General Medical:
Allergic Reaction

Goals: To provide timely therapy for potentially life-threatening reactions to known or suspected allergens in order to prevent cardiorespiratory collapse and shock; to provide symptomatic relief for symptoms due to exposure to known or suspected allergens
Inclusion Criteria: Patients of all ages with suspected allergic reaction
Exclusion Criteria: No specific exclusions
Refer to: Respiratory Distress and Shock CPGs

CRITICAL POINTS:
- **Immediate administration of IM epinephrine is the #1 priority to treat life-threatening anaphylaxis**
- **Delayed or insufficient epinephrine dosing is associated with poor patient outcome and death**

Basic Level

1. Assess and support ABCs according to UNIVERSAL CARE – ADULT or UNIVERSAL CARE – PEDIATRIC, as clinically indicated:
    a. A (Airway): Ensure airway patency and assess for stridor; insert nasopharyngeal or oropharyngeal airway as needed; monitor vomiting patients for possible aspiration risk
    b. B (Breathing): Assist ventilations with supplemental oxygen (15 lpm) and BVM, as needed:
        i. Assess breath sounds
        ii. If wheezing, stridor (or shock) is present and advanced level providers are not present on-scene, administer epinephrine via the patient's own auto-injector (EA), if available:
            1. The EA should be injected into the muscle of the anterolateral, mid-thigh, holding the EA firmly against the skin for 3 seconds (or per device manufacturer recommendations)
            2. Massage the injection site for 10 seconds and monitor for clinical response
            3. Contact BioTel immediately for authorization of repeat EA doses, if needed
        iii. Administer supplemental oxygen to maintain SpO_2 of at least 94%
    c. C (Circulation): Evaluate, document and treat signs/symptoms of hypoperfusion and shock as above and according to the Shock CPG
    d. D (Disability): Assess and document GCS; and assess pupillary size and reactivity
        i. At least two sets of measurements, 5 to 10 minutes apart, is the absolute minimum
        ii. Reassess and document every 5 to 10 minutes in patients with significant instability
    e. E (Exposure/Environmental): Assess for flushing, hives and other skin signs of allergic reaction
        i. Isolate the patient from the source of the allergen, if possible
2. Positioning:
    a. Place stable patient with minimal symptoms in a position of comfort; HOWEVER
    b. If there is evidence of respiratory distress or shock, treat the patient according to the Shock CPG
        i. NOTE: Sitting or change to upright position is associated with sudden death in anaphylaxis
3. Obtain SAMPLE history and detailed secondary physical examination, as time permits
4. Once advanced level care arrives on scene, give report and transfer care

Advanced Level

5. Initiate continuous ECG and $PetCO_2$ monitoring if respiratory distress or shock is present, anticipated or develops
6. Consider establishing IV/IO access at a TKO rate or use a saline lock if respiratory distress or shock is present, anticipated or develops
7. **Assess for anaphylactic reaction**, characterized by **acute onset of ANY** of these signs/symptoms:
    a. Skin/mucosal changes AND EITHER respiratory compromise OR hypotension/hypoperfusion; **OR**
    b. Hypotension for that patient (SBP less than 90 mmHg in adults; SBP less than 70 mmHg + 2(age in years) in infants and children) after exposure to a known allergen; **OR**
    c. Any *two or more* of the following occurring rapidly after exposure to a likely allergen:
        i. Skin/mucosal involvement (hives, flushing, itching, angioedema (swollen lips/tongue))

ii. Respiratory compromise (dyspnea, wheezing, stridor, hypoxia)
iii. Persistent GI symptoms (abdominal pain/cramps, vomiting (especially in infants))
iv. Hypotension or associated cardiovascular signs/symptoms (syncope, flaccidity)

8. If ***ANY*** of the above criteria are met, *and an EA has not yet been administered or is unavailable*, for an adult at least 14 years of age, administer epinephrine **(1 mg/mL)** 0.3 to 0.5 mg **(0.3 to 0.5 mL) IM** in the anterolateral, mid-thigh:
   a. Monitor for clinical response
   b. Repeat IM epinephrine up to 2 more times, every 10 minutes, if signs of anaphylaxis/shock persist:
      i. Total maximum number of IM epinephrine doses (including EAs) under standing orders: three
      ii. Contact BioTel for authorization of additional epinephrine doses, if needed

8. **Pediatric patients less than 14 years of age with signs/symptoms of anaphylaxis:**
a. Administer epinephrine **(1 mg/mL)** at 0.01 mg/kg **(0.01 mL/kg) IM** to the antero-lateral, mid-thigh
b. Monitor for clinical response
c. Repeat IM epinephrine up to two more times, every 10 minutes, if signs of anaphylaxis/shock persist
d. Total maximum number of IM epinephrine doses (including EAs) under standing orders: three
e. Contact BioTel for authorization of additional epinephrine doses, if needed

9. **In addition to epinephrine, administer IV/IO fluid bolus to patients with hypoperfusion or hypotension:**
   a. Any age patient: 20 mL/kg (up to 1000 mL per bolus) Normal Saline IV/IO over 15 minutes
      i. Monitor for clinical response
      ii. Repeat fluid bolus up to two more times, as needed
10. For persistent cardiovascular collapse (hypotension with altered mental status, pallor or poor perfusion) despite multiple doses of IM epinephrine and three fluid boluses, consider IV/IO epinephrine:
   a. Infusion (1 mg of 0.1 mg/mL in 1000 mL NS at 0.1 mcg/kg/min) Titrate to clinical response: Contact BioTel for dosing assistance; **OR**
   b. Epinephrine **(0.1 mg/mL)** IV/IO VERY SLOW PUSH over 1 minute:
      i. Adult at least 14 years of age ONLY: 0.05 to 0.1 mg **(0.5 to 1 mL)** IV/IO **over 1 minute**

i. **Pediatric patients less than 14 years: Do not use IV/IO epinephrine without consulting BioTel**

11. For persistent wheezing unresponsive to IM epinephrine, consider albuterol 2.5 mg via nebulizer (any age):
   a. Monitor for clinical response and repeat up to two times, if needed (total number of doses = three)
12. There is no proven benefit to use of corticosteroids in acute management of allergic reaction/anaphylaxis:
   a. IV/IO methylprednisolone (dexamethasone?) may be considered, if transport time permits
   b. Consult methylprednisolone (or dexamethasone) drug sheet or BioTel for dosing guidelines
13. For patients with anaphylaxis who are clinically improved after IM epinephrine and fluids, consider diphenhydramine for symptomatic relief (see #14)
14. For **adults with localized SKIN reaction ONLY** (e.g. hives, flushing, itching):
   a. Administer diphenhydramine 25-50 mg IM, IV or IO

14. **Pediatric patients less than 14 years of age with localized SKIN reaction ONLY:**
a. Administer diphenhydramine 1 to 2 mg/kg
i. IM administration (Do not dilute): Administer 1-2 mg/kg (0.02-0.04 mL/kg)
ii. IV/IO administration:
1. Dilute 50 mg (1 mL) with 9 mL Normal Saline to a final concentration of 5 mg/mL
2. Administer 1-2 mg/kg (0.2-0.4 mL/kg)

15. **Patients with acute dystonic reaction due to neuroleptic drugs (e.g. anti-psychotic medications, such as haloperidol or risperidone) MUST be transported for assessment/treatment by a qualified medical provider in a medical facility**:
   a. Initiate on-scene treatment with diphenhydramine, as detailed in section #14 above
16. All patients with moderate or severe allergic reaction or anaphylaxis must be transported to a hospital ED:
   a. The incidence of late-phase (biphasic) reaction may be as high as 25% in patients with hypotension or airway obstruction during the initial reaction
   b. Even patients with less severe presentation may require counseling, diagnostic testing, or other treatment(s)
   c. EXCEPTION: patients with mild, skin-only allergic reaction responsive to diphenhydramine
17. For additional patient care considerations not covered under standing orders, consult BioTel