



Anaphylaxis in Children: Acute Management

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References: Nelson Textbook of Pediatrics, UpToDate



Definition

Anaphylaxis is a **severe, rapid-onset systemic allergic reaction** that can rapidly become life-threatening. It affects multiple organ systems simultaneously and demands immediate recognition and treatment.

Airway Obstruction

Upper airway swelling and edema

Bronchospasm

Lower airway constriction

Hypotension

Dangerous drop in blood pressure

Shock

Circulatory collapse



⊗ ⚠ Anaphylaxis is a **medical emergency**. Every second counts – act immediately.



Key Concepts

★ Clinical Diagnosis

Diagnosis is **clinical**. Do not wait for laboratory confirmation before acting. Recognize the pattern and respond.

★ No Delays for Labs

Do **NOT** delay treatment while waiting for laboratory tests. Treatment must begin immediately upon clinical suspicion.

★ Epinephrine First

IM Epinephrine is the **FIRST** and **MOST IMPORTANT** treatment. Nothing replaces it – not antihistamines, not steroids.

Common Triggers

Anaphylaxis in children can be triggered by a wide range of allergens. Identifying the trigger is essential for long-term management and prevention.



Foods

- Peanuts
- Tree nuts
- Milk
- Eggs
- Seafood



Drugs

- Antibiotics
- NSAIDs



Others

- Insect stings
- Vaccines (rare)
- Latex



Clinical Features

Symptoms usually develop within **minutes to hours** after exposure to the trigger. Involvement of multiple organ systems is characteristic.

Skin & Mucosa

Most Common

- Urticaria
- Angioedema
- Flushing
- Pruritus

▪ Respiratory

- Wheezing
- Dyspnea
- Stridor
- Hoarseness
- Persistent cough

Cardiovascular

- Tachycardia
- Hypotension
- Dizziness
- Syncope
- Shock

▪ Gastrointestinal

- Vomiting
- Abdominal pain
- Diarrhea

Red Flags

The following signs indicate **severe, life-threatening anaphylaxis**. Treat **immediately** with IM epinephrine – do not wait.



Stridor

Upper airway obstruction



Respiratory Distress

Severe breathing difficulty



Hypotension

Dangerously low BP



Altered Consciousness

Confusion or unresponsiveness



Persistent Vomiting

Uncontrolled GI symptoms



Shock

Circulatory collapse

 Any of these red flags = **Immediate IM Epinephrine**. No exceptions.

Diagnosis

Clinical Diagnosis Criteria

Anaphylaxis is **highly likely** when there is an acute illness with:
Skin symptoms

PLUS

Respiratory compromise

OR

Hypotension

OR

Two or more organ systems involved

Clinical Examples

Skin + Wheeze

Skin + Vomiting

Wheeze + Hypotension

Angioedema + Stridor

 Remember: Diagnosis is **clinical**. No lab test is required before treatment.

Investigations



⚠️ ★ Treatment comes before investigations. Never delay epinephrine to obtain labs.

Laboratory Tests

May be performed **after** initial stabilization:

- Serum tryptase
- CBC
- Electrolytes
- Blood gas
- Lactate

Allergy Testing

Performed **after recovery** to identify the specific trigger and guide long-term allergen avoidance strategies.



Acute Management – Step 1: IM Epinephrine

★ FIRST-LINE TREATMENT

Dose

0.01 mg/kg IM
(1 mg/mL solution = 1:1000)

- Children: max 0.3 mg
- Adolescents: max 0.5 mg

★ Site of Injection

Anterolateral thigh

Preferred over deltoid – faster absorption, more reliable delivery.

Repeat Dose

Every 5–15 minutes if symptoms persist.

Do not hesitate to repeat – epinephrine is safe and life-saving.

Acute Management — Step 2: ABC Stabilization

After administering epinephrine, immediately assess and stabilize the airway, breathing, and circulation.



A — Airway

Assess for stridor, hoarseness, and airway edema. **Prepare for intubation** if necessary.



B — Breathing

High-flow oxygen via face mask. Target: SpO₂ >94%



C — Circulation

Establish IV or IO **access** immediately for fluid and medication delivery.

Acute Management – Steps 3 & 4: Fluids & Adjuncts

Step 3: IV Fluids

If hypotensive:

★ Normal Saline

20 mL/kg IV bolus

Repeat if necessary. Monitor response closely.

Step 4: Adjunctive Medications

Antihistamines

e.g. Diphenhydramine – useful for urticaria and pruritus.

✗ Not life-saving. Never replace epinephrine.

Corticosteroids

e.g. Hydrocortisone – may reduce prolonged symptoms and biphasic reactions.

✗ Not first-line therapy.

Bronchodilator

For persistent wheeze: ✓ Nebulized Salbutamol

Refractory Anaphylaxis & Observation



Refractory Anaphylaxis

If symptoms **persist despite repeated IM epinephrine**:

- Continuous **epinephrine infusion**
- ICU admission
- **Vasopressors** if shock persists

★ Observation Period

📌 Observe all patients for a **minimum of 4–6 hours** after the reaction.

Longer observation is required if:

- Severe initial reaction
- Multiple epinephrine doses required
- Hypotension present
- Previous biphasic reaction history

Biphasic reactions can occur **hours after** the initial episode – vigilance is essential.

Discharge Planning

Before a patient is discharged, a comprehensive plan must be in place to prevent future reactions and ensure family preparedness.



Identify the Trigger

Document the suspected allergen based on history and clinical context.



Avoid Allergen Exposure

Counsel family on strict avoidance strategies for the identified trigger.



Educate the Family

Teach recognition of early anaphylaxis signs and when to use the auto-injector.



Prescribe Epinephrine Auto-Injector

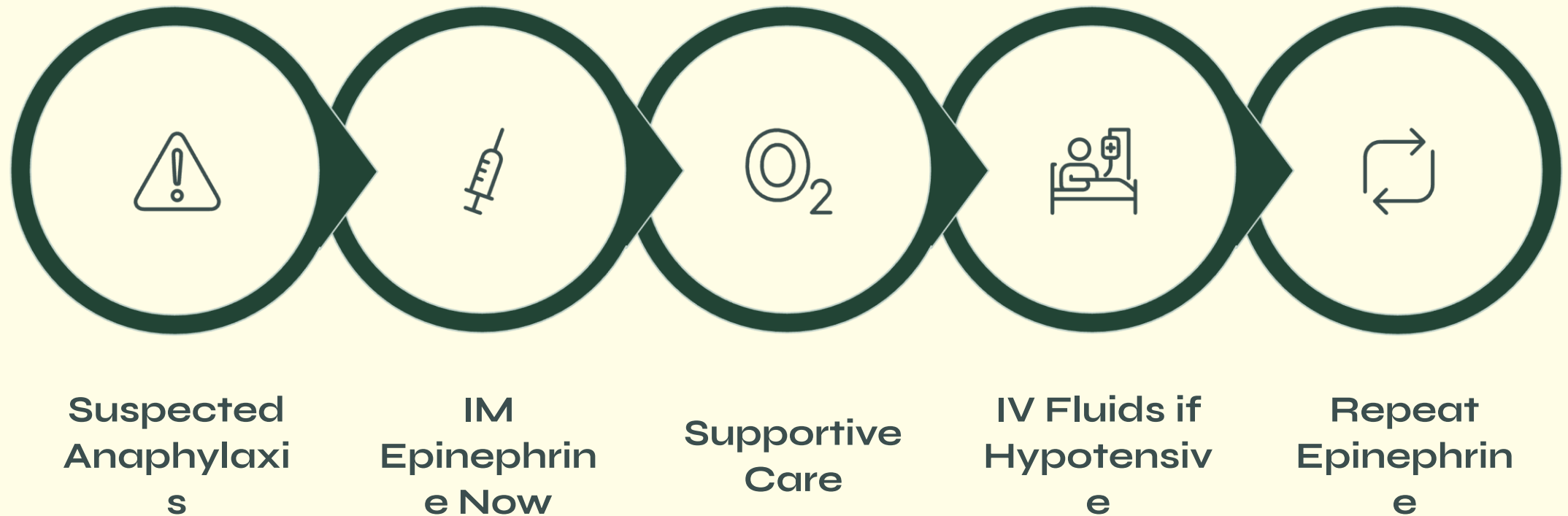
Prescribe if indicated. Ensure family is trained on correct administration technique.



Arrange Allergy Follow-Up

Refer to allergist for formal allergy testing and long-term management planning.

Acute Management Algorithm



This algorithm summarizes the stepwise approach to acute anaphylaxis management in children. **IM Epinephrine** is the cornerstone of every step – never delay its administration.

Key Home Messages

Clinical Diagnosis

Anaphylaxis is a **clinical diagnosis** – do not wait for lab results.

Epinephrine First

IM **epinephrine** is the first and most important treatment.

Antihistamines and steroids are adjunctive only.

Dose & Repeat

0.01 mg/kg IM in the anterolateral thigh. Repeat every **5–15 minutes** if necessary.

Observe All Patients

All patients must be observed for possible **biphasic reactions** for a minimum of 4–6 hours.

High-Yield Facts for Examinations

First-line treatment: IM Epinephrine

Route: Intramuscular

Site: Anterolateral thigh

Dose: 0.01 mg/kg (1:1000)

Most common cause in children: Food allergy

Never delay epinephrine administration.