addition of the EPI-Pen to the EMR Provider certification level as an option to carry and use with the permission of the Provider's Medical Director; and
2. That if a Provider Organization elects to carry and train its EMR certified personnel on the safe application and operation of the EPI-Pen with the agreement of its Medical Director, then the Provider Organization be responsible for training and documenting competency of its EMR certified technicians. .

It is further recommended that:

1. A standardized online training be developed by IDHS to document this training; and
2. That it be mandatory for technicians volunteering or working with services carrying EPI-Pens; and
3. That it be optional for technicians with services choosing not to carry the EPI-Pen.

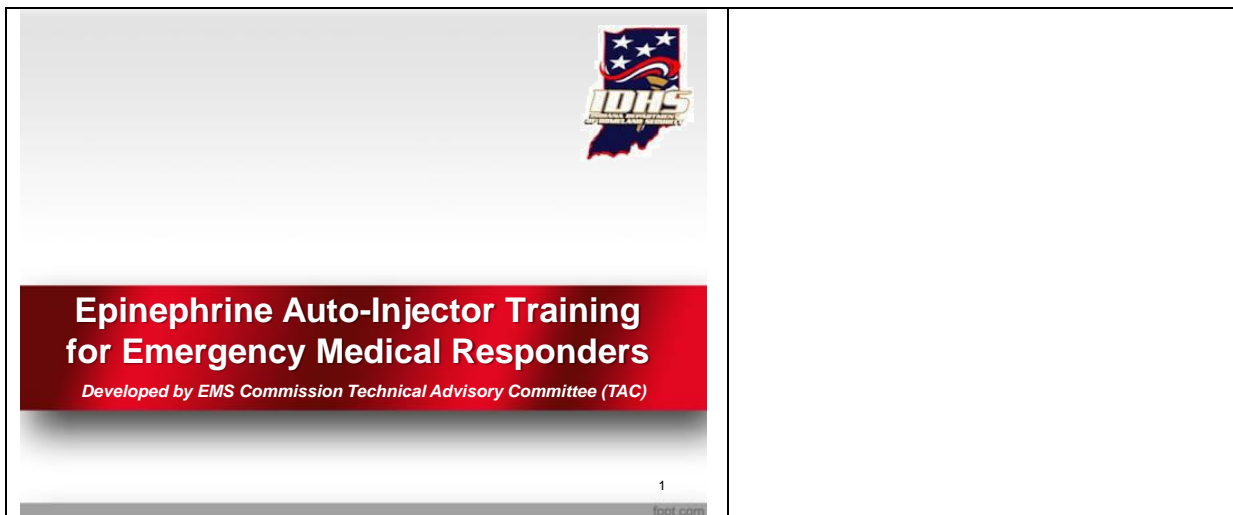
It is also the recommendation of the sub-committee that for New EMR Certification Classes:

1. EPI-Pen training be added to the curriculum using the EMT EPI-Pen training module; and
2. That the training institution be responsible for documenting competency of its students to the satisfaction of its Medical Director.

III. OBJECTIVES OF TRAINING

- Identify the common causes of allergic reactions.
- Identify signs and symptoms of severe allergic reactions (anaphylaxis), and their differences from other medical emergencies.
- Identify the steps for administration of epinephrine by auto-injector.
- Enumerate acceptable methods for safely storing, handling, and disposing of the auto-injector.
- Verbalize an understanding of safety issues when using an Epi Pen including before and after administration issues.
- Demonstrate knowledge of the conditions under which Certified Indiana EMR individuals' services can possess and use the epinephrine auto injector.
- Demonstrate knowledge of the conditions under which Certified Indiana EMR individuals' services can possess and use the epinephrine auto injector.

IV THE POWERPOINT



Objectives

After completing this training program, participants will be able to:

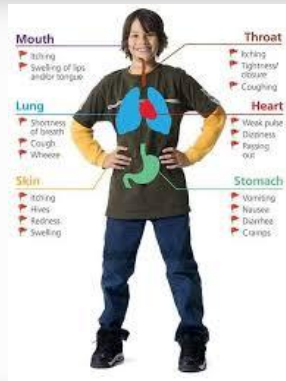
- Identify the common causes of allergic reactions.
- Identify signs and symptoms of severe allergic reactions (anaphylaxis), and their differences from other medical emergencies.
- Identify the steps for administration of epinephrine by auto-injector.
- Enumerate acceptable methods for safely storing, handling, and disposing of the auto-injector.
- Verbalize an understanding of safety issues when using an Epi Pen including before and after administration issues.
- Demonstrate knowledge of the conditions under which Certified Indiana EMR individuals' services can possess and use the epinephrine auto injector.



fppt.com

Signs and Symptoms

- Presentation of symptoms



fppt.com

Allergic reactions can present in many different forms, and can range from watery eyes and runny nose, to severe respiratory problems and hypotension.

Allergic Reactions

- An allergic reaction is defined as an exaggerated response of the body to a foreign substance, known as an allergen, that is trying to neutralize or get rid of that substance.
- Most allergic reactions are unpleasant, and relatively harmless, but others can be more serious, even life threatening. These more serious reactions are referred to as *Anaphylaxis*.
- Allergic reactions can be unpredictable.



fppt.com

An allergic reaction is defined as an exaggerated response of the body to a foreign substance, known as an allergen, that is trying to neutralize or get rid of that substance. Most allergic reactions are unpleasant, and relatively harmless, but others can be more serious, even life threatening. These more serious reactions are referred to as *Anaphylaxis*. Allergic reactions can be unpredictable.

Anaphylaxis

- Anaphylaxis is a result of exposure to an allergen, which causes a rapid dilation of blood vessels, and can cause hypotension.
- It will also swell respiratory tissues, causing constriction of airways and can even cause full airway obstruction.

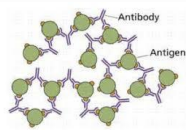
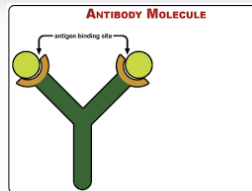


fppt.com

Anaphylaxis is a result of exposure to an allergen, which causes a rapid dilation of blood vessels, and can cause hypotension. It will also swell respiratory tissues, causing constriction of airways and can even cause full airway obstruction.

Anaphylaxis

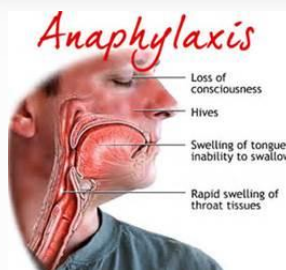
- People do not have reactions the first time they are exposed to an allergen.
- The body forms antibodies to fight the allergen.
- After subsequent exposures, antibodies combine with the allergen to produce the allergic response.



fppt.com

Antibodies are proteins that are produced by the body to fight the intrusion of foreign molecules, such as toxins or other poisons. The antibodies are designed to bind very tightly to their target molecules.

Anaphylactic Shock



- Anaphylaxis or Anaphylactic Shock is a severe reaction to an allergen that can be fatal if not treated immediately.



fppt.com

Anaphylaxis or Anaphylactic Shock is a severe reaction to an allergen that can be fatal if not treated immediately.

Some Causes of Allergic Reactions

- Insects
- Foods
- Plants
- Medications
- Miscellaneous



fppt.com

Insects
Foods
Plants
Medications
Miscellaneous

Insects

- Most common reactions come from stings from bees, wasps, yellow jackets and hornets.
- Reaction can be rapid and severe due to the sting being quickly absorbed into the bloodstream.



fppt.com

Most common reactions come from stings from bees, wasps, yellow jackets and hornets. Reaction can be rapid and severe due to the sting being quickly absorbed into the bloodstream.

Food

- The most common food allergies include nuts, eggs, milk and shellfish.
- Peanut allergies are commonly more rapid and severe than other food allergies.
- Normal food allergic reactions are generally slower onset than insect stings.



fppt.com

The most common food allergies include nuts, eggs, milk and shellfish. Peanut allergies are commonly more rapid and severe than other food allergies. Normal food allergic reactions are generally slower onset than insect stings.

Plants

- Probably the most common cause of allergy.
- Contact with “poison” plants (ivy, oak, sumac), will cause allergic reactions, characterized by rashes.
- Plant pollen is also a cause of allergies in many people.
- Plant allergic reactions are rarely severe enough to be characterized as anaphylaxis.



#ADAM



fppt.com

Contact with “poison” plants (ivy, oak, sumac), will cause allergic reactions, characterized by rashes. Plant pollen is also a cause of allergies in many people. Plant allergic reactions – while probably the most common form of allergy -- are rarely severe enough to be characterized as anaphylaxis.

Medications

- Common medication allergies are to antibiotics, like penicillin or other meds like aspirin, ibuprofen, morphine, anticonvulsants, and chemotherapy to name a few.
- People with penicillin allergies are usually allergic to related antibiotics as well.
- Swelling or rash is the most usual reaction.
 - Swelling of the face, lips, gums or airway is most critical reaction.

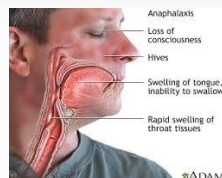


fppt.com

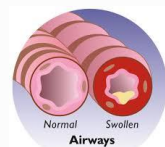
Common medication allergies are to antibiotics, like penicillin or other meds like aspirin, ibuprofen, morphine, anticonvulsants, and chemotherapy to name a few. People with penicillin allergies are usually allergic to related antibiotics as well. Swelling or rash is the most usual reaction. Swelling of the face, lips, gums or airway is most critical reaction.

Medications

- Medication allergies are usually not severe enough to be classified as anaphylaxis but there are some exceptions.
- Allergies to medications can cause severe swelling of the tongue, lips and airway and pose potential breathing issues when they do.



#ADAM



fppt.com

Medication allergies are usually not severe enough to be classified as anaphylaxis but there are some exceptions. Allergies to medications can cause severe swelling of the tongue, lips and airway and pose potential breathing issues when they do.

Miscellaneous Allergens

- There is a vast number of different substances to which people can potentially be allergic.
 - Dust, chemicals, make-up and soaps are common.
 - Many people, including EMS providers, are allergic to latex.
- While these substances rarely cause anaphylaxis, it is still important to know when treating such patients.



Penicillin Reaction

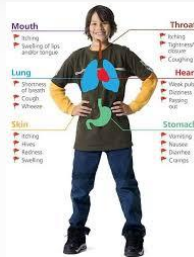


fppt.com

There is a vast number of different substances to which people can potentially be allergic. Dust, chemicals, make-up and soaps are common.

Physical Findings

- HEENT Exam: Itchy and/or watery eyes, headache, runny nose dysphasia, larynx.
- Skin: Swelling of face, lips, tongue, neck, or hands. Also itching, red, raised skin (hives), or cool, clammy skin and delayed cap refill (signs of hypoperfusion or shock).
- Breathing: Coughing, rapid breathing, noisy breathing, change in voice, loss of voice, wheezing or stridor.
- Breathing changes are sure signs of anaphylaxis.



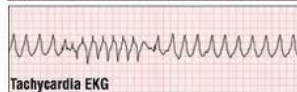
fppt.com

HEENT (which stands for Head, Eyes, Ears, Nose and Throat) Exam: Itchy and/or watery eyes, headache, runny nose dysphasia, larynx. Skin: Swelling of face, lips, tongue, neck, or hands. Also itching, red, raised skin (hives), or cool, clammy skin and delayed cap refill (signs of hypoperfusion or shock). Breathing: Coughing, rapid breathing, noisy breathing, change in voice, loss of voice, wheezing or stridor.

Breathing changes are sure signs of anaphylaxis.

Physical Findings – Cont.

- Heart: Tachycardia (rapid heart beat), hypotension,
- Mentation: Altered Mental Status, either partial or full loss of consciousness.



fppt.com

Heart: Tachycardia (rapid heart beat), hypotension, Mentation: Altered Mental Status, either partial or full loss of consciousness.

The Epinephrine Auto-Injector

- Definition: Liquid Medication administered by an automatically injecting needle and syringe system.
- Medication Name
 - Generic: Epinephrine
 - Trade: Adrenalin TM
 - EpiPen[®] or EpiPen Jr. [®] are brand names



fppt.com

Definition: Liquid Medication administered by an automatically injecting needle and syringe system.

Medication Name

Generic: Epinephrine

Trade: Adrenalin TM

EpiPen[®] or EpiPen Jr. [®] are brand names

The Epinephrine Auto-Injector

- Indications
 - Signs and symptoms of severe allergic reaction.
 - Epinephrine Auto-Injector is prescribed to patient by a doctor.
 - Medical Direction has been notified if the patient does not have a prescription for an auto injector.
- Contraindications
 - None in a life threatening scenario.



fppt.com

Indications

Signs and symptoms of severe allergic reaction.

Epinephrine Auto-Injector is prescribed to patient by a doctor.

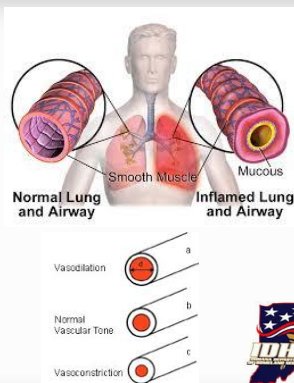
Medical Direction has been notified if the patient does not have a prescription for an auto injector.

Contraindications

None in a life threatening scenario.

The Epinephrine Auto-Injector

- An Auto-injection can reverse the reaction quickly
- Action:
 - Bronchiodilation – Dilation of airways.
 - Vasoconstriction – constriction of blood vessels.



fppt.com

An Auto-injection can reverse the reaction quickly

Action:

Bronchiodilation – Dilation of airways.

Vasoconstriction – constriction of blood vessels.

Epinephrine Auto-Injector Side Effects

- Vomiting
- Irregular or Fast Heart Beat
- Breathing problems
- Anxiety, Excitement
- Sweating
- Body tremors
- Dizziness
- Pallor
- Nausea
- Headache



1

fppt.com

Some possible side effects of epinephrine are vomiting, irregular heartbeat, breathing problems, feeling anxious, sweating, body tremors, pale skin, dizziness and feeling extremely tired, as noted by Mayo Clinic. If these side effects get worse or there are signs of an overdose, it is important to get prompt medical attention.

When to use the Epi-Pen

The auto-injector may be needed for a patient with a history of severe allergic reactions that comes in contact with substances that cause an allergic reaction. Also, it can be used for patients in severe respiratory distress, **and** have a **prescribed** auto-injector.



1

fppt.com

The auto-injector may be needed for a patient with a history of severe allergic reactions that comes in contact with substances that cause an allergic reaction. Also, it can be used for patients in severe respiratory distress, **and** have a **prescribed** auto-injector.

Administration of the Auto Injector

- 1st -- Ensure your safety from the allergen.
 - Do not expose yourself to the environment, especially if it could pose a threat to crew safety.
- Ensure that ALS is in route
- Sit the patient down, or ask them to lay down. If the patient is demonstrating signs of anaphylactic shock, elevate the patient's feet.
- Check the patient's vital signs
- Administer a high concentration of oxygen.



1

fppt.com

1st -- Ensure your safety from the allergen.
Do not expose yourself to the environment, especially if it could pose a threat to crew safety.
Ensure that ALS is in route
Sit the patient down, or ask them to lay down. If the patient is demonstrating signs of anaphylactic shock, elevate the patient's feet.
Check the patient's vital signs
Administer a high concentration of oxygen.

Administration of the Auto Injector

- If **BOTH** cardiac and respiratory status are normal, you will not need to administer.
- Reassess the patient's status at least every five minutes.
- If **EITHER** the cardiac or respiratory status of the patient is or becomes abnormal, then you will need to administer the auto-injector.



1

fppt.com

If **BOTH** cardiac and respiratory status are normal, you will not need to administer.

Reassess the patient's status at least every five minutes.

If **EITHER** the cardiac or respiratory status of the patient is or becomes abnormal, then you will need to administer the auto-injector.

Administration of the Auto Injector

- If the patient has their own auto-injector, assist them in using it.
- If the patient's auto-injector is not available, or has expired, and your agency is authorized to carry the auto-injector, has been authorized by their Medical Director and trained in its use, then administer the auto-injector.
- If there is a question in your mind about administration, call medical control.
- If medical control cannot be reached, and the patient is under 35 years of age, administer the auto-injector as indicated, and report the incident to Medical Control and the your agency Medical Director as soon as possible.



1

fppt.com

If the patient has their own auto-injector, assist them in using it.

If the patient's auto-injector is not available, or has expired, and your agency is authorized to carry the auto-injector, has been authorized by their Medical Director and trained in its use, then administer the auto-injector.

If there is a question in your mind about administration, call medical control.

If medical control cannot be reached, and the patient is under 35 years of age, administer the auto-injector as indicated, and report the incident to Medical Control and the your agency Medical Director as soon as possible

Administration of the Auto Injector



- Remove the safety cap from the injector, and check fluid for color and clarity. Fluid should be clear, and colorless.
- **Do not put fingers over the black tip when removing the safety cap, or after safety cap has been removed.**



1

fppt.com

Remove the safety cap from the injector, and check fluid for color and clarity. Fluid should be clear, and colorless.

Do not put fingers over the black tip when removing the safety cap, or after safety cap has been removed.

Administration of the Auto Injector

- Place the tip of the auto-injector against the patient's thigh (preferably bare), halfway between their waist, and knee.
- With a rapid motion, push the auto-injector firmly against the thigh until the spring loaded needle is activated. Hold the auto-injector in place for ten (10) seconds.



1

fppt.com

Place the tip of the auto-injector against the patient's thigh (preferably bare), halfway between their waist, and knee. With a rapid motion, push the auto-injector firmly against the thigh until the spring loaded needle is activated. Hold the auto-injector in place for ten (10) seconds.

After Administration

- Remove the auto-injector from the thigh, and record the time of the injection.
- Dispose of injector in biohazard container.
- Document patient response to injection.



1

fppt.com

Remove the auto-injector from the thigh, and record the time of the injection. Dispose of injector in biohazard container. Document patient response to injection.

After Administration

- After administration, continue to reassess the patient. Focus on ABC's.
- Transport patient, if not already enroute to hospital.



1

fppt.com

After administration, continue to reassess the patient. Focus on ABC's. Transport patient, if not already enroute to hospital.

After Administration

- If needed, contact medical control for a second dose of epinephrine via auto-injector.
- In the event of cardiac arrest, perform CPR as per ARC/AHA guidelines.



fppt.com

If needed, contact medical control for a second dose of epinephrine via auto-injector.

In the event of cardiac arrest, perform CPR as per ARC/AHA guidelines.

Storage of the Auto-Injector

- Store where it can be accessed quickly
- Keep in the plastic tube that it comes in.
- Kept at room temperature at all times.
 - Not refrigerated, or exposed to extreme heat.
 - Exposure to light and heat can cause the epinephrine to turn brown, and lose its effectiveness.



fppt.com

The Epinephrine Auto-Injector should be stored in an area where it can be accessed quickly in an emergency, and should be kept in the plastic tube that it comes in.

Replacing the Auto-Injector

- Expiration date.
- Check the date on a regular basis.
- Replace the unit before it expires.
- Regularly inspect for color and clarity, and replace if the liquid is discolored or cloudy.



fppt.com

As with any medication, the epinephrine auto-injector has an expiration date. It is very important to check the date on a regular basis, and replace the unit before it expires.

Also regularly inspect for color and clarity, and replace if the liquid is discolored or cloudy.

Who can use the Auto-Injector?

- People who have been prescribed and trained in self administration.
 - EMR's may assist in this self administration process.
- The EMR's agency can carry and administer the auto-injector:
 - if they have been trained; and
 - their Medical Director allows it.



1

fppt.com

Physicians prescribe the epinephrine auto-injector to many people who suffer from allergic reactions to different allergens, these people have been trained in self administration. EMR's may assist in this self administration process. The Indiana EMS Commission has adopted a policy that says EMR's can carry and administer the auto-injector if they have been trained and their Medical Director allows it.

If you have questions, please ask prior to the quiz.



1

fppt.com

V: THE QUIZ

Auto-Injector Training Review Quiz

1. Signs/symptoms of anaphylaxis may include:
 - a. nausea, abdominal cramping, vomiting, diarrhea
 - b. itching of the skin and raised rash (hives)
 - c. wheezing, shortness of breath, coughing, hoarseness
 - d. anxiety
 - e. flushing, swelling of the tissues of the lips, throat, tongue, hands and feet
 - f. all of the above
2. The initial symptoms of anaphylaxis may occur within a few seconds or hours after exposure.
 - a. True
 - b. False

3. Anaphylaxis may be caused by:
 - a. medications and latex
 - b. bee stings and food
 - c. an unknown allergen
 - d. all of the above

4. Death can occur with an extreme allergic reaction.
 - a. True
 - b. False

5. Auto-injectors should be stored:
 - a. in the refrigerator
 - b. near a heat source
 - c. with constant light exposure
 - d. both b & c
 - e. none of the above

6. Epinephrine (Auto-injector)
 - a. can be administered if the liquid is cloudy or unclear
 - b. is useable if liquid is amber in color
 - c. should be administered in the outer thigh while holding for count of 10
 - d. all of the above

7. Why must an ambulance be called whenever an auto-injector is used?
 - a. the patient may still go into anaphylaxis again after initial reaction.
 - b. dosage is limited and only lasts a short time
 - c. a and b

8. You are on a scene when a patient presents to you complaining of tingling in her throat after eating a brownie with nuts at lunch. What is the first thing you should do?
 - a. Identify whether the student has a life-threatening allergy and has been prescribed an auto-injector
 - b. Have the patient sit or lie down.
 - c. Find out where the patient keeps the auto-injector and if it is available to you.
 - d. Call an ambulance

9. It turns out that the above patient has a life-threatening allergy to walnuts and is prescribed an auto-injector. She does not have her auto-injector with her and her lip is starting to swell. What do you do next?
 - a. Step back to get a breath of fresh air to calm your nerves so you can think clearly
 - b. Have the patient sit or lie down.
 - c. Call your Medical Director and ask what to do
 - d. Have someone else call an ambulance.

10. A patient is presented to you with difficulty breathing and states he just had a peanut butter sandwich. He says nothing like this has ever happened to him before. He was never seen by the MD for allergies. What do you do?
 - a. Put the patient on high flow oxygen.
 - b. Make sure an ambulance is called,

- c. Have the patient sit or lie down.
- d. Use the auto-injector.
- e. All of the above

11. The most common form of allergic reaction is to:

- a. Shell fish
- b. Bee, wasp or hornet stings
- c. Medications
- d. Plants

12. Anaphylactic Shock can be fatal if not treated quickly.

- a. True
- b. False

13. In addition to swelling, allergens can cause:

- a. Breathing difficulty
- b. Rapid heart beat
- c. Rash or hives
- d. Loss of consciousness
- e. All of the above

14. If you are a certified EMR, you can administer an auto-injector of epinephrine only if your Medical Director says your agency may carry them and if you have been trained in its use.

- a. True
- b. False

15. An allergic reaction happens the first time you encounter a substance your body is allergic to.

- a. True
- b. False

Score: _____

Instructor Signature _____ Date _____

VI: EQI-PEN QUIZ KEY

1. f
2. a
3. d
4. a
5. e
6. c
7. c
8. a
9. d
10. e
11. d
12. a
13. e
14. a
15. b