Boston Children's Hospital

Anaphylaxis EBG Algorithm ©

Karen Farbman, MD
& Erin Morris, RN
Emergency Department,
Boston Children's Hospital

April 21, 2015

Anaphylaxis is a serious allergic reaction that is rapid in onset and may cause death. The presence of ***any*** one of the following 3 criteria indicates that anaphylaxis is highly likely:

Hives plus another system
Acute onset of an illness (minutes to several hours) involving skin, mucosal tissue, or both, and at least one of the following:

- Respiratory compromise
- Reduced blood pressure (BP) or associated symptoms of end-organ dysfunction

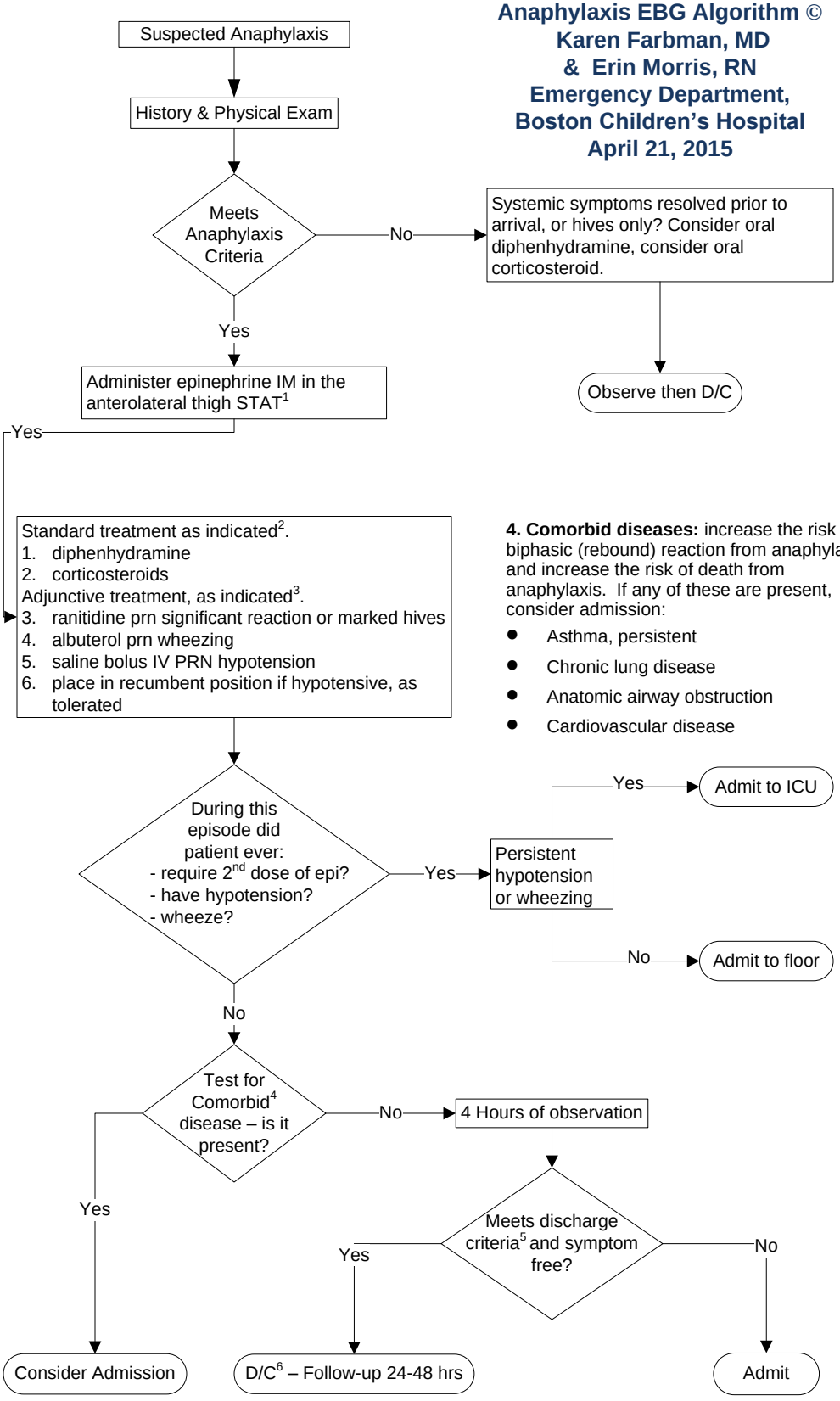
Two systems involved
Two or more of the of the following that occur rapidly after exposure to a likely allergen for the patient (minutes to several hours):

- Involvement of the skin-mucosal tissue
- Respiratory compromise
- Reduced BP or associated symptoms of end-organ dysfunction
- Persistent GI symptoms

Hypotension
Reduced BP after exposure to a known allergen for that patient (minutes to several hours).

ED Treatment:

1. **First-line treatment:** Epinephrine IM. Repeat as needed or use continuous epi IV infusion.
   Epi (1:1,000) high dose
   <10kg = IM 0.01mg/kg
   10-25kg = EpiPen Jr. IM 0.15mg
   >26kg = EpiPen IM 0.3mg
   ≥50kg and obese = IM 0.5mg
2. **Standard treatment** in the ED:
   - *H_1 antihistamine:* diphenhydramine. 1-2 mg/kg per dose. Maximum dose 50 mg IV *or* oral. (Oral liquid is more readily absorbed than tablets.)
   - *Corticosteroids*: prednisone 1 mg/kg with a maximum does of 60 to 80 mg po. or methylprednisone 1-2 mg/kg with a maximum dose of 60 to 80 mg IV.
3. **Adjunctive treatment:**
   - *Bronchodilator* (B2-agonist)*:* albuterol. MDI (4-8 puffs) or nebulized solution (child 1.5 mL; adult, 3 mL) every 20 minutes as needed.
   - *H2 antihistamine:* rantidine. 1-2 mg/kg per dose. Maximum dose 75-150 mg oral or IV.
   - *Vasopressors* (other than epinephrine) for refractory hypotension, titrate to effect.
   - *Glucagon* for refractory hypotension, titrate to effect. Child 20-30 mcg/kg. Adult 1-5 mg. Dose may be repeated or followed by infusion.
   - *Atropine* for bradycardia, titrate to effect.
5. **Discharge Criteria for Anaphylaxis:**
   1. Observation for 4 hours from epinephrine administration or longer based on severity of reaction
   2. No wheezing at any time during this episode
   3. No hypotension at any time during this episode
   4. Did not require 2nd dose of epinephrine
   5. Demonstrates understanding of discharge instructions and follow-up plan.
   6. Has ability to return in case of biphasic reaction
   7. Can promptly fill prescriptions for discharge medications



4. Comorbid diseases: increase the risk of biphasic (rebound) reaction from anaphylaxis and increase the risk of death from anaphylaxis. If any of these are present, consider admission:

- Asthma, persistent
- Chronic lung disease
- Anatomic airway obstruction
- Cardiovascular disease

6. Therapy after discharge
First-line treatment: Epinephrine auto-injector prescription (2 doses) and instructions on its use. (Adult injector for patients over 25 kg. Junior injector for patients under 25 kg.) Education on avoidance of allergen. Follow-up with primary care physician. Consider referral to an allergist.
Adjunctive treatment, standard:
- *H_1 antihistamine: diphenhydramine* every 6-8 hours for 2-3 days. Alternative dosing with a non-sedating second generation antihistamine in the morning, plus diphenhydramine in the evening.
- *Corticosteroids*: prednisone daily for 2-3 days.

Adjunctive treatment, supplemental:
- *H2 antihistamine:* rantidine twice daily for 2-3 days, especially for significant reaction with GI systems or marked hives.

***NOTE**: These guidelines are intended for use under the guidance of pediatric emergency medicine attending physicians in a pediatric emergency department.*

***NOTE:** The medication dosing contained within these guidelines is provided for reference only. Please refer to your institutional formulary or ordering guidelines when placing orders for clinical care of patients.*