Pediatric Allergic Reaction

History
- Onset and location
- Insect sting or bite
- Food allergy/ exposure
- Medication allergy/ exposure
- New clothing, soap, detergent
- Past medical history/ reactions
- Medication history

Signs and Symptoms
- Itching or hives
- Coughing/ wheezing or respiratory distress
- Chest or throat constriction
- Difficulty swallowing
- Hypotension or shock
- Edema

Differential
- Urticaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug induced)
- Aspiration/ Airway obstruction
- Vasovagal event
- Asthma/ COPD /CHF

Assess Symptom Severity

MILD
Skin Only

DIPHENHYDRAMINE
1 mg / kg mg PO
Maximum 50 mg
See Pearls

IV or IO Protocol UP 6
If indicated

A **DIPHENHYDRAMINE**
1 mg / kg IV / IM / IO / PO

B Monitor and Reassess
Monitor for Worsening
Signs and Symptoms

MODERATE
2+ Body Systems

EPINEPHRINE 1:1000
≥ 30 kg 0.3 – 0.5 mg IM
< 30 kg 0.15 mg IM
if available

DIPHENHYDRAMINE
1 mg / kg PO
Maximum 50 mg
See Pearls

B **ALBUTEROL NEBULIZER**
2.5 – 5 mg
(MAX OF 3 DOSES)
if indicated

A **EPINEPHRINE 1:1000**
≥ 30 kg 0.3 – 0.5 mg IM
< 30 kg 0.15 mg IM
Repeat every 5 minutes
if no improvement

DIPHENHYDRAMINE
1 mg / kg IV / IM / IO
if not given PO (See Pearls)

SEVERE
2 + Body Systems + hypotension
Or Isolated Hypotension

EPINEPHRINE 1:1000
≥ 30 kg 0.3 – 0.5 mg IM
< 30 kg 0.15 mg IM
if available

B **ALBUTEROL NEBULIZER**
2.5 – 5 mg
(MAX OF 3 DOSES)
if indicated

A **EPINEPHRINE 1:1000**
≥ 30 kg 0.3 – 0.5 mg IM
< 30 kg 0.15 mg IM
if available

Airway Pediatric Protocol(s)
if indicated

Pediatric Hypotension/ Shock
Protocol PM 3
if indicated

IV or IO Access Protocol UP 6

A **ALBUTEROL NEBULIZER 2.5 – 5 mg**
+/- IPRATROPIUM 0.5 mg
(MAX OF 3 DOSES)
if indicated

NORMAL SALINE Bolus
20 mL/kg IV / IO
Repeat as needed
Maximum 60 mL/kg Liter(s)

P No improvement with IM Epinephrine
EPINEPHRINE
0.1 mcg/kg/min IV / IO
(Maximum 10 mcg/min)
See notes for dosing

METHYLPREDNISOLONE
2 mg/kg IV
Maximum 125 mg

Notify Destination or Contact Medical Control

Pediatric Medical Protocol Section

PEDIATRIC ALLERGIC REACTION

EPINEPHRINE DRIP INSTRUCTIONS:

* 1 mg of Epinephrine = 1 mL of Epinephrine 1:1,000 *
For precise dosing, remove 1 mL of Normal Saline from a 1 L bag
Inject 1 mg of Epinephrine 1:1,000 into the 1 L of Normal Saline
This results in a **1 mcg/mL** concentration
Reminder: Standard unit conversion: **dose** (mg/mL) x 1000 (mcg/mg) = **dose** (mcg/mL)

Calculation formula for **WEIGHT** based dosing:

$$\frac{\textbf{desired dose } (mcg/kg) \times \textbf{weight } (kg) \times \textbf{drop set } (60 \text{ gtt/mL})}{\textbf{concentration } (1 \text{ mcg/mL})} = \textbf{gtt/min}$$

UTILIZE 60 GTT SET IV TUBING FOR PEDIATRICS ≤ 20 kg

$$\frac{\textbf{desired dose } (mcg/kg) \times \textbf{weight } (kg) \times \textbf{drop set } (10 \text{ gtt/mL})}{\textbf{concentration } (1 \text{ mcg/mL})} = \textbf{gtt/min}$$

UTILIZE 10 GTT SET IV TUBING FOR PEDIATRICS > 20 kg

*** REFER TO DRUG CARDS FOR ADDITIONAL INFORMATION AND PRE-CALCULATED DRIP RATES ***
Contact Medical Control for Epinephrine drip dosing guidance **if needed**.

Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs, Abdomen**
- **Anaphylaxis is an acute and potentially lethal multisystem allergic reaction.**
- **Epinephrine administration:**
  - **Drug of choice and the FIRST drug that should be administered in acute anaphylaxis (Moderate/ Severe Symptoms.)**
  - **IM Epinephrine should be administered in priority before or during attempts at IV or IO access.**
- **Diphenhydramine and steroid administration:**
  - **Diphenhydramine/ steroids have no proven benefit in Moderate/ Severe anaphylaxis.**
  - **Diphenhydramine/ steroids should NOT delay initial or repeat Epinephrine administration.**
  - **In Moderate and Severe anaphylaxis, Diphenhydramine may decrease mental status.**
  - **Diphenhydramine should NOT be given to a patient with decreased mental status and/ or a hypotensive patient as this may cause nausea, vomiting, and/ or worsening mental status.**
- **Anaphylaxis unresponsive to repeat doses of IM epinephrine may require IV epinephrine administration by IV push or epinephrine infusion. Contact Medical Control for appropriate dosing.**
- **Symptom Severity Classification:**
  - **Mild symptoms:**
    - **Flushing, hives, itching, erythema with normal blood pressure and perfusion.**
  - **Moderate symptoms:**
    - **Flushing, hives, itching, erythema plus respiratory (wheezing, dyspnea, hypoxia) or gastrointestinal symptoms (nausea, vomiting, abdominal pain) with normal blood pressure and perfusion.**
  - **Severe symptoms:**
    - **Flushing, hives, itching, erythema plus respiratory (wheezing, dyspnea, hypoxia) or gastrointestinal symptoms (nausea, vomiting, abdominal pain) with hypotension and poor perfusion.**
- **Allergic reactions may occur with only respiratory and gastrointestinal symptoms and have no rash/ skin involvement.**
- **Angioedema** is seen in moderate to severe reactions and is swelling involving the face, lips or airway structures. This can also be seen in patients taking blood pressure medications like Prinivil / Zestril (lisinopril)-typically end in -**il**.
- **Hereditary Angioedema** involves swelling of the face, lips, airway structures, extremities, and may cause moderate to severe abdominal pain. Some patients are prescribed specific medications to aid in reversal of swelling. **Paramedic may assist or administer this medication per patient/ package instructions.**
- **Fluids and Medication titrated to maintain a SBP >70 + (age in years x 2) mmHg.**
- **Patients with moderate and severe reactions should receive a 12-Lead ECG and should be continually monitored, but this should NOT delay administration of epinephrine.**
- **EMR/ EMT:**
  - **The use of Epinephrine IM is limited to the treatment of anaphylaxis and may be given only by autoinjector,** unless manual draw-up is approved by the Agency Medical Director and the NC office of EMS.
  - **Administration of diphenhydramine is limited to the oral route only**.
- **EMT administration of beta-agonist is limited to only patients currently prescribed the medication,** unless approved by the Agency Medical Director and the NC office of EMS.
- Agency Medical Director may require contact of medical control prior to EMT/ EMR administering any medication(s). Medical Director may require contact of medical control prior to EMT/ EMR administering any medication.
- The shorter the onset from exposure to symptoms the more severe the reaction.

EPINEPHRINE CONCENTRATION (1 mcg/mL) 0.1 mcg/kg/min			
(0.1 mcg/kg) x (kg) x (60 gtt) ÷ 1 mcg/mL		(0.1 mcg/kg) x (kg) x (10 gtt) ÷ 1 mcg/mL	
PATIENT WEIGHT (kg)	USING 60 gtt SET (≤ 20 kg) # gtts/min	PATIENT WEIGHT (kg)	USING 10 gtt SET (> 20 kg) # gtts/min
3	*18*	22	*22*
4	*24*	24	*24*
5	*30*	26	*26*
6	*36*	28	*28*
7	*42*	30	*30*
8	*48*	32	*32*
9	*54*	34	*34*
10	*60*	36	*36*
11	*66*	38	*38*
12	*72*	40	*40*
13	*78*	42	*42*
14	*84*	44	*44*
15	*90*	46	*46*
16	*96*	48	*48*
17	*102*	50	*50*
18	*108*	60	*60*
19	*114*	70	*70*
20	*120*	80	*80*
		90	*90*
		100	*100 – MAX DOSE*