

# Anaphylaxis

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# Objectives

- **By the end of this session the participant will be able to:**
  - Define allergic reaction
  - Define anaphylaxis
  - Identify findings suggestive of anaphylaxis
  - List 7 medications used to treat anaphylaxis and the doses of those medications in anaphylaxis



# Allergy

- Immune system response to an innocuous substance(allergen)
  - Allergen is harmless or minimally harmful
    - Pollen
    - Bee stings
  - Immune system over-response to allergen
    - Typically a local response
    - May also include a skin response



# Anaphylaxis

- **Systemic response to allergen**
  - Multisystem response
  - Classically second exposure
- **Allergic response (typically cutaneous) +**
  - Airway
  - Breathing
  - Circulation
  - GI symptoms



## COMMON ANAPHYLAXIS TRIGGERS



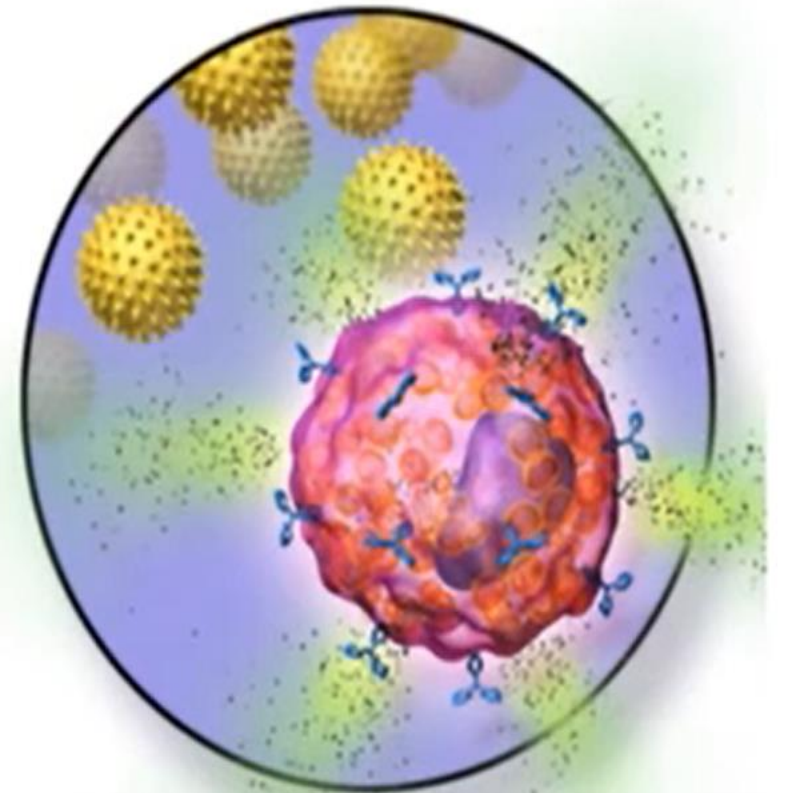
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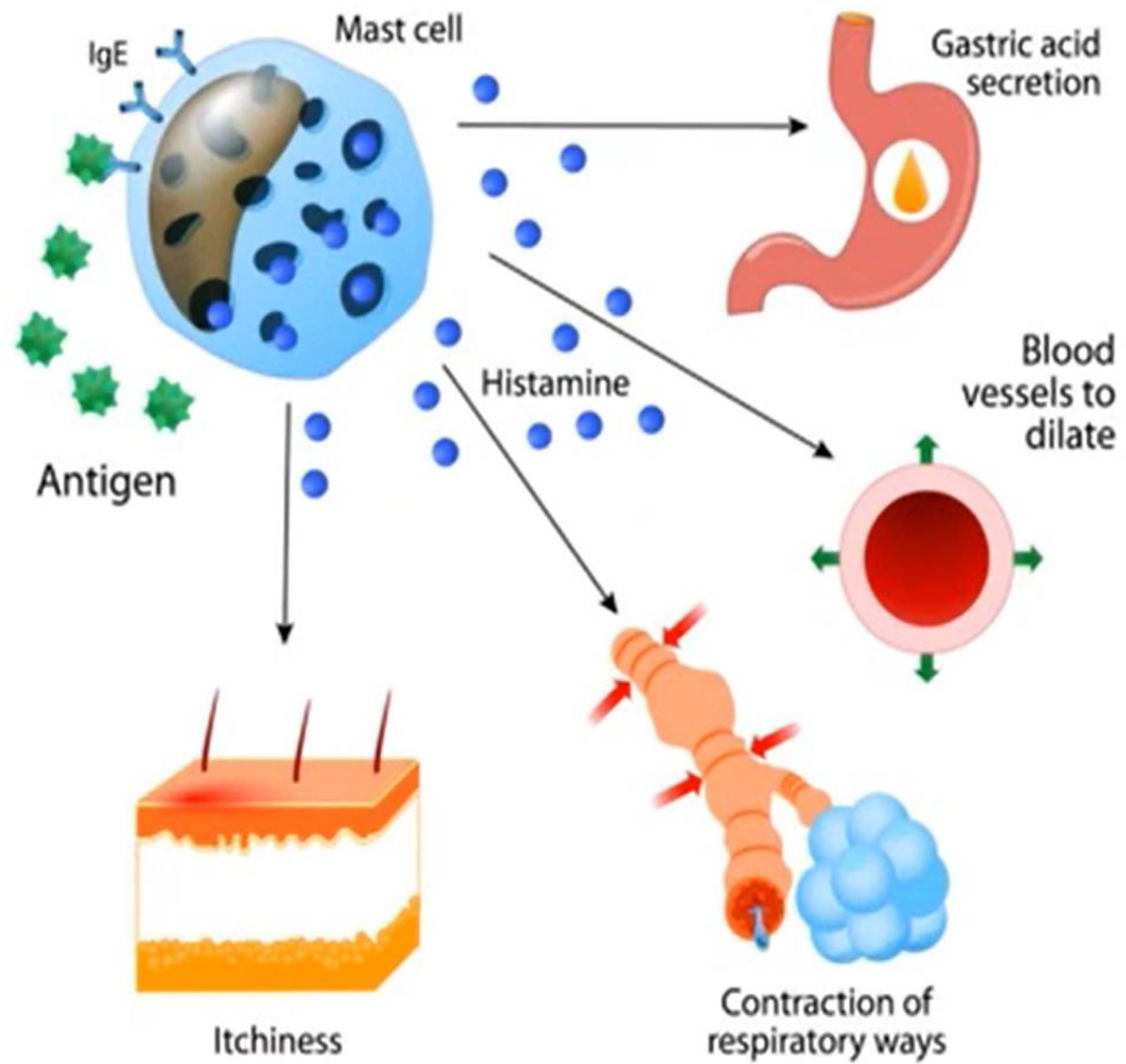


Histamine

Prostaglandins

Leukotrienes







Itching, hives

# Symptoms

*Typically begin within 15 minutes*



Swelling



Wheezing  
Difficulty breathing



Nausea  
Abdominal cramps  
Diarrhea



Dizziness  
Seizures  
Fainting



Fast heart rate  
Low blood pressure

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# Anaphylaxis

- **Presentation**

- Exposure
- Dermatologic
  - Flushing, urticaria, angioedema, pruritus, warmth, swelling
- Respiratory
  - Nasal congestion, throat tightness, chest tightness, wheezing, SOB, cough, hoarseness

- **Presentation**

- Cardiovascular
  - Dizziness, weakness, chest pain, syncope, palpitations
- GI
  - Dysphagia, nausea, vomiting, diarrhea, bloating, abdominal cramps
- Neuro
  - Headache, syncope, feeling of impending doom



## Anaphylactoid reactions

- do NOT involve IgE
- do NOT require prior sensitization



mast cell/  
basophil

## Common triggers:

- NSAIDs (aspirin, ibuprofen...)
- Local anesthetics
- Monoclonal antibodies
- Chemotherapeutic agents
- Radiopaque contrast agents
- Opioids
- Exercise

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# Treatment / Management

**Triage**

**Airway**

**Decontamination**

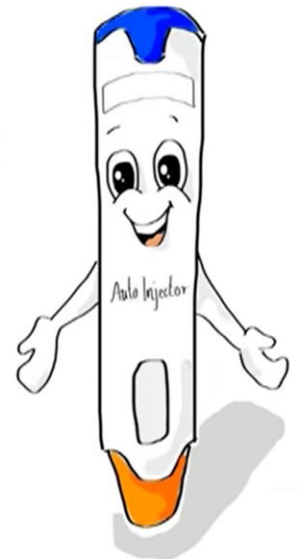
**Epinephrine**

dose of 0.3 to 0.5 mL of 1:1,000 concentration

Pediatric dosing is 0.01 mg/kg or 0.15 mg intramuscularly (IM)

Epinephrine is the **ONLY**  
first-line treatment for anaphylaxis!

Use it!



Give epinephrine  
even for ONE  
\*serious\* symptom







Adult dose:  
0.5mg (1mg/mL concentration) IM



Peds dose:  
 $0.01\text{mg/kg}$  ( $1\text{mg/mL}$  concentration) IM



intravenous (IV) epinephrine

1:10,000

repeat doses may be given every 5 to 10 minutes as needed until symptoms improve.

If patients require multiple doses, a continuous infusion of epinephrine may be considered, start an initial IV infusion of 0.1 mg of 1:10,000 given over 5 to 10 minutes. If more is required, begin infusion at 1 microgram per minute and titrate to effect. Stop IV infusion if arrhythmia or chest pain develops. The risk of cardiovascular complications is much greater for IV epinephrine



## IV Fluid Resuscitation

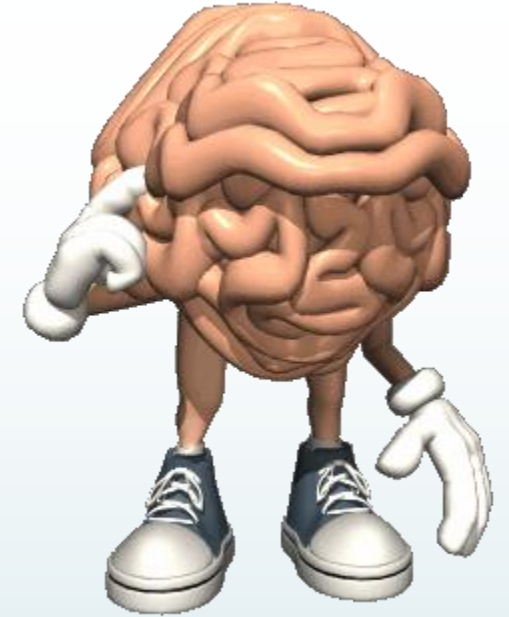
One to 2 L or 10 to 20 mL/kg isotonic crystalloid bolus

## Adjunctive Therapies

steroids, antihistamines, inhaled bronchodilators, and vasopressors

## Corticosteroids

reduction of length or biphasic response of anaphylaxis





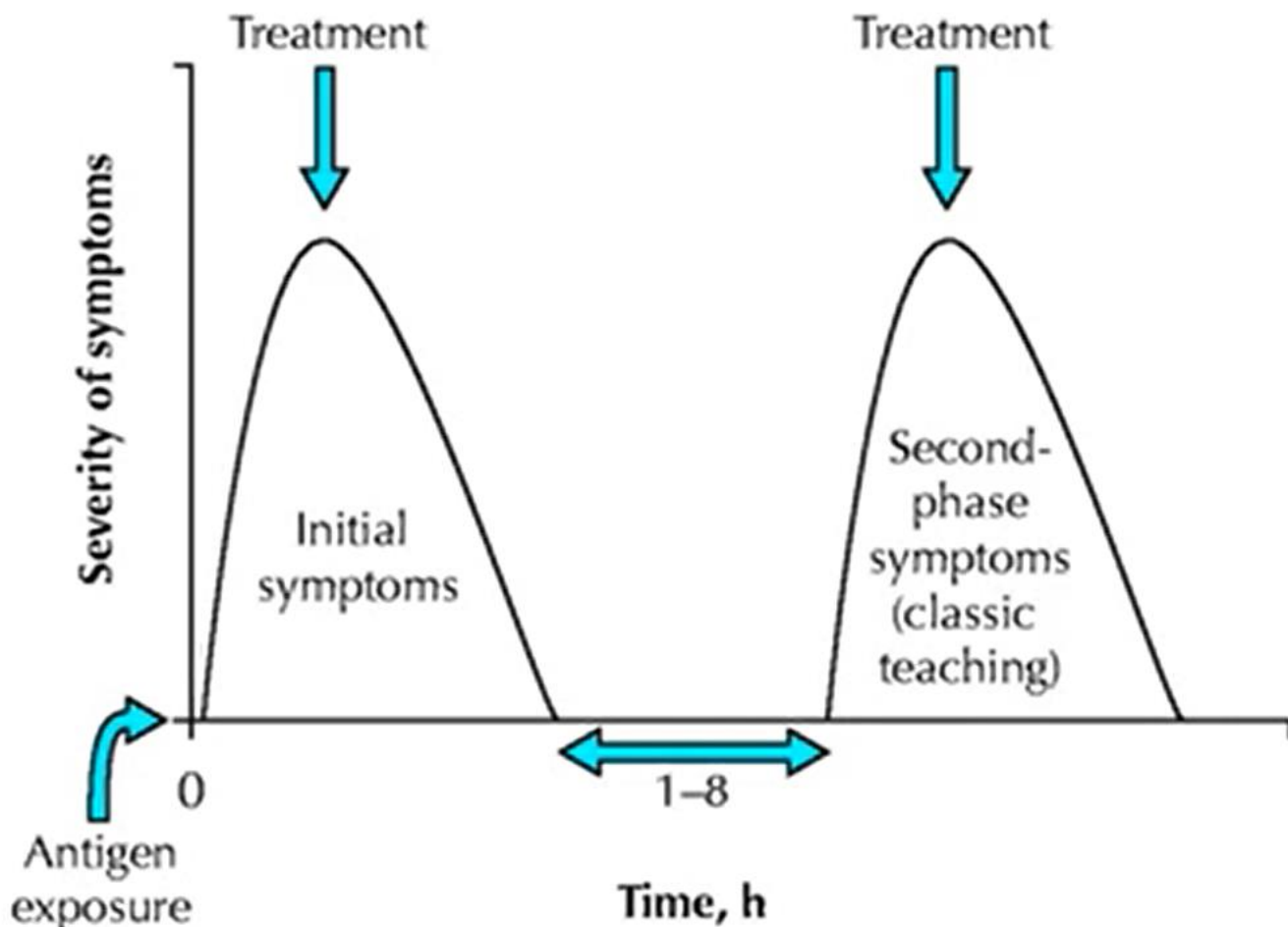
# Biphasic Reactions in Anaphylaxis

2-5 % of patients



?

No strong evidence presently exists but further study is required before recommending the exclusion of steroids



## Antihistamines

diphenhydramine 25 to 50 mg IV/IM

ranitidine (50 mg IV over 5 minutes)

## Bronchodilators

## Vasopressors

## Glucagon



## Deterrence and Patient Education

The patients should be provided with multiple epinephrine autoinjectors with 24-hour access and educated to use them when symptoms begin to recur.

Patients should be made aware of the importance of wearing medical alert bracelets or the like for assistance in the future.

## Prognosis



# SUMMARY

1. Recognize anaphylaxis quickly
2. Administer appropriate treatment – Epinephrine
3. Provide good discharge instructions and arrange follow-up with an Allergist

For references and a written summary on Anaphylaxis and Anaphylactic Shock go to the Emergency Medicine Cases Summary for Episode 78 at <https://emergencymedicinecases.com/emc-summaries/>



