

# Anaphylaxis

**Anaphylaxis** is a severe, generalized allergic reaction. By its nature, anaphylaxis is potentially life-threatening and involves more than one of the body's systems. Anaphylaxis is triggered by the immune system which produces IgE (Immunoglobulin E- an anti body class produced in excess during allergic reaction) as a response to an allergen. IgE then attaches itself to the surface of Mast cells. Anaphylaxis occurs when a person is exposed to a trigger substance, to which they have already become sensitized. Minute amounts of allergens may cause a life-threatening anaphylactic reaction. Anaphylaxis may occur after ingestion, skin contact, injection of an allergen or, in rare cases, inhalation.

**Anaphylactic shock**, the most severe type of anaphylaxis, occurs when an allergic response triggers a quick release from mast cells of large quantities of immunological mediators (histamines, prostaglandins, leukotrienes ) leading to systemic vasodilation (associated with a sudden drop in blood pressure) and edema of bronchial mucosa (resulting in bronchoconstriction and difficulty breathing). Anaphylactic shock requires agents to support vascular tone (epinephrine, IV fluids and in severe cases dopamine), bronchodilation (epi, albuterol) and membrane stabilizers (steroids) as well as antihistamines (diphenhydramine.) Anaphylactic shock can lead to death in a matter of minutes if left untreated.

Reactions usually begin within minutes of exposure, but may be delayed. Sometimes symptoms will improve initially, only **to recur or progress a few hours later** – this is known as biphasic anaphylaxis. Symptoms of anaphylaxis commonly include those in the skin such as itch, hives or urticaria, swelling or angioedema and flushing. Respiratory symptoms might include wheeze, cough, shortness of breath and chest tightness, throat tightness, swelling in the throat, or change in voice. At times eyes itch and the nose will become congested. Rapid heart rate may occur and low blood pressure may cause dizziness. Nausea, vomiting and abdominal cramping indicate involvement of the gastrointestinal tract. Symptoms may start mildly and rapidly progress to severe. Consider what may be causing the reaction and remove it from the patient or the patient from exposure, if possible.

SQ/IM Epinephrine is the medication of choice for first line treatment of anaphylaxis regardless of severity. Early and aggressive use of Epi in this setting leads to improved patient outcomes and reduces the chance for the patient to progress to anaphylactic shock.

Note; EMT I can assist with the patient's EpiPen or EpiPen Jr Autoinjector.

## Early Onset/Stable Reaction

1. Airway Protocol. \*
2. Cardiac Monitoring Protocol.
3. Epinephrine: 1:1000 SQ/IM (unless contraindicated)
  - Adult: 0.3-0.5 mg SQ/IM may repeat q10 as needed.
  - Ped: 0.01 mg/kg SQ may repeat q10 as needed.
4. IV Protocol.
5. Diphenhydramine (Benadryl):
  - Adult: 25 mg IV.
  - Ped: 1 mg/kg to a maximum 25 mg/dose.

## Moderate to severe anaphylaxis- includes wheezing

1. Airway Protocol. \*
2. Cardiac Monitoring Protocol.
3. Epinephrine\*\*: 1:1000 SQ/IM (unless contraindicated)
  - Adult: 0.3-0.5 mg SQ/IM may repeat q10 as needed.
  - Ped: 0.01 mg/kg SQ may repeat q10 as needed.

4. IV Protocol.
  5. Diphenhydramine (Benadryl):
    - Adult: 25- 50 mg IV/IO.
    - Ped: 1 mg/kg (give IM if no IV available) to a maximum 50 mg/dose.
  6. Albuterol: Nebulize per albuterol standing order if wheezing persists post epinephrine administration.
- \*\*Be prepared to move quickly to IV/IO epinephrine as per anaphylactic shock protocol if patient's symptoms progress .

#### **Anaphylactic shock**

1. Airway Protocol. \*
2. IV Protocol
3. Cardiac Monitoring Protocol.
4. Epinephrine: 1:100,000 IV/IO.
  - Give as a slow push from a 10ml syringe and titrate to symptoms. No dose limits in this setting if heart rate remains stable with no ectopy.
  - Ped administration same as adult.
5. Diphenhydramine (Benadryl):
  - Adult: 50 mg IV/IO.
  - Ped: 1 mg/kg to a maximum 50 mg/dose.
6. Albuterol: Nebulize per albuterol standing order if wheezing persists post epinephrine administration.

**\* Be prepared to proceed directly to cricothyrotomy due to the potential for massive laryngeal edema in the setting of anaphylaxis / anaphylactic shock.**