

# EMERGENCY MEDICINE ROTATION LEARNING OBJECTIVES

**Emergency Medicine** – Students will be placed in a hospital based emergency room to gain exposure to urgent and emergent care. This rotation’s examination will focus on Emergency Medicine. The following pages outline the learning objectives for this clinical experience. They are designed to guide students in their clinical activities and supplemental reading. It is not the Program’s intention that students will be exposed to this complete list of objectives during the clinical experience. This section is designed to assist students in their preparation for the emergency medicine end-of-rotation exam.

## LEARNING OBJECTIVES FOR MEDICAL KNOWLEDGE

Upon completion of this clinical experience, the student will be expected to competently *recognize and apply knowledge to compare, differentiate and evaluate* the:

- **etiology, epidemiology, risk factors and pathophysiology (if appropriate)**
- **clinical manifestations**
- **differential diagnosis**
- **assessment (including recommendation and interpretation of laboratory, diagnostic and radiological studies/findings)**
- **management (including initial stabilization, pharmacological/ non-pharmacological, patient education, procedural, consult requests, and disposition)**
- **prognosis, complications, prevention and patient education**

of the following diseases/disorders/symptoms.

### Airway Management

Recognize and recommend appropriate airway management in the conscious patient, unconscious patient, pediatric patient and the patient with facial and neck trauma.

### Fluid Management

Differentiate and choose the appropriate type of IV fluids

### Trauma/ Shock

etiology of shock in a trauma patient

shock – hypovolemic, cardiogenic, anaphylactic, neurogenic

resuscitation fluids (crystalloids verses colloids)

blunt verses penetrating trauma

tension pneumothorax

cardiac (pericardial) tamponade

flail chest

traumatic head injury

CPR (BLS, ACLS) Protocols

C-spine clearance protocol (National Emergency X-radiography Utilization study (NEXUS) criteria)

### Respiratory Emergencies

Pneumothorax, hemothorax

aspiration

exacerbation of asthma/ COPD

respiratory acidosis and alkalosis

pulmonary edema

pneumonia (viral, bacterial and fungal)

upper airway obstruction  
atelectasis  
epiglottitis  
peritonsillar abscess

pulmonary embolus  
pleurisy  
retropharyngeal abscess  
respiratory failure

Identify and recommend hospital admission for respiratory emergencies using appropriate criteria.

### Cardiovascular Emergencies

angina pectoris  
acute myocardial infarction (AMI)  
pericardial effusion and tamponade  
hypertensive emergencies/urgencies

pericarditis  
aortic dissection  
congestive heart failure

#### EKG abnormalities:

Asystole  
QT prolongation  
Atrial (fibrillation, flutter)  
Sinus bradycardia, tachycardia  
PVCs  
Paroxysmal supraventricular  
tachycardia

Ventricular (tachycardia, fibrillation)  
AV block (1<sup>st</sup>, 2<sup>nd</sup>, Complete)  
Right and left bundle branch block  
Wolf-Parkinson-White  
Torsade de Pointes

Appropriately and accurately identify and recommend and/or perform cardioversion, and defibrillation.

Identify and recommend hospital admission for cardiac emergencies through use of appropriate criteria

### Gastrointestinal Emergencies

Appendicitis	Obstruction- small/large intestine, volvulus
Perforated peptic ulcer	Bowel perforation
Diverticulitis	Gastroenteritis
Abdominal aortic aneurysm	Ischemic bowel
Splenic rupture	Esophageal spasm/esophagitis
Esophageal varices	Mallory-Weiss syndrome
Acute pancreatitis	Intussusception/volvulus
Mesenteric ischemia	Hemorrhoids-thrombosed
Infectious diarrhea	Hernias-incarcerated/strangulated
Upper and lower gastrointestinal bleeding	
Cholecystitis/lithiasis/ biliary colic	
Acute hepatitis	
Inflammatory bowel disease/toxic megacolon	

Identify and recommend hospital admission for gastrointestinal emergencies through use of appropriate criteria.

### Neurological Emergencies

Glasgow Coma Scale

Levels of consciousness

Subdural hematoma  
 Intracerebral hemorrhage  
 Subarachnoid hemorrhage  
 Meningitis  
 Encephalitis  
 Seizure disorders, status epilepticus  
 Spinal cord injury  
 Guillain-Barré syndrome

Acute TIA/CVA  
 Head trauma  
 Cerebral contusion  
 Headache  
 Basilar skull fracture  
 Hepatic encephalopathy

Recognize and appropriately recommend the potential etiology and diagnostic approach and treatment for syncope, dizziness, and vertigo.

Identify and recommend hospital admission for neurological emergencies through use of appropriate criteria.

### Musculoskeletal Trauma and Emergencies

Bursitis	Fractures	Strain
Contusion	Spasms	Tendonitis
Dislocations	Sprain	

#### *Types of Fractures*

Open	comminuted	displaced articular stress
pathologic	greenstick	closed avulsion
compression	angulated	oblique
spiral	transverse	torus

#### *Specific*

##### **A. Shoulder/Arm**

- 1) anterior/posterior shoulder dislocation
- 2) acromioclavicular separation
- 3) humeral fractures
- 4) clavicle fractures

##### **B. Elbow**

- 1) subluxation radial head (nursemaid's elbow)
- 2) Supracondylar fracture

##### **C. Forearm/Wrist**

- 1) Colle's Fracture
- 2) Radial Fracture
- 3) Ulnar fracture
- 4) Scaphoid (Navicular) fracture

##### **D. Hand/Finger**

- 1) MCP ulnar collateral ligament
- 2) sprain/rupture(gamekeeper's thumb)
- 3) phalanx fractures
- 4) metacarpal fractures (Boxer's)
- 5) mallet finger

## E. Ankle/foot

- 1) malleolar fractures
- 2) fifth metatarsal (Jones')
- 3) calcaneous fracture

## F. Leg

- 1) tibial fractures
- 2) fibular fractures
- 3) femur fractures

## G. Salter-Harris I-V

## H. Knee

- 1) patella fracture/dislocation

## I. Facial

- 1) orbital blowout fracture

## J. Pelvic

## K. Hip

- 1) intra-trochanteric fracture
- 2) subcapital fracture
- 3) Slipped Capital femoral epiphysis
- 4) Legg-Calve-Perthes

## Soft tissue trauma/injuries

Rotator Cuff tendonitis/bursitis/tear	
Biceps tendonitis/rupture	Medial/lateral epicondylitis
Anterior/posterior cruciate tear	Medial/lateral collateral ligament tear
Patella tendon bursitis/ tendonitis	Achilles tendon rupture
Compartment syndrome	

## Neck/Spine

Herniation	Vertebral fractures
Spinal cord injury	Whiplash
Cauda equine syndrome	Low back pain

Identify and recognize the most common fracture associated with the following complications:

- Osteomyelitis
- Volkman's ischemic contracture
- avascular necrosis
- fat emboli syndrome
- inhibited bone growth development in the pediatric patient

## Wound Care

Tetanus prophylaxis and immunization  
Primary/secondary wound closures  
Appropriate dressing and wound treatments based on wound type

## Dermatologic, Burns and Environmental Emergencies

Herpes zoster	Cellulitis
Erythema multiforme	Smoke inhalation
Steven-Johnson's Syndrome	Burns (all forms and degrees)
Toxic epidermal necrolysis	
Criteria for hospital and burn center admission for the burn patient	
Utilization of the Rule of Nines	Bites/Stings: all forms
Heat cramps/heat exhaustion/heat stroke	Rabies
Frostbite/ hypothermia	Drug eruptions
	Viral exanthems

## Eye, Ear, Nose, Oral Cavity Emergencies

Epistaxis (anterior, posterior)	Acute hearing loss and otalgia
Foreign bodies	Red eye
Ocular pain	Acute visual loss
Retinal detachment	Chemical and thermal flash burns
Acute angle-closure glaucoma	Hypema
Central retinal artery occlusion	Otitis media/externa
Orbital and periorbital cellulitis	Acute pharyngitis/laryngitis
Corneal abrasion and ocular trauma	Acute sinusitis/mastoiditis
Facial trauma	Barotrauma
Dental fractures/loss/avulsion/abscess	
Peritonsillar abscess	
Smiles for Life objectives:	

<http://www.smilesforlifeoralhealth.org/buildcontent.aspx?tut=555&pagekey=62948&cbreceipt=0>

## Gynecologic and Obstetric Emergencies

Ectopic pregnancy	Rupture ovarian cysts
Ovarian torsion	Placental abruption
Placenta previa	Spontaneous abortion
Preeclampsia	Eclampsia
Pelvic inflammatory disease	Fetal distress
Pelvic pain	Mastitis/breast abscess

## Genitourinary Emergencies

Glomerulonephritis	Epididymitis
Nephrolithiasis	Acute renal failure
Pyelonephritis	Prostatitis
Testicular torsion	Orchitis

Peripheral Vascular Emergencies

- Abdominal aortic aneurysm
- Acute arterial occlusion
- Deep vein thrombosis

Endocrine Emergencies

- Diabetic ketoacidosis
- thyroid storm
- myxedema coma
- hyperglycemic hyperosmolar nonketotic syndrome
- acute adrenal crisis
- hypoglycemia
- hyper/hypo calcemia

Metabolic, Fluid and Electrolyte Emergencies

- alcohol ketoacidosis
- hyper/hypo natremia
- respiratory acidosis/alkalosis
- dehydration
- hyper/hypo kalemia
- metabolic acidosis (anion and non-anion gap)/alkalosis

Toxicology

- Aspirin overdose
- Digoxin overdose
- opiate overdose
- cocaine overdose
- amphetamines
- decontamination/detoxification/antidotes
- acetaminophen overdose and toxicity
- sedatives and hypnotics (benzodiazepines)
- anticholinergic overdose
- antiepileptic overdose
- ethanol and other toxic alcohols
- carbon monoxide poisoning

Psychiatric Emergencies

- Suicide/homicide ideations
- Panic attack/anxiety disorders
- Psychosis
- Hallucinations
- Depression
- Bipolar disorder
- Schizophrenia
- Suicide attempt

Abuse

- Sexual abuse
- Child abuse
- Elder abuse
- Domestic/intimate partner violence

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**LEARNING OBJECTIVES FOR PHARMACOTHERAPEUTICS**

Students will also be expected to *discern* the **properties of the following drug or drug classes including mechanism of action, interactions, contraindications, and major and common side effects**. Students will also be expected to *discern* the appropriate **patient education and necessary follow up** required for the following drugs or drug classes.

- Oral and IV antibiotics
- Topical and local Anesthetics
- Anticoagulants
- Antiarrhythmics
- Analgesics
- Thrombolytics
- Antihypertensives
- Diuretics

Antipsychotics  
 Anti-anxiotics  
 Antiemetics  
 Ophthalmological medications  
 Corticosteroids

Antidepressants  
 Antidiarrheals  
 Antispasmodics/anticholinergics  
 Cardiac medications  
 Respiratory medications

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**LEARNING OBJECTIVES FOR EMERGENCY MEDICINE SKILLS**

**Recognize, perform and/or assist in the following procedures and identify the indications and potential complications (when applicable) for each:**

Nasogastric tube placement	Urinary catheterization
Chest tube placement	Application of splints
Application of wound dressings	Clearance of cervical spine
Control of superficial hemorrhage	Suturing
Local anesthesia infiltration	Removal of superficial foreign bodies
Anterior nasal packing	Fluorescein corneal examination
Airway management	Cardiopulmonary resuscitation
Lumbar puncture	Incision and drainage
IV access(peripheral and central line)	venipuncture
Injections	Digital/field block

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**LEARNING OBJECTIVES FOR DIAGNOSTIC STUDIES**

Students will be expected to appropriately **recommend, interpret** the findings, and **recognize the indications/clinical significance** of the following diagnostic studies. In addition students will be expected to discern appropriate **management** (including counseling and informed consent) when *abnormalities* are found in the following routine tests, and recognize the **potential complications** for each:

Peak Flow	Sodium	Pulse Oximetry
X-ray (chest, abd, KUB)	Carbon Dioxide	Ferritin
12 Lead ECG& Rhythm Strip	Albumin	DDimer
Stool occult blood	Lipase	Therapeutic drug Levels
CBC & Differential Glucose	Amylase	Qual/Quantitative β Hcg
ESR	Cardiac enzymes	MSK X-ray/MRI
BUN	TSH	Rheumatoid factor
Creatinine	CT scan	Cholesterol Panel
Fluid Analysis	Urine Analysis	Wound C &S
Potassium	Urine C&S	BNP
AST/ALT	HgA <sub>1</sub> C	Blood C&S
Alkaline Phosphatase	Anion gap	ABGs
Chloride	Calcium	PT, PTT, INR
Blood type and cross	Magnesium ultrasonography	Toxicology screens

**END OF EMERGENCY MEDICINE LEARNING OBJECTIVES**