1 Chapter 20
Immunologic Emergencies

2 Introduction
● EMTs often respond to calls involving ______________________ reactions
● Allergy-related emergencies may involve:
  – Acute airway obstruction
  – Cardiovascular collapse
● You must be able to treat these life-threatening complications.
● Distinguish between the body’s usual response to an allergen and an allergic reaction

3 Immune System
● Immune system protects the body from ______________________ substances and organisms.
● When a foreign substance invades the body:
  – Body goes on alert.
  – Body initiates a series of responses to inactivate the invader.

4 Allergic Reactions
● Allergic reaction
  – ______________________ immune response to any substance
● Histamines and leukotrienes
  – Chemicals released by the immune system
● Allergen
  – Substance triggering body’s immune system

5 Allergic Reactions
● Some patients may not know what is causing their reaction.
● You must:
  – Recognize the signs and symptoms
  – Maintain a high index of suspicion
● Allergic reaction may be mild and local or severe
Allergic reaction may be mild and local or severe and _____________.

Pathophysiology

Anaphylaxis

- _________________ allergic reaction
- Involves multiple organs
- Can rapidly result in shocks and death
- Most common signs:
  - Wheezing
  - Urticaria (hives)
  - Angioedema

Anaphylaxis

- Patients may also experience:
  - Hypotension due to _________________ and increased capillary permeability
  - Gastrointestinal dysfunction (eg, nausea, vomiting, and abdominal cramps)

Severe Allergic Reaction

Five General Allergen Categories

- Insect bites and stings
- _________________
- Plants
- Food
- Chemicals

Common Allergens:

Insect Bites and Stings

- When an insect bites and injects the bite with its _________________, this is called envenomation.
- The reaction may be local (swelling and itchiness) or systemic (involving the entire body).
- Honeybees cannot withdraw their stinger.
- Wasps and hornets can sting multiple times.
12 Common Allergens: Medications
● If medication is injected, the reaction may be ____________ and severe.
● Oral medications may take longer.
● A person will typically experience an allergic reaction after becoming sensitized.

13 Common Allergens: Plants, Food, Chemicals
● Plants
  – Dusts, ________________, other plant materials
● Food
  – Reaction can be relatively slow
  – Shellfish, nuts
● Chemicals
  – Makeup, soap, latex

14 Insect Stings (1 of 2)
● Death from insect stings ________________ those from snakebites.
● Venom is injected through stinging organ.
● Some insects and ants can sting repeatedly.
● May cause local or systemic reaction.
● Honeybees cannot withdraw their stinger.
  – Fly away and die
● Wasps, hornets, and fire ants can sting multiple times.

15 Insect Stings (2 of 2)
● Some ants, especially the fire ant, also strike ________________.
  – Often inject a particularly irritating toxin at the bite sites

16 Signs and Symptoms of Insect Stings
● Sudden pain, swelling, and redness at site
● Itching and sometimes a ________________
- Sometimes dramatic swelling
- Localized heat
- Redness in light-skinned individuals

17 **Wheal**

18 **Management of Insect Stings (1 of 3)**
- There is no specific treatment for these injuries.
- Applying ice sometimes helps.
- Swelling may be ____________________________ and frightening.
- Local manifestations are not serious.

19 **Management of Insect Stings (2 of 3)**
- Stinger of the honeybee can continue to inject venom for up to ____________________________ minutes.
- Attempt to remove the stinger by scraping the skin with the edge of a sharp, stiff object such as a credit card.

20 **Management of Insect Stings (3 of 3)**
- Do not use ____________________________ or forceps.
- Wash the area with soap and water.
- Remove any jewelry from the area.
- Be alert for vomiting or signs of shock.
- Give oxygen if needed.
- Monitor the patient's vital signs.

21 **Anaphylactic Reactions to Stings**
- Approximately ____________________________ % of adults and 1% of children are allergic to the venom of bees, hornets, and wasps.
- Insect stings cause at least 50 deaths/year in the United States.
- Most deaths occur within half an hour of being stung.

22 **Signs and Symptoms of Allergic Reaction**
1. Itching and burning
2. Widespread urticaria
3. Wheals
● Wheals of the lips and tongue
● Bronchospasm and wheezing
2 ● Chest tightness and coughing
  ● Dyspnea
  ● Anxiety
  ● Abdominal cramps
  ● Hypotension
  ● Loss of Consciousness

23 □ Patient Assessment
● Allergic symptoms are almost as varied as allergens themselves.
● Assessment should include evaluations of:
  – Respiratory system
    – ________________ system
  – Mental status
  – Skin

24 □ Questions to Ask?
● Have any interventions been completed?
● Do you have any prescribed, preloaded medications for allergic reactions?
● Do you have any ________________ symptoms?
● Do you have other symptoms?
● Have you had previous allergic reactions, asthma, or hospitalizations?
● What were you doing or what were you exposed to before the onset of symptoms?

25 □ Emergency Medical Care (1 of 2)
● Give oxygen.
● Perform a focused history and physical examination.
  – Find out if the patient has a history of allergies.
● Obtain baseline vital signs and a ________________ history.
● Inform medical control.

26 □ Emergency Medical Care (2 of 2)
● Find out if the patient has a prescribed ________________.
● Be prepared to use standard airway procedures and CPR.
● Assist the patient with the auto-injector if permitted or use EMS auto-injector.
● If bee sting, carefully scrape stinger and venom sac away if present.
● Apply icepack

27 □ Epinephrine (1 of 3)
● Mimics the ________________ (fight-or-flight) response
● Causes the blood vessels to constrict
● Reverses vasodilation and hypotension
● Increases cardiac contractility and relieves bronchospasm
● Rapidly reverses the effects of anaphylaxis

28 □ Epinephrine (2 of 3)
● Indications include:
  – A ________________ allergic reaction
  – Hypersensitivity to an exposed substance
● Remember that your EMS service may or may not allow you to assist the patient in the administration of epinephrine. Call medical control!

29 □ Epinephrine (3 of 3)
● Normal adult dosage is ________________ via auto-injector (0.3 to 0.5mg SC)
● Pediatric dosage is normally ________________ via auto-injector (0.01mg/kg SC)
● In this area, EMS carries and utilizes either subcutaneous Epi or auto-injectors

30 □ Using an Epi Auto-Injector
● Receive order from medical direction, ________________ order
● Follow BSI precautions.
● Make sure the prescription is for the patient (or EMS).
● Make sure the medication is not discolored or expired.

31 □ Epinephrine Auto-Injector
● Epinephrine dilates ________________ and constricts blood
Epinephrine dilates vessels and constricts blood vessels.

Dosage:
- Adult: 0.3mg
- Pedi: 0.15mg

Route is intramuscular (IM)

32 Administering an Auto-Injector
- Prepare the injection site (bare and clean)
- Remove the cap.
- Place tip of the injector against the lateral side of the patient’s thigh.
- Push the injector firmly and hold until all of the medication is injected.
- Remove the injector.
- Record the time and dose.
- Reassess and record vitals every 2-5 minutes.

33 Auto-Injector Kit

34 Epinephrine Side Effects
1. Tachycardia
   - Pallor
   - Dizziness
   - __________________________ Pain
   - Headache
2. Nausea
   - Vomiting
   - High BP
   - Anxiety
   - Cardiac arrhythmias

35 Key Points
- Epinephrine is a powerful drug and is not intended or indicated for minor allergic reactions; only anaphylactic reactions
- Follow local protocols for Epinephrine usage