



ALLERGIC REACTION / ANAPHYLAXIS

History

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

Signs and Symptoms

- Itching or hives
- Coughing / wheezing or respiratory distress
- Chest or throat constriction
- Difficulty swallowing
- Hypotension or shock
- Edema
- N/V

Differential

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

Assess Symptom Severity / Suspected Exposure to Allergen

MILD
Skin Only

	DIPHENHYDRAMINE 25 - 50 mg PO
	IV or IO Access Protocol UP 6 <i>if indicated</i>
A	DIPHENHYDRAMINE 25 - 50 mg PO / IV / IM / IO

B	Monitor and Reassess Monitor for Worsening Signs and Symptoms
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MODERATE
2 + Body Systems

	EPINEPHRINE 1:1000 0.3 – 0.5 mg IM <i>if available</i>
	DIPHENHYDRAMINE 25 - 50 mg PO <i>See Pearls</i>
B	ALBUTEROL NEBULIZER 2.5 – 5 mg (MAX OF 3 DOSES) <i>if indicated</i>
A	EPINEPHRINE 1:1000 0.3 – 0.5 mg IM Repeat every 5 minutes if no improvement
A	DIPHENHYDRAMINE 25 - 50 mg IV / IM / IO <i>if not given PO (See Pearls)</i>

SEVERE
2 + Body Systems + hypotension
Or Isolated Hypotension

	EPINEPHRINE 1:1000 0.3 – 0.5 mg IM <i>if available</i>
B	ALBUTEROL NEBULIZER 2.5 – 5 mg (MAX OF 3 DOSES) <i>if indicated</i>
A	EPINEPHRINE 1:1000 0.3 – 0.5 mg IM Repeat every 5 minutes if no improvement
	Airway Protocol(s) AR 1 - 4 <i>if indicated</i>
	Hypotension/ Shock Protocol AM 5 <i>if indicated</i>

	IV or IO Access Protocol UP 6
A	ALBUTEROL NEBULIZER 2.5 – 5 mg +/- IPRATROPIUM 0.5 mg (MAX OF 3 DOSES) <i>if indicated</i>
	NORMAL SALINE BOLUS 500 mL IV / IO Repeat as needed (Maximum 2 Liters)
P	No improvement with IM Epinephrine EPINEPHRINE 0.1 mcg/kg/min IV / IO (Maximum 10 mcg/min) See notes for dosing
	METHYLPREDNISOLONE 125 mg IV / IO
	Notify Destination or Contact Medical Control



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- Emergency Medical Responders and EMTs must complete annual training to administer Epinephrine 1:1000.
- Epinephrine 1:1000 initial dose is typically 0.3 mg IM. If patient condition indicates a higher dose, or if there is no response / improvement after initial dose, administer 0.5 mg IM.
- **Anaphylaxis unresponsive to repeat doses of IM epinephrine may require IV epinephrine administration by IV push or epinephrine infusion.**

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:

desired dose (mcg/kg) x weight (kg) x drop set (10 gtt/mL) = gtt/min
concentration (1 mcg/mL)

UTILIZE 10 GTT SET IV TUBING FOR ADULTS

* 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, Abdominal**
- **Anaphylaxis is an acute and potentially lethal multisystem allergic reaction.**
- **Epinephrine and 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/ poor perfusion or isolated hypotension.
- **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.
- **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).
- The shorter the onset from exposure to symptoms the more severe the reaction.



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EPINEPHRINE CONCENTRATION (1 mcg/mL) 0.1 mcg/kg/min

$$(0.1 \text{ mcg/kg}) \times (\text{kg}) \times (60 \text{ gtt}) \div 1 \text{ mcg/mL}$$

$$(0.1 \text{ mcg/kg}) \times (\text{kg}) \times (10 \text{ gtt}) \div 1 \text{ mcg/mL}$$

PATIENT WEIGHT (kg)	USING 60 gtt SET (≤ 20 kg)	PATIENT WEIGHT (kg)	USING 10 gtt SET (> 20 kg)
	# gtt/min		# gtt/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