

Emergency Medicine Knowledge Base

Trauma Management

Primary Survey (ABCDE)

- **A - Airway**: Assessment and management with C-spine protection
- **B - Breathing**: Ventilation and oxygenation
- **C - Circulation**: Hemorrhage control and shock management
- **D - Disability**: Neurologic assessment (GCS)
- **E - Exposure**: Complete examination with temperature control

Advanced Trauma Life Support (ATLS)

- **Golden Hour**: Critical first hour after trauma
- **Damage Control**: Rapid control of life-threatening injuries
- **Massive Transfusion Protocol**: Blood product resuscitation
- **Trauma Team Activation**: Coordinated multidisciplinary response

Specific Trauma Types

- **Traumatic Brain Injury**: GCS assessment, ICP management
- **Chest Trauma**: Pneumothorax, hemothorax, cardiac tamponade
- **Abdominal Trauma**: FAST exam, diagnostic peritoneal lavage
- **Pelvic Fractures**: Hemorrhage control, stability assessment

Cardiac Emergencies

Acute Coronary Syndrome

- **STEMI**: ST-elevation myocardial infarction
- **NSTEMI**: Non-ST-elevation myocardial infarction
- **Unstable Angina**: Chest pain at rest or with minimal exertion
- **Treatment**: Antiplatelet, anticoagulation, reperfusion therapy

Cardiac Arrest

- **Ventricular Fibrillation**: Immediate defibrillation
- **Pulseless Ventricular Tachycardia**: Defibrillation, antiarrhythmics

- **Asystole**: High-quality CPR, epinephrine, reversible causes
- **PEA**: Pulseless electrical activity, treat underlying cause

Arrhythmias

- **Atrial Fibrillation**: Rate vs rhythm control, anticoagulation
- **Supraventricular Tachycardia**: Vagal maneuvers, adenosine
- **Ventricular Tachycardia**: Stable vs unstable, cardioversion

Respiratory Emergencies

Acute Respiratory Failure

- **Type I**: Hypoxemic (pneumonia, ARDS, pulmonary edema)
- **Type II**: Hypercapnic (COPD, neuromuscular disease)
- **Treatment**: Oxygen therapy, mechanical ventilation

Asthma Exacerbation

- **Assessment**: Peak flow, oxygen saturation, accessory muscles
- **Treatment**: Beta-2 agonists, corticosteroids, magnesium
- **Severe**: Continuous nebulizers, BiPAP, intubation

Pneumothorax

- **Spontaneous**: Primary (young, tall males) vs secondary (COPD)
- **Tension**: Life-threatening, immediate decompression
- **Treatment**: Needle decompression, chest tube placement

Pulmonary Embolism

- **Risk Factors**: Virchow's triad (stasis, hypercoagulability, endothelial injury)
- **Clinical Presentation**: Dyspnea, chest pain, hemoptysis
- **Diagnosis**: D-dimer, CTPA, V/Q scan
- **Treatment**: Anticoagulation, thrombolysis, embolectomy

Neurologic Emergencies

Stroke

- **Ischemic**: Thrombotic, embolic, lacunar

- **Hemorrhagic**: Intracerebral, subarachnoid
- **Assessment**: NIHSS, FAST exam, time of onset
- **Treatment**: tPA, mechanical thrombectomy, blood pressure management

Seizures

- **Generalized**: Tonic-clonic, absence, myoclonic
- **Focal**: Simple vs complex partial seizures
- **Status Epilepticus**: Continuous seizure >5 minutes
- **Treatment**: Benzodiazepines, antiepileptics, airway protection

Altered Mental Status

- **Differential**: AEIOU-TIPS mnemonic
- A: Alcohol, Acidosis
- E: Epilepsy, Encephalitis, Endocrine
- I: Insulin (hypoglycemia), Intoxication
- O: Opiates, Oxygen (hypoxia)
- U: Uremia
- T: Trauma, Temperature
- I: Infection
- P: Psychiatric, Poisoning
- S: Shock, Stroke

Shock and Resuscitation

Types of Shock

- **Hypovolemic**: Blood loss, dehydration
- **Cardiogenic**: Heart failure, myocardial infarction
- **Distributive**: Septic, anaphylactic, neurogenic
- **Obstructive**: Tension pneumothorax, cardiac tamponade, PE

Fluid Resuscitation

- **Crystalloids**: Normal saline, lactated Ringer's
- **Colloids**: Albumin, synthetic colloids
- **Blood Products**: Packed RBCs, plasma, platelets
- **Monitoring**: Urine output, lactate, central venous pressure

Vasopressors

- **Norepinephrine**: First-line for septic shock
- **Epinephrine**: Cardiac arrest, anaphylaxis
- **Dopamine**: Cardiogenic shock with bradycardia
- **Vasopressin**: Adjunct in refractory shock

Infectious Disease Emergencies

Sepsis and Septic Shock

- **SIRS Criteria**: Temperature, heart rate, respiratory rate, WBC
- **qSOFA**: Quick sequential organ failure assessment
- **Treatment**: Early antibiotics, fluid resuscitation, source control
- **Surviving Sepsis Guidelines**: Evidence-based management

Meningitis

- **Bacterial**: S. pneumoniae, N. meningitidis, H. influenzae
- **Viral**: Enterovirus, HSV, VZV
- **Clinical**: Fever, headache, neck stiffness, altered mental status
- **Treatment**: Empiric antibiotics, steroids, supportive care

Cellulitis and Soft Tissue Infections

- **Uncomplicated**: Oral antibiotics, outpatient management
- **Complicated**: IV antibiotics, surgical consultation
- **Necrotizing Fasciitis**: Surgical emergency, broad-spectrum antibiotics

Toxicology

Common Poisonings

- **Acetaminophen**: N-acetylcysteine antidote
- **Salicylates**: Alkalinization, hemodialysis
- **Opioids**: Naloxone reversal
- **Benzodiazepines**: Flumazenil (limited use)
- **Tricyclic Antidepressants**: Sodium bicarbonate

Antidotes

- **Specific Antidotes**: Naloxone, flumazenil, N-acetylcysteine
- **Chelating Agents**: EDTA, dimercaprol, deferasirox

- **Enhanced Elimination**: Activated charcoal, hemodialysis

Pediatric Emergencies

Pediatric Assessment Triangle

- **Appearance**: Mental status, muscle tone, consolability
- **Work of Breathing**: Respiratory effort, positioning
- **Circulation**: Skin color, capillary refill

Common Pediatric Conditions

- **Febrile Seizures**: Benign, age 6 months to 5 years
- **Croup**: Barking cough, stridor, viral etiology
- **Bronchiolitis**: RSV, wheezing in infants
- **Intussusception**: Abdominal pain, bloody stools

Pediatric Resuscitation

- **Weight-based Dosing**: Broselow tape, length-based calculations
- **Airway Management**: Age-appropriate equipment
- **Fluid Resuscitation**: 20 mL/kg boluses
- **Defibrillation**: 2 J/kg initial dose