EMERGENCY MEDICINE ROTATION

Course Title: Emergency Medicine Rotation

Course Description and Goals:
The purpose of the Emergency Medicine rotation is to provide the student additional didactic and practical clinical experience in the areas of evaluation, diagnosis, and management of patients with emergent, urgent and non-urgent medical problems that present to the emergency department. The ultimate goal of the rotation is to cover all variabilities in the ER training that we see – be it urban, rural, family practice offices – and give a strong base. The goal of the student should be to work through the objectives prior to, and continuing through their ER rotation. Students will likely not be able to accomplish all objectives listed below in the clinical realm and 4-week time frame. However, they are expected to be familiar with the diagnostic entities outlined below in terms of clinical presentation, diagnostic work-up and management. Students are also responsible for information on the PANCE blueprint. As a reminder, students will be tested formally on information they are expected to see clinically or review didactically through specialty examinations.

Method of Evaluation: (preceptor evaluation, Typhon, self evaluation, specialty exam score, competency list, other)

I. Medical Knowledge
Upon completion of the rotation, the student will demonstrate the ability to evaluate, manage, and educate patients and their families on the following problems for which they present to the ED:

Objectives

Anesthesia
1. Discuss the use and role of topical and local anesthetic agents
2. Describe and observe conscious sedation, including its indications, precautions, monitoring and choice of agents

Analgesia
1. Evaluate the various options and select an appropriate method of relieving pain for all ED patients
2. Compare and contrast pharmacologic properties of narcotic agents and NSAIDs available for providing analgesia in the ED.

Resuscitation
1. Recognize and initiate management in a patient with acute respiratory distress
2. Recognize situations requiring emergency airway intervention and understand the appropriate use of endotracheal intubation and alternatives including rapid sequence intubation and bag-valve-mask resuscitation
3. Demonstrate the ability to identify, classify and treat shock
4. Identify circumstances requiring vascular access and identify the various routes of vascular access for drugs and fluids
5. Interpret 12-lead electrocardiograms and identify and describe the initial treatment protocols for patients presenting with AV blocks, bundle branch blocks and dysrhythmias including non-pharmacologic methods of controlling tachy and brady cardias
6. Describe the management of a patient in cardiac arrest, including description of CPR, ACLS and PALS protocols
7. Describe the assessment and management of patients with an altered level of consciousness and who are comatose, and define the Glasgow Coma Scale

**Neurological Conditions**

*Traumatic*

1. Describe the presentation, evaluation, radiologic studies and management of mild, moderate and severe brain injuries including epidural, subdural and subarachnoid hemorrhage, diffuse axonal injury and skull fractures

*Non-traumatic*

1. Describe the typical presentations of viral and bacterial meningitis, understand the CSF findings in both and identify appropriate treatments for both including antibiotic therapy if indicated
2. Describe the presentation, evaluation, diagnosis and treatment of a patient who presents with TIA or CVA
3. Describe the presentation, evaluation and treatment of Bell’s palsy and trigeminal neuralgia
4. Recognize epilepsy, grand-mal, petit-mal, absence, Jacksonian and status epilepticus seizures, and describe the initial treatment for each
5. Understand the mechanism of injury of the cervical, thoracic and lumbar spine and recognize and describe spinal emergencies including cauda equina syndrome and epidural abscess
6. Describe the signs and symptoms, evaluation and management of Guillan-Barre syndrome and Myasthenia gravis
7. Describe the typical presentation of headaches including but not limited to migraine with and without aura, tension and cluster headaches

**Ophthalmology Conditions**

*Traumatic*

1. Identify and manage chemical, blunt, superficial and penetrating injuries of the eye
2. Discuss the initial management of corneal foreign bodies or abrasions
3. Discuss the physical findings and management of hyphema, traumatic iritis, lens dislocation, global rupture, orbital fracture and vitreous hemorrhage
Non-Traumatic
1. Discuss the findings, workup and treatment of bacterial, viral, chemical and allergic conjunctivitis
2. Outline the signs and symptoms, evaluation, management and referral of a patient with iritis and keratitis
3. Compare and contrast the clinical findings of anterior optic neuritis and posterior optic neuritis
4. Describe the abnormal anatomic changes of both open angle and angle closure glaucoma and outline the management of each
5. Describe the ophthalmologic findings of papilledema
6. Describe the signs and symptoms, causes, evaluation, treatment and referral of central arterial and venous occlusion
7. Describe the clinical findings of retinal detachment and outline the appropriate treatment

ENT Conditions

Traumatic
1. Describe the clinical findings, diagnostic imaging and initial management of frontal bone and sinus fractures, naso-ethmoidal-orbital fractures, orbital floor fractures, nasal fractures, tripod fractures, zygomatic arch fractures

Non-traumatic
1. List the basic differential diagnosis of acute hearing loss and outline the initial management
2. Describe the differences between central and peripheral vertigo, Meniere’s disease and labyrinthitis
3. Describe the initial approach to controlling anterior and posterior epistaxis
4. Discuss the presentation, evaluation, management and follow up of a patient with sinusitis
5. Describe the clinical findings and management of a patient with epiglottitis, including indications for hospitalization and consultation with ENT
6. Describe the normal anatomy of the pharynx and hypopharynx and identify the clinical findings associated with a foreign body
7. Identify the pathophysiology and initial treatment of dental abscess, tooth avulsion, peritonsillar abscess and parotitis
8. Identify the presentation, risk factors and treatment of H1N1 influenza

Traumatic Chest Conditions
1. Describe the clinical findings and initial management of the following:
   - Tension pneumothorax
   - Pericardial tamponade
   - Diaphragmatic rupture
   - Pneumomediastinum
   - Flail chest
   - Rib fractures
   - Sternal fractures
   - Pulmonary contusion
Cardiovascular Conditions
1. Outline the indications, contraindications, diagnosis, timelines for invasive interventions for the definitive management of acute myocardial infarctions
2. Describe the pharmacologic and non-pharmacologic adjunct agents used in the treatment of acute ischemic heart disease including oxygen, nitrates, opioids, anti-platelet agents and anticoagulants
3. List the indications and contraindications for the use of thrombolytics
4. Discuss the basic clinical features of left and right sided congestive heart failure (CHF) and describe the initial treatment for acute and chronic CHF
5. Define hypertensive emergencies and list pharmacologic agents used to treat
6. Describe pericarditis, myocarditis, endocarditis and rheumatic fever with respect to clinical and electrocardiographic findings and initial treatment
7. Discuss the presentation, radiologic studies and interpretation and initial management of acute thoracic aortic dissection
8. Discuss the clinical presentation, risk factors, initial management and duration of treatment for a patient with DVT or PE, and understand the role of diagnostic tests such as ABGs, EKGs, d-dimer assays, VQ scans, contrast-enhanced CT and pulmonary angiography
9. Describe the presentation, risk factors, diagnosis and management of pericardial tamponade
10. Define stable, unstable and Prinzmetal’s/variant angina and the treatment for each

Respiratory Conditions
1. Discuss the prioritization, assessment, initiating stabilization and treatment of an acute exacerbation of asthma and COPD/emphysema and discuss indications and options for ventilatory support
2. Describe the clinical findings, risk factors and management options for spontaneous pneumothorax including observation, chest tube insertion and thoracostomy
3. Discuss the presentation, causes of, radiologic studies and treatment for patients with community-acquired, nosocomial pneumonia, pneumocystis carinii pneumonia and pleural effusion
4. Outline the differential diagnosis, evaluation and initial management of a patient with hemoptysis

Endocrine and Metabolic Conditions
1. Discuss the clinical findings and initial management of patients presenting with diabetic ketoacidosis and alcoholic ketoacidosis
2. Describe the common presentation, laboratory abnormalities, treatment and admission criteria for hypothyroidism, hyperthyroidism and thyroid storm.
3. Outline the presentation, laboratory abnormalities and initial treatment of patients with adrenal insufficiency and Cushing's syndrome.
4. Describe the causes, EKG findings (if applicable) and initial management of patients with the following:
   - Hypokalemia
   - Hyperkalemia
   - Hyponatremia
   - Hypernatremia
   - Hypocalcemia
   - Hypercalcemia
   - Respiratory acidosis
   - Respiratory alkalosis
   - Metabolic acidosis
   - Metabolic alkalosis
   - Diabetes insipidus

Abdominal and Gastrointestinal Conditions

**Traumatic**
1. Define ‘surgical abdomen’ and list indications for emergent laparotomy.
2. Describe the role of diagnostic peritoneal lavage, CT, F.A.S.T. ultrasound, formal abdominal ultrasound in blunt traumatic injuries.

**Non-traumatic**
1. Describe the clinical presentation, common causes, role of endoscopy and initial treatment in patients with upper and lower GI bleeding and diverticulitis.
2. Discuss the potential options for managing patients with impacted food bolus, ingestion of foreign or sharp objects.
3. Describe the difference between peptic ulcer disease, gastritis and dyspepsia and discuss the lab and radiologic studies and initial management of each.
4. Describe the classic presentation of acute appendicitis and of a perforated appendix.
5. Outline the presentation, common causes, clinical and diagnostic imaging (DI) findings, and initial management of small and large bowel obstructions and mesenteric ischemia.
6. Recognize the potential complications of an incarcerated or strangulated hernia.
7. Discuss the clinical and pathologic findings of Crohn's disease and ulcerative colitis and discuss the management of the following potential complications:
   - Perianal complications
   - Abcesses
   - Intestinal obstruction or perforation
   - Malabsorption/malnutrition
   - GI bleeding
   - Toxic megacolon
   - Intestinal neoplasm
8. Discuss the presentation and initial management of internal and external hemorrhoids, perianal abscess, anal fissures and rectal foreign bodies.
9. List the differential diagnosis for diarrhea.
10. Discuss the presentation, diagnostic imaging, and ED management of biliary colic, acute cholecystitis, ascending cholangitis, gallstone pancreatitis

11. Outline the presentation, causes, lab tests and initial treatment of liver disease, chronic and acute hepatitis, and cirrhosis

12. Describe the signs and symptoms, causes, lab and DI studies and treatment of acute and chronic pancreatitis

13. Discuss the most common clinical presentation, evaluation and management of abdominal aortic aneurysm

14. Describe the initial treatment of post-surgical abscesses and infections, including MRSA

**Genitourinary Conditions (non-traumatic)**

1. Outline the basic differential diagnosis of renal colic and understand diagnostic imaging such as x-ray, ultrasound, intravenous pyelogram and CT scan in the diagnosis of renal calculi

2. Differentiate between uncomplicated and complicated UTIs, cystitis and pyelonephritis, and describe the use of urinalysis, routine microscopy and urine culture for diagnosis

3. Define acute renal failure and list causes using the prerenal, renal and postrenal classifications

4. Define end-stage renal disease and describe the complications encountered in hemodialysis and peritoneal dialysis patients

5. List the differential diagnosis for gross and microscopic hematuria, and discuss the use of IVP, ultrasound and CT for diagnosis

6. Discuss urethritis with respect to presentation, lab studies and appropriate antibiotic therapy

7. Recognize acute and chronic prostatitis and the initial management of each

8. List the presentations, relevant DI, and appropriate treatment for testicular torsion and epididymitis

9. Define phimosis and paraphimosis and a technique to correct the conditions

10. Identify causes and management of priapism

**Obstetric and Gynecologic Conditions**

1. List the differential diagnosis, risk factors and management of vaginal bleeding in the first 20 weeks of pregnancy including miscarriage, gestational trophoblastic disease and ectopic pregnancy

2. Identify and manage fetal distress, pre-term labor, placenta previa, placental abruption, uterine rupture and vasa previa

3. In the setting of pregnancy, define: hypertension, transient hypertension, preeclampsia and eclampsia and describe the initial diagnostic and treatment modalities for each

4. Define immediate and delayed post-partum hemorrhage (PPH) and discuss causes of PPH and appropriate consultations with specialists

5. State the current recommended treatment for pelvic inflammatory disease, cervicitis, urethritis, primary genital herpes and vaginitis

6. Describe the presentation and management of ovarian cysts
Musculoskeletal Conditions

Traumatic

1. List the complications of extremity crush injuries and describe the presentation and treatment of compartment syndrome
2. Describe fractures using orthopedic terminology, including exact anatomic location, type of fracture line, presence of any articular surface involvement, closed vs. open fractures, stages of fracture healing and complications of fracture immobilization
3. Describe the anatomy (bone, soft tissues, vasculature and neuroanatomy), mechanism, clinical findings, DI appearance and management of the different fractures, sprains and dislocations of the following
   • Shoulder
   • Upper arm and elbow
   • Forearm
   • Wrist and hand
   • Metacarpal and finger
   • Pelvic
   • Hip and thigh
   • Knee
   • Lower extremity
   • Ankle/foot
4. Describe the etiology for the development of stress fractures and discuss the common sites, DI findings and treatment of stress fractures
5. Describe the anatomy, DI findings, motor deficits and sensory levels, and initial stabilization of patients with C-spine, T-spine and L-spine injuries
6. Review the risk factors for compression fractures in the elderly

Non-Traumatic

1. Define monoarticular arthritis, septic arthritis, flexor tenosynovitis and crystal-induced synovitis and describe the etiology, DI findings and treatment for each
2. Differentiate osteroarthritis and rheumatoid arthritis and describe the DI findings and treatment for each
3. Discuss the presentation, etiology, lab and DI studies and treatment of osteomyelitis, avascular necrosis, osteochondrosis and Paget’s disease
4. Discuss ankylosing spondylitis, spondylosis and spondylolisthesis with respect to signs and symptoms, DI findings, initial treatment and follow up
5. List the most common tumors that metastasize to bone and the common sites involved; understand plain view DI findings that differentiate between a malignant and benign bone tumor
6. Describe the presentation, evaluation and treatment of the following overuse injuries
   • Lateral epicondylitis (tennis elbow)
   • Medial epicondylitis (golfer’s elbow)
   • Biceps tendinitis
   • Rotator cuff tendinitis
   • DeQuervain’s disease
   • Plantar fasciitis
   • Shin splints
   • Carpal tunnel syndrome
7. List the early symptoms of a patient with muscular dystrophy
8. Define the clinical features, lab findings and treatment for myositis, polymyositis and myositis ossificans

Dermatologic Conditions

Traumatic
1. Define the appearance and depth of injury associated with 1\textsuperscript{st}, 2\textsuperscript{nd} (superficial and deep), 3\textsuperscript{rd} and 4\textsuperscript{th} degree burns, thermal burns, electrical burns, alkali burns and acid burns, and describe the management of each including indications for fluids and debridement
2. Describe the assessment and possible complications of wounds and formulate a plan for wound management

Non-Traumatic
1. Recognize potentially life threatening illnesses that may present with rash, including Stevens-Johnson syndrome, meningococcemia, anaphylaxis, toxic epidermal necrolysis, rocky mountain spotted fever and erythema multiforme
2. Using appropriate dermatology terminology, describe the appearance, symptoms, etiological factors, locations, diagnosis and treatments for the following dermatologic conditions:
   • Urticaria
   • Herpes zoster
   • Pemphigus vulgaris
   • Toxic epidermal necrolysis
   • Purpura
   • Erythema nodosum
   • Contact dermatitis
   • Tinea infections
   • Pityriasis rosea
   • Toxic shock syndrome
   • Cellulitis
   • Erysipelas
3. Differentiate between abscesses according to the location and their typical microbiology, including Bartholin gland, breast, hidradenitis suppurativa, pilonidal and perirectal
4. Define necrotizing fasciitis and describe the initial treatment
5. Describe the features of skin cancers including basal cell, squamous cell and melanoma, and describe initial management and follow up for each

Psychobehavioral Conditions
1. Identify criteria for the diagnosis of mood and anxiety disorders including major depression, bipolar, dysthymic, panic, generalized anxiety, phobic, posttraumatic stress and obsessive-compulsive
2. Describe somatoform disorders (conversion, somatization), dissociative disorders (amnesia and fatigue) and personality disorders
3. Identify the presentation, evaluation and management of psychotic disorders including schizophrenia, schizophreniform, brief psychotic and delusional disorders
4. Compare and contrast dementia and delirium
5. Recognize the presentation of substance intoxication and withdrawal
6. Outline initial management of a suicidal patient
7. Name three neuroleptic agents and three benzodiazepine agents, indications for use, dosages, routes of administration, contraindications and major side effects in the management of agitated patients

**Toxicologic Conditions**
1. Define ‘clinical toxidrome,’ and list the specific drugs or drug classes that can precipitate anticholinergic, cholinergic, opiate, sedative-hypnotic and sympathomimetic toxicities
2. Provide an appropriate medical management for these toxidromes
3. List the antidotes for the following overdoses/syndromes:
   - Acetaminophen
   - Carbon monoxide
   - Iron
   - Benzodiazepines
   - Cyanide
   - Hydrofluoric acid
   - Beta blockers
   - Digoxin
   - Organophosphates
   - CCBs
   - Ethylene glycol/methanol
   - Opioids
   - Anticoagulants

**Environmental Conditions**
1. Describe the predisposing factors and cooling options for heat illnesses including prickly heat, heat edema, heat syncope, heat cramps, heat stroke and heat exhaustion
2. Outline the general approach to the hypothermic patient, methods of rewarming and approach to hypothermic cardiac dysrhythmias and arrest
3. Outline the ED management of patients with superficial and deep frostbites
4. Describe the presentation and treatment of patients suffering from smoke inhalation
5. List the factors affecting outcome in a near drowning
6. List the oral flora that can contaminate human, cat and dog bites and list the appropriate antibiotic therapy
7. Outline the management of a patient with a spider and snake bite of unknown type

**Emergency Medical Services**
1. Discuss the medical interventions that each level of EMS provider may perform
2. If in a rural setting, recognize the steps necessary to prepare the patient for ground or air transport
3. If in the case of a disaster, describe the facilities, organizations and agencies that should be involved in disaster planning

**Other Emergency Situations**
1. Recognize situations for potential organ donation and facilitate the decision making process for next of kin by providing information in a supportive, respectful manner.
2. List available resources to the patient whom is in crisis, and describe crisis intervention.
3. Identify the protocol when dealing with blood borne pathogens, including needle sticks.
4. Elicit and interpret the historical features, symptoms and signs of physical or emotional abuse or neglect of a man or woman, including elders, and children.
5. List the components of a sexual assault examination.
6. Identify the indicators and management of domestic abuse or elder abuse and provide resources to the patient and describe when to contact the appropriate authorities.
7. List the treatments for prophylaxis of pregnancy, STD transmission, Hepatitis B and HIV transmission.

**Pediatric Conditions**
Please refer to the Pediatrics Rotation objectives.

**II. Patient Care**
Students are expected to gather and document essential and accurate information about their patients and make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences. The student is expected to use up-to-date scientific evidence and clinical judgment to develop and carry out management plans. Prior to completion of the Emergency Medicine rotation, the student should:

**Clinical Skills**
1. Participate in wound care, including sterilizing, debridement and closure of wounds by sutures, steri-strips or adhesives.
2. Comprehend and, if possible, observe or assist the supervising physician in the following procedures:
   - Conscious sedation
   - IV line placement
   - Reducing, splinting and casting fractures
   - Cervical spine clearance
   - Specimen collection
   - Diagnostic peritoneal lavage
   - Lumbar puncture
   - Nasogastric intubation
   - Endotracheal intubation
   - Urinary catheterization
   - CPR
   - ACLS/PALS activities
   - Central line placement
   - Chest tube placement
3. Interpret results of CT scan (head, chest, abdominal), ultrasound, plain films (extremity, flat and upright abdominal, chest) and MRI.
4. Understand the results of the following lab studies.
   - Amylase/lipase
   - Basic metabolic panel
   - Cardiac enzymes
   - PT/PTT
CBC with differential
• Urinalysis

III. Interpersonal & Communication Skills
Students are expected to communicate information respectfully, efficiently and effectively in verbal, nonverbal and written exchange. During the Emergency Medicine rotation, the student must:

- Effectively communicate information, perform counseling and patient education clearly to patients and their families
- Respectfully communicate with ALL members of the medical team including providers, ancillary staff and other learners
- Perform accurate and complete documentation of the patient’s visit or hospital stay

IV. Professionalism
Students are expected to demonstrate professionalism at all times during their Emergency Medicine rotation. During the rotation, the student must:

- Maintain a professional attitude at all times with patients, families and the medical team
- Provide care for patients of all ages, genders, cultures, socioeconomic backgrounds, sexual orientations and disabilities with respect, compassion and dignity
- Maintain integrity and honesty at all times with patients, families and the medical team
- Be accountable to patients, families, the medical team and the profession

V. Practice-Based Learning and Improvement
Practice-based learning and improvement includes the processes through which clinicians engage in critical analysis of their own practice experience, medical literature and other information resources for the purpose of self-improvement. During the Emergency Medicine rotation, students are expected to:

- Recognize one’s own limitations and continuously strive for self-improvement
- Acquire a capacity to learn from errors and use it to self-improve
- Identify appropriate consultation with other medical services for the benefit of the patient to assure comprehensive patient care
- Use evidence from literature to make the most informed and up-to-date clinical decisions
- Participate not only in learning from others but in teaching others, including patients, families, medical team, staff and faculty

- Describe the principles of EBM as they pertain to ‘daily acute care’ clinical practice and locate relevant scientific literature

Suggested Reading List
Online texts can be accessed through the following websites:

2. [www.uptodate.com](http://www.uptodate.com)
3. [www.mdconsult.com](http://www.mdconsult.com)
4. [www.pubmed.com](http://www.pubmed.com)
5. [www.dynamed.com](http://www.dynamed.com)
6. [www.emedicine.com](http://www.emedicine.com)

**VI. Systems-Based Practice**

Students must be aware of the societal and economic environments in which health care is delivered. During the Emergency Medicine rotation, the student must:

- Identify relationships between the different levels of inpatient care
- Identify the importance of continuity of care and coordinate appropriate follow-up care when needed
- Realize the financial impact of medical care on a patient and identify cost-effective alternatives when appropriate, as well as resources for the patient’s financial and medical benefit
- Use information technology to improve health care delivery and patient education