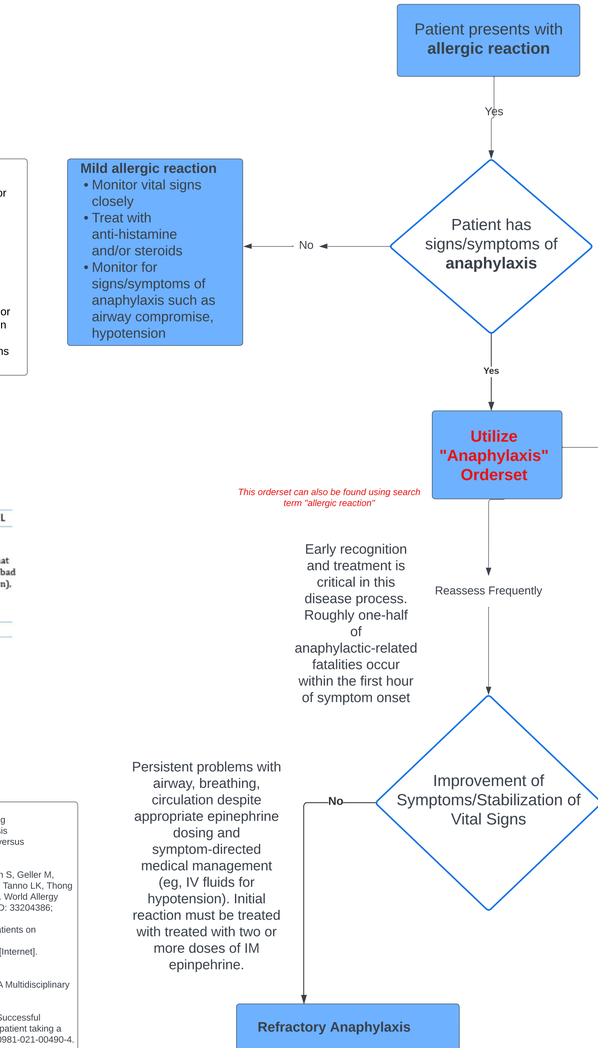
Guideline for Treatment of Allergic Reaction/Anaphylaxis Patients in the Emergency Department

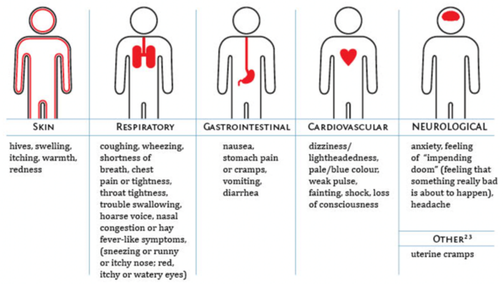
Purpose and Scope: This clinical care guideline has been collaboratively developed by the Department of Emergency Medicine, Pharmacy and Informatics to provide guidance for, and standardization of, the care of patients diagnosed with anaphylaxis in Emergency Departments across the Mount Sinai Health System.

Original Date: 6/2024



Anaphylaxis is highly likely when any one of the following 2 criteria are fulfilled:

1. Acute onset of an illness (minutes to several hours) with involvement of the skin, mucosal tissue, or both (eg, generalized hives, pruritus or flushing, swollen lips-tongue-uvula) and at least one of the following:
   a. Respiratory compromise (eg, dyspnea, wheeze-bronchospasm, stridor, reduced PEF, hypoxemia)
   b. Reduced BP or associated symptoms of end-organ dysfunction (eg, hypotonia [collapse], syncope, incontinence)
   c. Severe gastrointestinal symptoms (eg, severe crampy abdominal pain, repetitive vomiting), especially after exposure to non-food allergens
2. Acute onset of hypotension or bronchospasm or laryngeal involvement after exposure to a known or highly probable allergen for that patient (minutes to several hours), even in the absence of typical skin involvement.
   a. Excluding lower respiratory symptoms triggered by common inhalant allergens or food allergens perceived to cause "inhalational" reaction in the absence of ingestion.



Refractory Anaphylaxis

Initiate epinephrine gtt
Dose: 0.1 mcg/kg/min

Consider early intubation if there is airway involvement (stridor) or significant edema of tongue, oropharynx or voice alteration

Utilize DART as necessary

Consider glucagon for patients taking beta-blockers

Anaphylaxis

First-Line Treatment (ALL PATIENTS)

Epinephrine 1mg/mL (1:1000) injection
Pediatric Dosing: 0.01mg/kg
Adult Dosing: 0.5mg IM

Second-Line Treatment

Anti-histamine (Benadryl)
Diphenhydramine (Capsule vs Liquid/Elixir vs Injection)

+ Steroid
Prednisone (Tablet vs Solution) OR
Methylprednisolone (Injection)

+ H2 Blocker
Famotidine (Tablet vs Oral Suspension vs Injection)

IF Wheezing present:
Albuterol nebulization

IF Hypotension:
Sodium Chloride 0.9% injection

SEE CHART FOR COMPLETE MEDICATION LIST & DOSING

Improvement of Symptoms

After epinephrine administration, consider* monitoring for 4-6 hours *

If symptoms remain improved or have resolved, likely discharge

Upon discharge:
- if patient received prednisone as steroid, prescribe 3 day total course
- Prescribe antihistamine
- Prescribe EpiPen
- Refer to allergist

* Many EM guidelines suggest a post-epinephrine monitoring period of 4-6 hours. However, some available literature suggests this is not necessary.

In two papers among ED patients with allergic reactions or anaphylaxis, clinically important biphasic reactions and fatalities are rare. One study's data suggests that prolonged routine monitoring of patients whose symptoms have resolved is likely unnecessary for patient safety. In a second paper, no evidence was found that routine ED care for asymptomatic patients who have received prehospital epinephrine improves outcomes or that ED observation to monitor for biphasic reactions is necessary or reduces fatality risk.

ADULT DOSING

Medication	Defaults	Other Available Options
ADRENALINE - for life threatening allergic reactions		
Epinephrine 1 mg/mL injection	0.5 mg Intramuscular	[0.01 mg/kg] [0.3 mg]
	Once	[intramuscular]
Epinephrine Infusion 4 mg/250mL	Intravenous	[0-0.05 mcg/kg/min] [0.25 mcg/kg/min] [0.5 mcg/kg/min]
	Continuous	[0.1 mcg/kg/min]
ANTIHISTAMINES - for hives, angioedema, flushing, itching, or other cutaneous symptoms		
ORAL		
Diphenhydramine capsule	50 mg oral	[25 mg]
	Once	[Q4H PRN] [Q6H PRN]
PARENTAL		
Diphenhydramine injection	50 mg IV push	[10 mg] [12.5 mg] [25 mg] [50 mg]
	Once	[intravenous]
		[Q6H] [Q6H PRN]
STEROIDS - for the prevention of recurrent or protracted reaction		
ORAL		
Prednisone tablet	60 mg Oral	[1 mg] [2.5 mg] [5mg] [10 mg] [20mg] [30 mg] [40 mg] [60 mg]
	Once	[DAILY] [BID] [TID] [QID]
PARENTAL		
Methylprednisolone 125mg/mL injection	125 mg IV push	[10 mg] [20 mg] [40 mg]
	Once	[80 mg] [1 mg/kg] [2 mg/kg]
		[intravenous]
		[DAILY] [Q8H] [Q6H] [Q12H]
H2 BLOCKERS - for cutaneous symptoms not relieved by diphenhydramine		
ORAL		
Famotidine tablet	20 mg oral	[10 mg] [40 mg]
	Once	[DAILY] [BID]
PARENTAL		
Famotidine injection	20 mg IV push	[20 mg]
	Once	[DAILY] [Q12H]
BRONCHODILATORS - for shortness of breath/wheezing, as needed for bronchospasm resistant to IM epinephrine		
Albuterol 2.5 mg/3 mL (0.083%) nebulizer solution	2.5 mg – 5 mg nebulization	[2.5 mg]
	Every 20 minutes for 3 doses	[Q4H SCH] [Q6H SCH] [QID] [Q4H PRN] [Q6H PRN] [Q90 MIN]
IV FLUIDS - for hypotension/shock that does not respond to IM epinephrine		
Sodium Chloride 0.9% Bolus	1000 mL Intravenous	[250 mL] [500 mL] [1000 mL]
	Once for 1 hour	[2 hours] [3 hours] [4 hours]

PEDIATRIC DOSING

Medication	Defaults	Other Available Options
ADRENALINE - for life threatening allergic reactions		
Epinephrine 1 mg/mL injection	0.01 mg/kg (Max: 0.3 mg) intramuscular	[0.01 mg/kg] [0.1 mg/kg]
	Once	[intramuscular]
Epinephrine Infusion 4 mg/250mL	Intravenous	[0.01 mcg/kg/min] [0.05 mcg/kg/min]
	Continuous	
STEROIDS - for the prevention of recurrent or protracted reaction		
ORAL		
Prednisolone 15 mg/5 mg (3 mg/mL) solution	1-2 mg/kg (Max: 60 mg) oral	[1 mg/kg] [2 mg/kg] [4 mg/kg]
	Once	[DAILY] [BID]
PARENTAL		
Methylprednisolone 125mg/mL injection	1 mg/kg (Max: 125 mg) IV push	[0.5 mg/kg]
	Once	[1 mg/kg] [2 mg/kg]
		[intravenous]
		[DAILY] [Q8H] [Q6H] [Q12H]
ANTIHISTAMINES - for hives, angioedema, flushing, itching, or other cutaneous symptoms		
ORAL		
Diphenhydramine 12.5 mg/5 mL liquid/elixer	1 mg/kg (Max: 50 mg)	[1 mg/kg] [1.25 mg/kg]
	Once	[Q6H PRN] [Q8H PRN] [QID] [TID]
PARENTAL		
Diphenhydramine injection	1 mg/kg (Max: 50 mg) IV push	[1 mg/kg] [1.25 mg/kg]
	Once	[intravenous]
		[Q6H] [Q8H PRN] [TID] [QID]
H2 BLOCKERS- for cutaneous symptoms not relieved by diphenhydramine		
ORAL		
Famotidine Oral Suspension 40mg/5mL (8 mg/mL)	0.5 mg/kg (Max: 20 mg) oral	[1 mg/kg/day] [1.2 mg/kg/day]
	Once	[DAILY] [AT BEDTIME] [BID] [TID with Meals] [Q6H SCH]
PARENTAL		
Famotidine injection	0.5 mg/kg (Max: 20 mg) IV push	[0.25 mg/kg] [20 mg]
	Once	[DAILY] [Q12H]
BRONCHODILATORS - for shortness of breath/wheezing, as needed for bronchospasm resistant to IM epinephrine		
Albuterol 2.5 mg/3 mL (0.083%) nebulizer solution	2.5 mg – 5 mg nebulization	[2.5 mg] [5 mg] [7.5 mg]
	Every 20 minutes for 3 doses	[Q2H] [Q3H] [Q4H] [Q8H]
IV FLUIDS - for hypotension/shock that does not respond to IM epinephrine		
Sodium Chloride 0.9% Bolus	20 mL/kg intravenous	[250 mL] [500 mL] [1000 mL]
	Once for 1 hour	[2 hours] [3 hours] [4 hours]

Citations:

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