Emergency Medicine Clerkship

MEDICAL KNOWLEDGE

Goal. Students should develop a differential diagnosis that is prioritized on potential life-threatening conditions and likelihood of disease. Students should demonstrate knowledge (or understanding) of basic diagnostic modalities and interpretation of results. Student should relate the basic science (anatomy, physiology, biochemistry, etc.) to patients encountered in the Emergency Department and identify the relevant catastrophic ("think of the worst first") potential diagnoses. Most importantly, students should cultivate an appreciation of risk stratification and pretest probabilities for selected conditions.
http://www.saem.org

Topics:

1. *Cardiovascular Emergencies*
   Chest Pain: Video Part 1 Video Part 2
   a. Acute coronary syndrome (ACS)
      https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-cardiovascular/acute-coronary-syndromes
      i. Define the spectrum of ACS
      ii. Outline the value and limitations of chest pain history in the evaluation of patients with suspected ACS.
      iii. Report risk stratification based on HEART score and state the added benefit of shared decision making.
      iv. State atypical presentations of ACS, both the patient populations and chief complaints
      v. Describe the initial approach to management of patients with ACS
      vi. Outline the utility of cardiac enzymes in the setting of chest pain
   b. Recall classic history and physical, assessment, and management of a patient with a thoracic aortic dissection
      https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-cardiovascular/thoracic-aortic-dissection
   c. State the signs, symptoms, and initial treatment of acute heart failure
      https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-cardiovascular/congestive-heart-failure
   d. Discuss the role and most appropriate indications for diagnostic testing in the evaluation of pulmonary embolism
      https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-cardiovascular/pulmonary-embolus
   e. *EKG*
      i. State the systematic approach to EKG interpretation
      ii. Correlate the EKG findings with infarcted region of myocardium
      iii. Identify special case EKG interpretation in the context of Wellens syndrome and Brugada syndrome

2. *Pulmonary Emergencies*
   a. Describe the initial assessment and management of a patient in respiratory distress
      https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-approach-to/shortness-of-breath
   b. Describe the critical decisions and interventions in a patient with pneumonia
      https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-respiratory/pneumonia
      i. State appropriate resuscitation

ii. Outline diagnostic testing
iii. Discuss appropriate antibiotic selection and timely administration
iv. Differentiate appropriate patient disposition

c. Define emergent assessment and management of acute asthma exacerbation https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-respiratory/asthma
d. Describe the treatment of COPD exacerbation https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-respiratory/copd
e. Recognize exam findings and emergent treatment of pneumothorax https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-respiratory/pneumothorax

3. *Orthopedic Emergencies*

General Principles video (55 min)
Splinting video (27 min)
Injuries & X-Rays video (27 min)
http://www.meddean.luc.edu/lumen/restricted/er/ortho.pdf

a. State general principles (ex: assess ligament and tendon integrity, assess distal neurovascular compromise) in the assessment of a patient with a potential fracture
b. Describe the risk factors and method of diagnosis and treatment of a septic joint
c. State the assessment and management of a potential scaphoid fracture
d. Employ evidence based medicine using NEXUS criteria to identify which patients require cervical spine imaging in the setting of blunt trauma
e. Employ evidence based medicine using Ottawa ankle and knee rules to distinguish which patients require ankle and knee xrays in the setting of blunt trauma
f. Recognize the signs and symptoms of compartment syndrome
g. Describe the indication for thumb spica, sugar tong, posterior mold (elbow) and posterior mold (foot/ankle) plus demonstrate the application of these splints http://www.meddean.luc.edu/lumen/restricted/er/Splinting.pdf
h. Describe the physical examination of the knee, shoulder and hip/spine

4. *Neurologic Emergencies*

a. State the differential diagnosis and initial assessment of a patient with altered mental status https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-approach-to/approach-to-altered-mental-status
b. Discuss the diagnosis and management of acute stroke https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-neurology/ischemic-stroke
c. Describe the patient presentation, diagnostic testing, and medical management of meningitis https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-neurology/meningitis-encephalitis
d. Identify the patient presentation, role of diagnostic testing, and management of subarachnoid hemorrhage https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-neurology/intracranial-hemorrhage
e. State the differential diagnosis, work-up, and management of a patient with a seizure https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-neurology/seizure-status-epilepticus

5. *Gastrointestinal*

https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-approach-to/approach-to-abdominal-pain

a. Recognize key points in assessment, management, and treatment of abdominal pain from:
   i. Cholecystitis https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-gastrointestinal/biliary-disease
   ii. Appendicitis https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-gastrointestinal/appendicitis
   iii. AAA dissection https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-cardiovascular/abdominal-aortic-aneurysm
   iv. Mesenteric ischemia https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-gastrointestinal/mesenteric-ischemia
   v. Bowel obstruction https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-gastrointestinal/small-bowel-obstruction
   vi. Massive GI bleed https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-approach-to/gi-bleed
   vii. Perforated viscus https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-gastrointestinal/perforated-viscus

6. *Genito-urinary*
   a. Recognize key points in assessment, stabilization, and treatment of:
      i. Ectopic Pregnancy https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-genitourinary/ectopic-pregnancy---genitourinary
      ii. Pelvic Inflammatory Disease/Tubo-ovarian Abscess https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-genitourinary/pid-toa
      iii. Ovarian Torsion https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-genitourinary/ovarian-torsion
      iv. Testicular Torsion https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-genitourinary/testicular-torsion
   b. Examine the role of bedside ultrasound in pregnancy

7. *Shock*
   a. Identify the effects of cardiogenic shock on cardiac output and systemic vascular resistance and be able to compare these findings to those of anaphylactic shock and septic shock https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-approach-to/shock
   b. Define anaphylaxis and recall emergent medical treatment methods http://www.stritch.luc.edu/lumen/restricted/er/Anaphylaxis.pdf

8. *Sepsis*
   Sepsis video podcast (60 min), Sepsis ppt presentation https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-approach-to/sepsis
   a. List the components of SIRS criteria
   b. Describe the appropriate physical exam, diagnostic testing, and management plan for a patient with suspected sepsis based on the LUMC sepsis guidelines.

9. *Airway*
    a. Describe the method to open an airway with and without a potential cervical spine injury
    a. Demonstrate appropriate bag-valve-mask use
    b. Recall the means to confirm proper endotracheal tube placement

10. *BLS/ACLS/PALS/ATLS*
    http://www.stritch.luc.edu/lumen/restricted/er/AlgorithmReview.pdf
    a. State initial approach to a patient in suspected cardiopulmonary arrest
    https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-approach-to/cardiac-arrest
    b. Recall appropriate compression to ventilation ratios
    c. Identify the correct ventilation rate in a patient with ongoing CPR who has an advanced airway in place
    d. Identify which rhythms require defibrillation
    e. List the differential diagnosis considerations for pulseless electrical activity and management related to those causes (ex: hypoglycemia, hyperkalemia, tension pneumothorax)
    f. Explain management of supraventricular and ventricular tachycardia
    g. Recognize options for medication delivery when peripheral IV access cannot be easily obtained
    h. Identify routinely used medications in pediatric and adult cardiac arrest
    i. *ATLS*
    https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-approach-to/trama
        i. Describe the components and means of assessment of a primary survey
        ii. Discuss appropriate time to transfer a trauma patient to a trauma center

11. *Pediatric Emergencies*
    Pediatric video podcast (60 min): Part 1 Part 2 Part 3
    a. See above objectives that have a unique correlation with common pediatric illnesses under BLS, PALS, Airway, and ENT
    b. Apply pediatric rapid cardiopulmonary assessment principles to assess ill pediatric patients

12. *ENT*
    ENT video podcast (60 Min)
    a. Develop an appropriate differential diagnosis for common ENT complaints of otalgia and odynophagia
    b. State most common causative agent and management principles of various ENT conditions seen in the ED (otitis media, otitis externa, mastoiditis, peritonsillar abscess, retropharyngeal abscess, epiglottitis, dental infections, Ludwigs angina)
    c. Recognize common presentation of streptococcal pharyngitis
    d. Recall methods of epistaxis management
    e. List common causes of dentalgia and associated treatment

13. *Endocrine/Electrolyte*
    a. Recognize key points in assessment, stabilization, and treatment of:
        i. Hyperglycemia
        https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-endocrine-electrolytes/hyperglycemia
        ii. Hypoglycemia
        https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-endocrine-electrolytes/hypoglycemia
        iii. Thyroid Storm

https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-endocrine-electrolytes/thyroid-storm

iv. Hyperkalemia
https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-endocrine-electrolytes/hyperkalemia

14 *Toxicology*
Toxicology video podcast (12 min)
http://www.stritch.luc.edu/lumen/restricted/er/Toxicology.pdf
https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-approach-to/poisonings

a. Outline general assessment and management of the poisoned/potentially poisoned patient
b. Discuss basic toxidrome recognition and management
   i. Sympathomimetic
   ii. Sedative Hypnotic
   iii. Opiate
   iv. Anticholinergic
   v. Cholinergic
c. Explain assessment and management of patients with acetaminophen toxicity
d. Define emergency preparedness and describe guiding principles in the initial management of patients with chemical agent exposures

15. *Wilderness Medicine*
Wilderness Medicine video podcast (60 min)

a. Define wilderness medicine as a subspecialty, the role of emergency medicine within the field of wilderness medicine, define the unique aspects of patient assessment in the field and the difference to that of EM
b. Define heat related injuries including hyperthermia, heat stroke, heat exhaustion, heat cramps, and heat syncope. Describe presentation and pathophysiology of heat illness and aspects of assessment and management in the field vs the ED
https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-environmental/hyperthermia
c. Define cold related injuries including hypothermia, frostbite, frostnip, and chilblains and cold water immersion. Describe presentation and pathophysiology of cold injuries and aspects of assessment and management in the field vs the ED
https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-environmental/hypothermia
d. Describe common injuries associated with lightning strike
e. Discuss basic principles of bite and sting assessment and management from spiders, snakes, ticks and hymenoptera
f. Recognize how to respond to a victim of submersion

16. *Wound care*
Wound care video podcast (60 min)

a. Recognize the role of irrigation in wound care
b. Match laceration location with suture choice and duration until suture removal
c. Recognize the need to assess for foreign body in a wound
d. State animal bites at high risk for rabies and define the role of wound closure and antibiotics in cat and dog bites.
e. Recognize the indications for tetanus immunization in the setting of a laceration
f. Demonstrate appropriate simple interrupted suturing technique
g. Define the role of wound closure and antibiotics in cat, dog and human bites
h. Cite the options for local anesthetic

17. *Bedside point of care ultrasound in the ED*

a. Explain the basic physics of ultrasound imaging
b. Utilize ultrasound terminology to describe echogenicity and image orientation
c. Cite the indications for the various ultrasound transducers and scanning modes
d. Identify the 5 windows needed for an EFAST scan and the 5 components of the RUSH protocol and the related the related key anatomical structures
e. Successfully utilize a bedside ultrasound device to complete an EFAST and RUSH protocol scan eFAST video 20 minutes
f. Diagnose free fluid using static ultrasound images of an EFAST scan and pathology on a RUSH protocol scan and formulate a management plan based on it
g. Clarify the indications and limitations of various diagnostic modalities in the setting of a hypotensive trauma patient
h. Demonstrate ultrasound guided peripheral IV placement

18. *Care accelerated*
http://www.stritch.luc.edu/lumen/MedEd/elective/er/FromTheDirector.pdf
a. State the principle of rapid evaluation and management of critical patients in the ED

19. *Psychiatric Emergencies*
a. Cite psychotropic medications (and their potential clinically significant side effects) used in the ED for acute management of agitated but not psychotic patients, psychotic patients, patients with medical etiology for their psychosis, and patients with substance withdrawal
https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-psychiatry/agitation
b. Recognize patients at high risk for suicide
https://saem.org/cdem/education/online-education/m4-curriculum/group-m4-psychiatry/suicidal

20. *Violent patient/person management*
Violent Patient/Person Management video (10 min)
a. List medical causes which may potentially lead a patient or visitor to develop violent behavior.
b. Recognize characteristics that suggest a person may become violent.
c. Define weapons of opportunity and understand their use in assaults in the healthcare setting.
d. Employ verbal and non-verbal de-escalation strategies while waiting for security to respond to a potentially violent or violent person situation.

21. *Death disclosure*
Death disclosure video (15 min)
a. Recognize the importance of expressing empathy, sitting down when delivering bad news, using the term "died" or "dead", encouraging family viewing of the body, and being available for questions

22. *Legal*
http://www.stritch.luc.edu/lumen/restricted/er/legal2013Lew.pdf
Legal video podcast (15 min)
a. Recognize the requirements for a lawsuit and determination of the standard of care in a lawsuit
b. Recognize importance of good documentation
c. Recognize high liability conditions seen in the ED
d. Identify EMTALA requirements for permitting patient transfer

23. *Inter-professional practice:*
a. Identify similarities & differences in roles and perspectives of other professionals.

b. Recognize informational conflict and apply Team STEPPS techniques in interprofessional communication to assure patient safety.
c. Demonstrate understanding of the key principles of Team STEPPS (leadership, situation monitoring, mutual support, communication).

24. *Sports Medicine:*
Physical Examination Form
Child SCAT-3
SCAT-3
a. Recognize symptoms of a concussion
b. Identify normal EKG variants in athletes
c. Detect non-cardiac causes of sudden death in athletes
d. List cardiac causes of seizure and syncope in athletes
e. Exercise Associated Syncope and Death video Part 1 Part 2