

EMERGENCY MEDICINE ROTATION LEARNING OBJECTIVES

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.

EM MEDICAL KNOWLEDGE

Upon completion of this clinical experience (EM), the student will be able to:

- **Understand etiology, epidemiology, risk factors and pathophysiology**
- **Evaluate clinical manifestations**
- **Formulate a differential diagnosis**
- **Develop an assessment (including recommendation and interpretation of laboratory, diagnostic and radiological studies/findings)**
- **Construct a patient-specific plan (including pharmacological/ non-pharmacological, patient education, procedural and necessary referrals)**
- **Describe prognosis, complications, prevention, patient education, and treatment goals**

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

upper airway obstruction

atelectasis

epiglottitis

respiratory acidosis and alkalosis

pulmonary edema

pneumonia (viral, bacterial and fungal)

pulmonary embolus

pleurisy

retropharyngeal abscess

peritonsillar abscess
ARDS

respiratory failure

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

Cardiovascular Emergencies

angina pectoris	pericarditis
acute myocardial infarction (AMI)	aortic dissection
pericardial effusion and tamponade	congestive heart failure
hypertensive emergencies/urgencies	

EKG abnormalities:

Asystole	Ventricular (tachycardia, fibrillation)
QT prolongation	AV block (1 st , 2 nd , Complete)
Atrial (fibrillation, flutter)	Right and left bundle branch block
Sinus bradycardia, tachycardia	Wolf-Parkinson-White
PVCs	Torsade de Pointes
Paroxysmal supraventricular tachycardia	

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	Subdural hematoma
Levels of consciousness	Intracerebral hemorrhage

Subarachnoid hemorrhage
 Meningitis
 Encephalitis
 Seizure disorders, status epilepticus
 Acute TIA/CVA
 Spinal cord injury
 Guillain-Barré syndrome

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 online module objectives	

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

Metabolic, Fluid and Electrolyte Emergencies

alcohol ketoacidosis	dehydration
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hyper/hypo natremia
respiratory acidosis/alkalosis

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

Abuse

Sexual abuse
Child abuse

Elder abuse
Domestic/intimate partner violence

EM 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.

- Analgesics
- Anesthetics- topical, local
- Antianxiolytics
- Antiarrhythmics
- Antibiotics- oral, IV
- Anticoagulants
- Antidepressants
- Antidiarrheals
- Antiemetics
- Antihypertensives
- Antipsychotics
- Antispasmodics/anticholinergics
- Cardiac medications
- Corticosteroids
- Diuretics
- Ophthalmological medications
- Respiratory medications
- Thrombolytics

EM SKILLS

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

- Airway management
- Anterior nasal packing
- Application of splints
- Application of wound dressings
- Cardiopulmonary resuscitation
- Chest tube placement
- Clearance of cervical spine
- Control of superficial hemorrhage

- Digital/field block
- Fluorescein corneal examination
- Incision and drainage
- Injections
- IV access- peripheral, central line
- Local anesthesia infiltration
- Lumbar puncture
- Nasogastric tube placement Suturing
- Removal of superficial foreign bodies
- Urinary catheterization
- Venipuncture

EM 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:

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

AQUIFER CASES

1. Family Med 27: 17 year old male with groin pain
2. Internal Med 1: 49 year old man with chest pain
3. Internal Med 4: 67 year old woman with shortness of breath and lower leg swelling
4. Internal Med 7: 28 year old woman with lightheadedness
5. Internal Med 22: 71 year old man with cough and fatigue
6. Internal Med 30: 55 year old woman with leg pain

See Appendix E for suggestions of additional cases to complete.

END OF EMERGENCY MEDICINE LEARNING OBJECTIVES