Emergency Management of Anaphylaxis

**Concern for severe allergic reaction or angioedema**

- **Non-allergic angioedema?**
  - Asymmetric mucosal edema, absence of hives/pruritus suggests non-allergic
  - Unless certainly non-allergic, start treatment as allergic
  - If certainly non-allergic or failing allergic treatment, proceed to purple box

- **Remove stimulus**
  - Remove stinger
  - Stop medication infusion
  - Consider rinsing mouth/brushing teeth if food trigger

- **Insult to Airway, Breathing, or Circulation?**
  - yes
    - 0.3 mg (300 mcg) for smaller patient/less severe reaction
    - 0.5 mg (500 mcg) for larger patient/more severe reaction
    - preferred location is anterolateral thigh
    - 1 mg/mL concentration (1:1000) is best
    - 0.1 mg/mL (1 mg in 10 mL, 1:10,000) is OK
    - avoid 1:1000 and 1:10000 terminology—causes errors

  - no
    - **Secondary care**
      - H1 and H2 blockers, steroids
      - Observation
      - Discharge with epinephrine auto-injector
      - Auto-injector instructions, allergic precautions
      - Referral to allergy/immunology
      - Duration of observation based on
        - Severity of reaction
        - Speed with which reaction developed
        - Capacity of patient to self-treat with epinephrine
        - Capacity of patient to immediately access emergency care

- **Epinephrine 0.3 mg - 0.5 mg IM**
  - IV, O2, Monitor
  - if uncertain whether or not to treat with epi, treat with epi

- **Does airway require management?**
  - Assume cricothyrotomy will be necessary
  - If laryngoscopy or flexible endoscopy attempted, double setup with full cric readiness

- **Improved?**
  - yes
  - **Emepinephrine 0.3 mg - 0.5 mg IM**
    - Start epinephrine drip
    - informal epi drip: 1 mg in 1 liter NS, start at 2 drops per second
    - formal epi drip: start at 10 mcg/min or 0.1 mcg/kg/min
    - nebulized epinephrine if laryngeal involvement
  - no

- **Epinephrine 0.3 mg - 0.5 mg IM**
  - Start epinephrine drip
  - (0.01 mg/kg in children, max 0.5 mg)

- **Hypotensive?**
  - Crystalloid bolus
  - **Wheezeing?**
  - Asthma therapy

- **Glucagon 1 mg IV if beta blocker**
  - If anaphylaxis persistently epinephrine-refractory:
    - Methylene blue 100 mg IV
    - Vasopressin 5 u IV
    - ECMO (scant evidence for these therapies)

- **Secondary Care**
  - **Non-allergic/bradykinin mediated angioedema**
    - ACE inhibitor or ARB related
    - Hereditary angioedema/C1 esterase deficiency
    - tPA related
    - Empiric treatment: 1 g TXA over 10 minutes and 2 units FFP
    - C1 inhibitor concentrate is first line treatment for hereditary angioedema
    - May be used in other forms of bradykinin mediated angioedema
    - Very expensive and often not immediately available
    - Berinert 20 u/kg, Ruconest 50 u/kg, Cinryze 1000 u
    - Bradykinin/kallikrein modifiers (ecallantine, icatibant, lanadelumab) poorly supported by evidence

- emupdates.com/anaphylaxis
  - h/t: @ibookcc