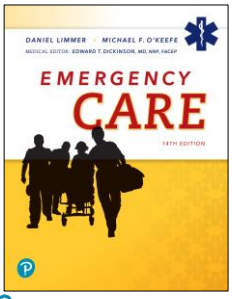
Emergency Care

Fourteenth Edition



Chapter 23

Allergic Reaction

Topics

Allergic Reactions

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Allergic Reactions (1 of 15)

- The immune system naturally responds to foreign substances in body in order to get rid of them
- An allergic reaction is an exaggerated immune response
- An allergen is a substance that causes an allergic reaction

Allergic Reactions (2 of 15)

- Anaphylaxis (anaphylactic shock) is a severe, life-threatening allergic reaction
  - Blood vessels dilate rapidly causing a drop in blood pressure (hypotension)
  - Cells leak fluid into the interstitial space
  - Tissues swell, including the airways

Allergic Reactions (3 of 15)

- Causes of allergic reactions
  - Insects (bee, yellow jacket, wasp, and hornet sting)
  - Foods (nuts, eggs, milk, and shellfish)
  - Plants (poison ivy, poison sumac, and poison oak)
  - Medications (penicillin)
  - Others (dust, chemicals, soap, and makeup)

Allergic Reactions (4 of 15)

Substances that may cause allergic reactions.

Allergic Reactions (5 of 15)

- Latex allergy is of particular concern in EMS
  - Many patients have latex sensitivity
    - Patient who have had multiple surgeries are increasingly likely to have this allergy
    - Wearing latex gloves while providing care can cause a reaction
  - Providers can also develop latex allergy from prolonged exposure

Allergic Reactions (6 of 15)

- An allergic reaction does not occur the first time a person encounters an allergen
  - On first exposure, the immune system forms antibodies.
  - On second exposure, the antibodies combine with the allergen
    - This combination causes release of histamines
    - These substance lead to a spectrum of reactions

Allergic Reactions (7 of 15)

- This spectrum of allergic reactions includes:
  - Dilation of blood vessels, which reduces the amount of blood returned to the heart
  - Flushing of skin as blood vessels near the surface open up
  - Development of angioedema as fluid moves into tissues
  - Swelling around the vocal cords

Allergic Reactions (8 of 15)

- This spectrum of allergic reactions includes:
  - Development of urticaria (hives) on the skin
  - Bronchoconstriction that decreases air movement in the lungs
  - Development of thick mucus in the lungs

Allergic Reactions (9 of 15)

- The exact course of an allergic reaction is unpredictable
  - Severe reaction may be immediate but can be delayed 30 minutes or more
  - Mild allergic reaction can rapidly progress to anaphylaxis
- Closely monitor any patient exposed to a known allergen

Allergic Reactions (10 of 15)

- Signs and symptoms of allergic reaction:
  - Skin
    - Itching
    - Hives
    - Flushing (red skin)
    - Swelling of the face, neck, hands, feet, or tongue
    - Warm, tingling feeling in the face, mouth, chest, feet, or hands

Allergic Reactions (11 of 15)

Signs of an allergic reaction may include facial swelling. © **Edward T. Dickinson, MD**

Allergic Reactions (12 of 15)

Signs of an allergic reaction may include hives. © Edward T. Dickinson, MD

Allergic Reactions (13 of 15)

- Signs and symptoms of allergic reaction:
  - Respiratory
    - Tightness in the throat or chest
    - Cough
    - Rapid, labored, and/or noisy breathing
    - Hoarseness, muffled voice, or loss of voice
    - Stridor
    - Wheezing (audible without stethoscope)

Allergic Reactions (14 of 15)

- Signs and symptoms of allergic reaction:
  - Cardiac
    - Increased heart rate
    - Decreased blood pressure
  - Generalized findings
    - Itchy, watery eyes
    - Headache
    - Runny nose
    - Sense of impending doom

Allergic Reactions (15 of 15)

- Signs and symptoms of allergic reaction:
  - Signs and symptoms of shock
    - Altered mental status
    - Flushed, dry skin or pale, cool, clammy skin
    - Nausea or vomiting
    - Changes in vital signs
      - Increased pulse and respirations
      - Decreased blood pressure

Allergic Reactions—Distinguishing Anaphylaxis from Mild Allergic Reaction

- Any of previous signs and symptoms can be associated with an allergic reaction.
- To be anaphylaxis, the patient must have either respiratory distress or signs and symptoms of shock

Allergic Reactions—Patient Assessment (1 of 2)

- Perform a primary assessment and care for any immediate life threats (ABCs)
- During the secondary assessment, inquire about:
  - History of allergies
  - What was the patient exposed to
  - How the patient was exposed (route of exposure)
  - Signs and symptoms
  - Progression
  - Interventions

Allergic Reactions—Patient Assessment (2 of 2)

- Assess baseline vital signs and obtain the remainder of the past medical history
- Suspect allergic reaction when:
  - The patient has come in contact with a substance that has caused a reaction in the past
  - The patient complains of itching, hives, or difficulty breathing
  - The patient shows signs or symptoms of shock

Allergic Reactions—Patient Care (1 of 4)

- Manage the patient's airway and breathing
- Apply high-concentration oxygen if the patient is in distress or appears to be in anaphylaxis
- If the patient has or develops altered mental status, open and maintain the airway
- If the patient is not breathing, adequately provide artificial ventilations

Allergic Reactions—Patient Care (2 of 4)

- Determine whether assisting the patient with an epinephrine auto-injector is appropriate
- Consult medical direction regarding use of auto-injector when the patient has come in contact with allergen and:
  - Has respiratory distress or signs of shock
  - Is not wheezing or showing signs of respiratory distress or shock
  - Complains of respiratory distress or shows signs of shock but does not have an auto-injector available

Allergic Reactions—Patient Care (3 of 4)

- After using an auto-injector or administering epinephrine from the ambulance:
  - Record the administration of epinephrine
  - Transport the patient
  - Reassess after 2 minutes
- If the patient meets the criteria for epinephrine but you cannot carry and use it, call for an ALS intercept

Allergic Reactions—Patient Care (4 of 4)

After administering epinephrine, perform a reassessment, paying special attention to the patient's ABCs and vital signs en route to the hospital.

Self-Administered Epinephrine

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Self-Administered Epinephrine (1 of 7)

- As a medication, epinephrine constricts blood vessels and dilates bronchioles
- It is often prescribed to patients with a history of allergy
- Auto-injectors are carried or kept at home by patients
- Auto-injectors are spring-loaded needles and syringes with a single dose of epinephrine
- They come in adult and child sizes

Self-Administered Epinephrine (2 of 7)

Epinephrine auto-injectors: EpiPen® and EpiPen Jr.®

Self-Administered Epinephrine (3 of 7)

- If authorized by medical direction, you can administer epinephrine from auto-injector prescribed for the patient
- Some states allow EMTs to carry auto-injectors on the ambulance to administer with medical direction approval

Self-Administered Epinephrine (4 of 7)

- Administering an auto-injector
  - Check the expiration date
  - Ensure the liquid is clear
  - Remove the cap and press the injector firmly against the outer thigh (midway between the waist and knee)
  - Hold it in place until the entire dose is injected
  - Reassess after 2 minutes
    - Pulse will likely increase
    - Symptoms will likely decrease

Self-Administered Epinephrine (5 of 7)

- Epinephrine may be dangerous for a patient with a heart condition or who is hypertensive
- Traditional thinking held that EMTs should only deliver epinephrine to patients with prescribed auto-injectors
  - This thinking has changed
  - Many systems now allow EMTs to carry and administer epinephrine in certain conditions
  - Follow local protocols

Self-Administered Epinephrine (6 of 7)

- Patients with prescribed auto-injector may be uncomfortable or afraid to use it without help
  - In general, always inject directly through the clothing when assisting the patient
  - Check local protocols for variation to this general rule

Self-Administered Epinephrine (7 of 7)

- Carefully monitor the patient's airway and breathing throughout care and transport
- If the patient's condition deteriorates, you may need to give additional doses
- This requires bringing the patient's additional auto-injectors in the ambulance
- You must obtain permission from medical control for additional doses

EMT-Administered Epinephrine

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EMT-Administered Epinephrine (1 of 3)

- EMS systems that allow EMTs to administer epinephrine have moved to using hypodermics and syringes
- The Ready-Check-Inject method is commonly used:
  - Only 1 mL of epinephrine is carried in a vial or ampule
  - A second provider must verify the dose drawn up
    - 0.3 mL for adults
    - 0.15 mL for children
  - Intramuscular needles and syringes are used

EMT-Administered Epinephrine (2 of 3)

- The Ready-Check-Inject method is commonly used:
  - Supplies are packaged in a single container with a review card
  - EMTs must be trained in the use of the kit
  - EMTs must demonstrate competency in the technique
  - The agency must maintain records of training

EMT-Administered Epinephrine (3 of 3)

- If your system uses Ready-Check-Inject, you must complete these steps in order to be authorized
- You should also be familiar with your system's protocols, including the need to obtain on-line medical direction

Chapter Review

Chapter Review (1 of 4)

- Allergic reactions are common. Anaphylaxis, a true life-threatening allergic reaction, is rare.

Chapter Review (2 of 4)

- The most common symptom in these cases is itching. Patients with anaphylaxis, though, will also display life-threatening difficulty breathing and/or signs and symptoms of shock (hypoperfusion). These patients will also be extremely anxious. Their bodies are in trouble and are letting the patient know it.

Chapter Review (3 of 4)

- The signs and symptoms of anaphylaxis are a result of physiological changes: vasodilation, bronchoconstriction, leaky capillaries, and thick mucus.

Chapter Review (4 of 4)

- By quickly recognizing the condition, consulting medical direction, and administering the appropriate treatment, you can literally make the difference between life and death for these patients.

Remember (1 of 3)

- In an allergic reaction, the body's immune system overreacts to an allergen and causes potentially harmful side effects.
- Anaphylaxis is a severe, systemic form of allergic reaction; it is a life-threatening emergency.

Remember (2 of 3)

- EMTs must use assessment to differentiate a localized allergic reaction from a systemic anaphylactic reaction.
- Epinephrine is useful in anaphylaxis because it constricts dilated blood vessels and opens bronchial passages.

Remember (3 of 3)

- Epinephrine has potentially dangerous side effects and should be used only in the event of anaphylaxis.

Questions to Consider (1 of 2)

- What are the indications for administration of an epinephrine auto-injector?
- List some of the more common causes of allergic reactions.

Questions to Consider (2 of 2)

- List signs or symptoms of an anaphylactic reaction associated with each of the following:
  - Skin
  - Respiratory system
  - Cardiovascular system

Critical Thinking (1 of 2)

- A 24-year-old male ate a meal that he believes contained shellfish. He is allergic to shrimp. He is sweating and nervous. He appears to be breathing adequately. You do not note any wheezing or stridor.

Critical Thinking (2 of 2)

- His face is slightly red. His pulse is 88 strong and regular, respirations 24, blood pressure 108/74, and skin warm and moist. Should you administer epinephrine?

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