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 and prevention

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.

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
open pneumothorax

Respiratory Emergencies
pneumothorax
aspiration
exacerbation of asthma/ COPD
upper airway obstruction
atelectasis
epiglottitis
peritonsillar abscess
respiratory acidosis and alkalosis
pulmonary edema
hemothorax
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
- paroxysmal supraventricular tachycardia
- atrial fibrillation
- ventricular tachycardia
- ventricular fibrillation
- right and left bundle branch block
- pericarditis
- aortic dissection
- congestive heart failure
- sinus bradycardia and tachycardia
- atrial flutter
- Wolf-Parkinson-White
- Torsade de Pointes
- asystole
- 1st, 2nd, 3rd degree AV block

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
- perforated peptic ulcer
- diverticulitis
- abdominal aortic aneurysm
- splenic rupture
- esophageal varices
- acute pancreatitis
- hernias
- small and large intestinal obstruction
- bowel perforation
- gastroenteritis
- ischemic bowel
- esophageal spasm
- Mallory-Weiss syndrome
- intussusception/volvulus

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
- status epilepticus
- seizures
- acute TIA/CVA
- concussion
- 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**

<table>
<thead>
<tr>
<th>Sprain</th>
<th>Strain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contusion</td>
<td>Bursitis/tendonitis</td>
</tr>
<tr>
<td>Fractures</td>
<td></td>
</tr>
</tbody>
</table>

**Types**

- Open
- Comminuted
- Displaced articular stress
- Pathologic
- Greenstick
- Closed avulsion
- Compression
- Angulated
- Oblique
- Spiral
- Transverse
- Torus

**Specific**

**A. Shoulder Injuries**

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

**B. Elbow Injuries**

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

**C. Wrist Injuries**

1) Colles Fracture
2) Radial Fracture
3) Ulnar fracture
4) Scaphoid (Navicular) fracture

**D. Hand/Finger Injuries**

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 Injuries**

1) malleolar fractures
2) fifth metatarsal (Jones’)

**F. Leg Injuries**

1) tibial fractures
2) fibular fractures
3) femur fractures
G. **Hip Fractures**
   1) intra-trochanteric fracture
   2) subcapital fracture

H. **Knee**
   1) patella fracture/dislocation

I. **Facial**
   1) orbital blowout fracture

J. **Pelvic**

K. **Salter-Harris I-V**

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

**Neck/Spine**
   - Herniation
   - Vertebral fractures
   - Spinal cord injury
   - Whiplash
   - Cauda equine syndrome

Identify and recognize the most common fracture associated with the following complications:
   - Osteomyelitis
   - Volkmann’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

**Dermatologic, Burns and Environmental Emergencies**
   - herpes zoster
   - erythema multiforme
   - Steven-Johnson’s Syndrome
   - toxic epidermal necrolysis
   - cellulitis
   - first, second, third degree thermal burns
   - Rule of Nines
   - smoke inhalation
chemical burns
electrical burns/ lightening strike
criteria for hospital and burn center admission for the burn patient
heat cramps/heat exhaustion/heat stroke
frostbite/immersion foot/hypothermia
snake bites/bee stings/ spider bites
human/dog and cat bites
rabies

**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
acute angle-closure glaucomacentral retinal artery occlusion
orbital and periorbital cellulitis
corneal abrasion and ocular traum
facial trauma
dental fractures/loss/avulsion
peritonsillar abscess

**Gynecologic and Obstetric Emergencies**
ectopic pregnancy rupture ovarian cysts
ovarian torsion placental abruption
placenta previa spontaneous abortion
preeclampsia eclampsia
pelvic inflammatory disease

**Genitourinary Emergencies**
Nephrolithiasis
pyelonephritis
testicular torsion
epididymitis

**Peripheral Vascular Emergencies**
Acute arterial occlusion
Deep vein thrombosis

**Endocrine Emergencies**
Diabetic ketoacidosis
thyroid storm
myxemda coma
acute adrenal crisis
hypoglycemia
hyper/hypo calcemia
hyperglycemic hyperosmolar nonketotic syndrome
Metabolic, Fluid and Electrolyte Emergencies
- alcohol ketoacidosis  dehydration
- hyper/hypo natremia  hyper/hypo kalemia
- respiratory acidosis/alkalosis  metabolic acidosis/alkalosis

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

Psychiatric Emergencies
- Suicide  Depression
- Panic attack/anxiety disorders  Bipolar disorder
- Psychosis  Schizophrenia

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

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

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
- Analgesics
- Topical and local Anesthetics
- Thrombolytics
- Anticoagulants
- Antihypertensives
- Antiarrhythmics
- Diuretics
- Antipsychotics
- Antidepressants
- Anti-anxiotitics
- Antidiarrheals
- Antiemetics
- Antispasmotics/anticholinergics
- Ophthalmological medications
- Cardiac medications
- Corticosteroids
- Respiratory medications
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:

<table>
<thead>
<tr>
<th>Procedure/Exam</th>
<th>Procedure/Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasogastric tube placement</td>
<td>Urinary catheterization</td>
</tr>
<tr>
<td>Chest tube placement</td>
<td>Application of splints</td>
</tr>
<tr>
<td>Application of wound dressings</td>
<td>Clearance of cervical spine</td>
</tr>
<tr>
<td>Control of superficial hemorrhage</td>
<td>Suturing</td>
</tr>
<tr>
<td>Local anesthesia infiltration</td>
<td>Removal of superficial foreign bodies</td>
</tr>
<tr>
<td>Anterior nasal packing</td>
<td>Fluorescein corneal examination</td>
</tr>
<tr>
<td>Airway management</td>
<td>Cardiopulmonary resuscitation</td>
</tr>
<tr>
<td>Lumbar puncture</td>
<td>Incision and drainage</td>
</tr>
<tr>
<td>IV access</td>
<td>venipuncture</td>
</tr>
<tr>
<td>Injections</td>
<td>Digital/field block</td>
</tr>
</tbody>
</table>

______________________________________________________________

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:

<table>
<thead>
<tr>
<th>Test/Procedure</th>
<th>Test/Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Flow</td>
<td>Sodium</td>
</tr>
<tr>
<td>X-ray (chest, abd, KUB)</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>12 Lead ECG&amp;Rhythm Strip</td>
<td>Albumin</td>
</tr>
<tr>
<td>Stool occult blood</td>
<td>Lipase</td>
</tr>
<tr>
<td>CBC &amp; Differential Glucose</td>
<td>Amylase</td>
</tr>
<tr>
<td>ESR</td>
<td>Cardiac enzymes</td>
</tr>
<tr>
<td>BUN</td>
<td>TSH</td>
</tr>
<tr>
<td>Creatinine</td>
<td>CT scan</td>
</tr>
<tr>
<td>Fluid Analysis</td>
<td>Urine Analysis</td>
</tr>
<tr>
<td>Potassium</td>
<td>Urine C&amp;S</td>
</tr>
<tr>
<td>AST/ALT</td>
<td>HgA1C</td>
</tr>
<tr>
<td>Alkaline Phosphatase</td>
<td>Anion gap</td>
</tr>
<tr>
<td>Chloride</td>
<td>Calcium</td>
</tr>
<tr>
<td>Blood type and cross</td>
<td>Magnesium ultrasonography</td>
</tr>
<tr>
<td></td>
<td>Pulse Oximetry</td>
</tr>
<tr>
<td></td>
<td>Ferritin</td>
</tr>
<tr>
<td></td>
<td>DDimer</td>
</tr>
<tr>
<td></td>
<td>Therapeutic drug Levels</td>
</tr>
<tr>
<td></td>
<td>Qual/Quantitative β Hcg</td>
</tr>
<tr>
<td></td>
<td>MSK X-ray/MRI</td>
</tr>
<tr>
<td></td>
<td>Rheumatoid factor</td>
</tr>
<tr>
<td></td>
<td>Cholesterol Panel</td>
</tr>
<tr>
<td></td>
<td>Wound C &amp;S</td>
</tr>
<tr>
<td></td>
<td>BNP</td>
</tr>
<tr>
<td></td>
<td>Blood C&amp;S</td>
</tr>
<tr>
<td></td>
<td>ABGs</td>
</tr>
<tr>
<td></td>
<td>PT, PTT, INR</td>
</tr>
<tr>
<td></td>
<td>Toxicology screens</td>
</tr>
</tbody>
</table>

END OF EMERGENCY MEDICINE LEARNING OBJECTIVES