OVERVIEW

Medical students in the fourth year of training are refining their skills and knowledge base required to evaluate and treat patients. They should display competence in performing the history and physical, differentiate between normal and pathologic findings, present a case in an organized manner, develop a differential list, select appropriate diagnostic tests, and begin to develop cost effective management plans, which incorporate health education and referral (if necessary). With guidance from the preceptor, students should have the opportunity to independently evaluate patients and practice clinical problem solving.

The rotation consists of four weeks of emergency department experiences. This service should expose the student to various aspects of the management of patients in an emergency department. These experiences should include reading, lectures, seminars, and patient care management.

Emergency Medicine has enjoyed increasing popularity and stature in osteopathic medical schools throughout the United States. It occupies a unique niche in medical education in that it provides students with the opportunity to see an undifferentiated patient population with varying modes of presentation. This experience will stress diagnostic skills, ability to prioritize patient care and developing appropriate management strategies.

GOALS

The goals of the emergency medicine rotation are to:

1) Provide the student with a fundamental knowledge base in emergency medicine.

2) Introduce the student to basic procedures relevant to the practice of emergency medicine.

3) Facilitate an understanding of the approach to clinical problem solving and management of conditions seen in the emergency department.

4) Encourage the continued development of the student’s professional attitude and behavior.
LEARNING OBJECTIVES

Learning objectives for the emergency medicine rotation relate to the following areas: a) cognitive knowledge; b) psychomotor skills; c) problem solving; and d) professional development.

By the end of a four-week emergency medicine rotation, the student is expected to have achieved, at a minimum, the following objectives through reading, conference attendance, observation, discussion, and hands-on clinical experience:

I. TOPICS (in alphabetical order)

1. Abdominal Pain/Gastrointestinal Disorders
   A. List the key points to be obtained in the history and the physical examination of the patient with abdominal pain, addressing the differential diagnosis in both adults and children.
   B. Evaluate and interpret laboratory and plain film radiographic data of a patient presenting with abdominal pain.
   C. Demonstrate knowledge regarding pathophysiology, evaluation, and management of commonly encountered conditions including gastrointestinal bleeding, peptic ulcer disease, appendicitis, intestinal obstruction, hernias, colitis, diverticulitis, constipation, jaundice, biliary colic, hepatic failure, and pancreatitis.

2. Acid-Base Disorders
   A. Identify common acid-base disorders, including respiratory acidosis/alkalosis, metabolic alkalosis and metabolic acidosis (increased anion gap metabolic acidosis and normal gap metabolic acidosis).
   B. Explain the management of these different conditions.
   C. Demonstrate knowledge with regards to identification, evaluation, and management of diabetic ketoacidosis and hyperosmolar hyperglycemic nonketotic syndrome.

3. Adult/Pediatric Resuscitation
   A. Describe and perform various types of airway control, oxygenation, and ventilation used in acute respiratory failure.
   B. Discuss evaluation and management of cardiovascular arrest.
   C. Identify and list treatment options for the following cardiac dysrhythmias: ventricular fibrillation, asystole, pulseless electrical activity (PEA), ventricular tachycardia, first, second, and third degree heart blocks.
   D. List and describe the intravenous access techniques for the peripheral and central circulation.
4. **Altered Mental Status (Coma, Syncope, Seizures, Emergency Psychiatry)**
   A. Explain the pathophysiology and differential diagnosis of the comatose patient.
   B. List the critical actions in the management of a comatose patient.
   C. Explain the diagnostic studies and procedures used in evaluating the comatose patient.
   D. Demonstrate the evaluation of a cerebral CT radiograph.
   E. Demonstrate or verbalize the procedure for a lumbar puncture.
   F. Explain the pathophysiology and differential diagnosis of syncope.
   G. Perform the history and physical examination pertinent to the evaluation of a patient with syncope.
   H. List the diagnostic studies and/or procedures used to evaluate the syncopal patient.
   I. Plan the management of the syncopal patient.
   J. Describe the evaluation and pathophysiology of seizures.
   K. Explain the evaluation and management of seizures in the emergency department.
   L. Describe the mental status examination and the psychiatric interview.
   M. Evaluate and differentiate patients presenting with delirium and dementia and plan their management.
   N. Perform a mental status examination.
   O. Describe the evaluation and management of the violent patient.
   P. Describe protective measures for the patient and staff.
   Q. Explain the procedure in dealing with patients who are at risk of harm to self or others.
   R. Describe the evaluation and management of the suicidal patient.

5. **Blunt and Penetrating Injuries**
   A. Describe the diagnostic modalities for evaluating blunt and penetrating injuries and the rationale for appropriate choices in the management of different scenarios including head injury, spinal cord injury, abdominal injury, thoracic injury, genitourinary injury.
   B. Understand the different approach to trauma in special groups such as pediatric, geriatric, and pregnant populations.
   C. Identify the management options for blunt and penetrating injuries, explaining circumstances when splenectomy and splenorrhaphy are indicated.
   D. Identify indications for performing a diagnostic peritoneal lavage (DPL), describe the procedure, and evaluate the results (i.e., indicators of a positive peritoneal lavage).
   E. Identify indications for performing a tube thoracostomy or pericardiocentesis.
6. **Burn Injuries**  
   A. Demonstrate the “rule of nines” in assessing the percentage of body surface area affected in a burn injury and how this formula is different for the pediatric population.  
   B. Contrast different types of burn injuries and the four different burn degrees.  
   C. Describe the assessment and management of patients with burn injuries.

7. **Cardiovascular Accident/Transient Ischemic Attack**  
   A. Differentiate between CVA and TIA.  
   B. Differentiate between ischemic and hemorrhagic CVA.  
   C. Explain the short term and long term management of CVA.  
   D. Discuss admission to the hospital versus discharge for subsequent testing for TIA.

8. **Chest Pain**  
   A. Describe the evaluation and management of the patient with chest pain, listing the differential diagnosis and explaining the relative importance of history, physical examination, and diagnostic studies and the cost of admission versus risk of discharge.  
   B. Evaluate a patient or simulate various scenarios of patients with chest pain. Scenarios should include patients with acute coronary syndrome/myocardial infarction, pulmonary thromboembolism, aortic dissection, pneumothorax, cardiac tamponade, and congestive heart failure and cardiomyopathy.

9. **Dermatologic disorders**  
   A. Be able to identify and understand basic management of common dermatologic disorders encountered in the emergency department.

10. **Dyspnea**  
    A. List the differential diagnosis of dyspnea, specifically considering, asthma, COPD, pulmonary embolism, cardiac causes such as congestive heart failure, and infectious causes.  
    B. Describe the initial evaluation and management of the dyspneic patient.  
    C. Explain the identification, evaluation and management of upper airway causes of dyspnea.  
    D. Describe the presentation, evaluation, and management of the patient with lower airway causes of dyspnea.  
    E. Explain the presentation, evaluation, and management of the cardiovascular causes of dyspnea.
11. **Endocrine Emergencies**
   A. Explain the pathophysiology, evaluation, and management of the patient with hypoglycemia, lactic acidosis, thyroid storm, myxedema coma, and adrenal crisis.

12. **ENT Emergencies**
   A. Explain the evaluation and management of the patient with epistaxis.
   B. Describe the differential diagnosis of “sore throat”, including the appropriate history, physical examination, diagnostic studies, treatment and complications.
   C. Explain the evaluation and management of ENT foreign bodies.

13. **Environmental Emergencies**
   A. Explain the evaluation and management of common environmental injuries such as: frostbite, heat emergencies, hypothermia, and high altitude medical illness.

14. **Fever**
   A. Simulate the evaluation of the febrile child.
   B. Highlight the important points of the history, physical examination, and discuss the use of laboratory and other diagnostic tests.
   C. Describe the use of antibiotics and the decision process of admission versus discharge.
   D. Define and explain the evaluation and treatment of fever of unknown origin depending on age group.

15. **Headache**
   A. Evaluate a patient presenting with headache, analyzing the pertinent history and physical examination and diagnostic studies and procedures.
   B. Describe the management of the patient with headache.
   C. Demonstrate the neurological and fundoscopic examination.

16. **Hypertension**
   A. Explain the definition of accelerated hypertension, hypertensive urgency, and hypertensive emergency.
   B. Understand and describe the end-organ damage caused by hypertension.
   C. Discuss treatment goals for hypertension in the emergency department.

17. **Musculoskeletal Emergencies**
   A. Describe the clinical findings, evaluation, and treatment of dislocation of the shoulder.
   B. Explain the mechanisms of injury, presentation, and management of common fractures seen in the emergency department.
C. Evaluate a patient presenting with a common sprain and identify a management plan.
D. Describe the presentation, evaluation, and management of common injuries and infections of the hand.

18. **Ophthalmologic Emergencies**
A. List the common causes and describe the management of conjunctivitis, keratitis, iritis, and the presentation of acute glaucoma and periorbital/orbital cellulitis.
B. Explain the pathophysiology, evaluation and management of temporal arteritis.
C. Explain the presentation, evaluation, and management of corneal foreign bodies and abrasions, ocular penetration, hyphema, dislocated lens, retinal detachment, and corneal burns.

19. **Pediatrics**
A. Understand the differences in pathophysiology of disease states between adults and children and know how to recognize, evaluate, and manage common pediatric diseases presenting to the emergency department.
B. Discuss the possible etiologies, evaluation, and management in the neonate with fever.

20. **Renal and genitourinary disorders**
A. Understand the pathophysiology, evaluation and management of patients who present with acute renal failure, urinary tract infections, urologic stones, ovarian and testicular torsion, phimosis, paraphimosis, epididymis, Fournier’s gangrene, and urinary retention.

21. **Shock**
A. Describe the etiologies and pathophysiologic mechanisms of the different types of shock, including hypovolemic, neurogenic, cardiogenic, septic, obstructive, and anaphylactic.
B. Describe the physical findings of patients in varying degrees and types of shock.
C. Simulate the management of the varying degrees and types of shock in adults and children.

22. **Toxicology/Drug Overdose/Adverse Drug Reactions**
A. Simulate the evaluation and management of the poisoned patient beginning with their initial stabilization. Address the ABC’s, supportive care, formulation of a toxidrome from the history and physical examinations and the use of common antidotes.
B. Discuss decontamination, prevention of absorption, dilution and enhanced excretion.
C. Be familiar with common drug overdoses with regards to their evaluation and management.

23. **Trauma**
   A. Explain the components of the history in a multiple trauma patient.
   B. Outline the components of the primary and secondary trauma survey and discuss the recognition and management of immediate life threatening injuries.

24. **Vaginal Bleeding/Gynecology and Obstetrics**
   A. Understand normal changes of pregnancy.
   B. Recognize emergencies during pregnancy and the postpartum period including HELLP syndrome, pre-eclampsia, and eclampsia.
   C. List the causes of ovulatory and anovulatory bleeding and their emergency department management.
   D. Describe the evaluation and management of the patient with suspected ectopic pregnancy.
   E. Describe the causes, evaluation and management of early and late bleeding during pregnancy.
   F. Explain the classifications of miscarriage.

25. **Wound Care**
   A. Evaluate a patient’s wound and plan the management, including wound cleansing, debridement, examination for foreign body and closure.
   B. Describe anesthetic uses, suturing materials and technique, and dressings.
   C. List the indications for and use of tetanus, rabies, and antibiotic prophylaxis.

II. **Osteopathic Principles and Practices (OPP)**

1. Differentiate between and develop an appropriate treatment plan for acute versus chronic pain syndromes.
2. Incorporate OPP in the care of a treatment of a patient requiring emergency care.
3. Apply Chapman’s Reflexes in the evaluation and management of a patient requiring emergency care
4. Utilize lymphatic pump and other OMT modalities to aid in shortening hospital length of stay.
III. Procedures:

For a variety of procedures, students will be able to:
➢ identify indications
➢ observe
➢ perform (under supervision and when appropriate)
➢ analyze findings

1. Arterial puncture
2. Artificial ventilation
3. FAST exam
4. Cardiac pacemaker, temporary
5. Cardiopulmonary resuscitation (CPR/ACLS)
6. Cardioversion
7. Central venous catheterization
8. Chest tube insertion
9. Cricothyroidotomy
10. Culture techniques
11. Electrocardiogram (ECG)
12. Fingerstick sampling of blood
13. Foley catheter insertion
14. Nebulized breathing treatment
15. Intravenous insertion
16. Intubation (endotracheal)
17. Intubation (nasogastric)
18. Lumbar puncture
19. Osteopathic manipulative therapy for all diagnoses
20. Paracentesis
21. Pelvic examination
22. Pericardiocentesis
23. Phlebotomy
24.
25. Sputum smear/culture
26. Stool hemoccult testing
27. Thoracentesis

The preceptor may add more procedures to the list. Students are required to log participation in these (and other significant) procedures.

IV. Laboratory Studies

For a variety of laboratory studies, students will be able to:
➢ identify indications
➢ explain purposes
➢ analyze findings
1. Arterial blood gases
2. Cardiac enzymes
3. Coagulation studies
4. Complete blood count (CBC)
5. Electrolytes
6. Glucose
7. Glucose, reagent strip
8. Liver function tests
9. Oximetry
10. Renal function tests
11. Urinalysis
12. Toxicology testing
13. Pregnancy testing

The preceptor may add more diagnostic studies to the list. Students are required to log participation in these (and other significant) laboratory studies.

V. Imaging Studies

For a variety of imaging studies, students will be able to:

- identify indications
- explain purposes
- analyze findings

1. CT Scan, brain, chest, abdomen/pelvis
2. Doppler, venous/arterial (extremities)
3. Echocardiography, Transthoracic
4. Echocardiography, Transesophageal (TEE)
5. Ultrasound, abdomen
6. Ultrasound, pelvis
7. Ventilation-perfusion lung scan (V/Q)
8. Plain film X-rays of all major musculoskeletal areas of body.

The preceptor may add more procedures to the list. Students are required to log participation in these (and other significant) procedures.

VI. Required Reading

Students are expected to complete the required reading assignments by the end of the rotation. Readings are assigned by objective and are taken from the following sources:


VII. **Suggested Reference Books:**
