1 Emergency and Critical Care

1.1 Shock

1.1.1 Anaphylactic Shock

Definition

Anaphylaxis is a severe, life-threatening, generalized or systemic hypersensitivity reaction characterized by rapidly developing life-threatening airway and/or breathing and/or circulation problems usually associated with skin and mucosal changes.

Causes

- Medications (especially antibiotics like penicillin, cephalosporins)
- Foods (peanuts, tree nuts, shellfish, eggs, milk)
- Insect stings (bees, wasps, hornets)
- Latex exposure
- Blood transfusion reactions

Clinical Features

Early signs and symptoms (within minutes to 2 hours):

- Skin: Urticaria, angioedema, flushing, pruritus
- Respiratory: Dyspnea, wheezing, stridor, throat tightness
- Cardiovascular: Hypotension, tachycardia, chest pain
- Gastrointestinal: Nausea, vomiting, abdominal pain, diarrhea
- Neurological: Dizziness, confusion, sense of impending doom

⚠ **WARNING:** Anaphylaxis is a medical emergency. Delayed treatment increases mortality risk. Epinephrine should be administered immediately when diagnosis is suspected.

Differential Diagnosis

- Vasovagal syncope
- Acute asthma exacerbation
- Myocardial infarction
- Carcinoid syndrome

- Hereditary angioedema

Investigations

Investigation	Purpose	Level of Care
Serum tryptase	Confirm mast cell activation (take within 1-2 hours)	HC III, HC IV
Complete blood count	Assess for eosinophilia, exclude infection	HC III, HC IV
Specific IgE testing	Identify allergen (perform 4-6 weeks after event)	HC IV

Management

Immediate management (First 5 minutes):

1. **Epinephrine (Adrenaline)** - FIRST-LINE TREATMENT
   - **Adults:** 0.5 mg (0.5 mL of 1:1000) IM into mid-outer thigh
   - **Children:** 0.01 mg/kg (max 0.3 mg) IM into mid-outer thigh
   - Repeat every 5-15 minutes if needed
   - *Note: IM route preferred over SC for faster absorption*
2. **Position patient appropriately**
   - Supine with legs elevated (if hypotensive)
   - Semi-recumbent if respiratory distress
   - **Never sit upright if hypotensive** - risk of cardiac arrest
3. **High-flow oxygen**
   - 15 L/min via non-rebreather mask
   - Target SpO_2 ≥94%
4. **IV fluid resuscitation**
   - 0.9% Normal Saline 1-2 liters rapid bolus (adults)
   - 20 mL/kg bolus in children
   - May need 2-4 liters in first hour

📋 **NOTE:** At HC II level, give IM epinephrine immediately and refer urgently to higher level facility. Do not delay transfer while waiting for IV access.

Secondary management (After stabilization):

Medication	Dose	Route	Purpose
Hydrocortisone	200 mg (adults) 4 mg/kg (children)	IV/IM	Prevent biphasic reaction
Chlorpheniramine	10 mg (adults) 0.2 mg/kg (children)	IV/IM	Relieve cutaneous symptoms
Salbutamol nebulizer	5 mg in 2.5 mL NS 2.5 mg (children)	Inhaled	Bronchospasm relief

Prevention

- **Patient education:** Allergen avoidance strategies
- **Epinephrine auto-injector prescription:** All patients should carry two devices
- **Medical alert bracelet/card:** Document known allergens
- **Allergy testing referral:** To confirm specific triggers
- **Action plan:** Written emergency plan for patient and family

Referral Criteria

Refer to HC IV or Specialist Care if:

- Required multiple doses of epinephrine
- Severe respiratory or cardiovascular compromise
- Pregnant patient
- History of biphasic reactions
- Uncertain trigger requiring extensive allergy testing

⚠ **OBSERVATION PERIOD:** All patients must be observed for minimum 6-8 hours after anaphylaxis due to risk of biphasic reaction (occurs in 20% of cases). Patients with severe reactions require 24-hour observation.