

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*
 - a. Acute coronary syndrome (ACS)
<http://cdemcurriculum.com/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 of patients with suspected ACS based on TIMI risk score.
 - 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
<http://cdemcurriculum.com/thoracic-aortic-dissection/>
 - c. State the signs, symptoms, and initial treatment of acute heart failure
<http://cdemcurriculum.com/cardiovascular/congestive-heart-failure/>
 - d. Discuss the role and most appropriate indications for diagnostic testing in the evaluation of pulmonary embolism
<http://cdemcurriculum.com/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
<http://cdemcurriculum.com/shortness-of-breath/>
 - b. Describe the critical decisions and interventions in a patient with pneumonia
<http://cdemcurriculum.com/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
<http://cdemcurriculum.com/asthma/>
 - d. Describe the treatment of COPD exacerbation
<http://cdemcurriculum.com/copd/>

- e. Recognize exam findings and emergent treatment of pneumothorax
<http://cdemcurriculum.com/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
<http://cdemcurriculum.com/altered-mental-status/>
 - b. Discuss the diagnosis and management of acute stroke
<http://cdemcurriculum.com/ischemic-stroke/>
 - c. Describe the patient presentation, diagnostic testing, and medical management of meningitis
<http://cdemcurriculum.com/meningitis-encephalitis/>
 - d. Identify the patient presentation, role of diagnostic testing, and management of subarachnoid hemorrhage
<http://cdemcurriculum.com/intracranial-hemorrhage/>
 - e. State the differential diagnosis, work-up, and management of a patient with a seizure
<http://cdemcurriculum.com/seizure-status-epilepticus/>
5. *Gastrointestinal*
- <http://cdemcurriculum.com/abdominal-pain/>
 - a. Recognize key points in assessment, management, and treatment of abdominal pain from:
 - i. Cholecystitis
<http://cdemcurriculum.com/biliary-disease/>
 - iii. Appendicitis
<http://cdemcurriculum.com/appendicitis/>
 - iv. AAA dissection
<http://cdemcurriculum.com/abdominal-aortic-aneurysm/>
 - v. Mesenteric ischemia
<http://cdemcurriculum.com/mesenteric-ischemia/>
 - vi. Bowel obstruction
<http://cdemcurriculum.com/small-bowel-obstruction/>
 - vii. Massive GI bleed
<http://cdemcurriculum.com/gi-bleed/>
 - viii. Perforated viscus
<http://cdemcurriculum.com/perforated-viscus/>

6. *Genito-urinary*
 - a. Recognize key points in assessment, stabilization, and treatment of:
 - i. Ectopic Pregnancy
<http://cdemcurriculum.com/ectopic-pregnancy/>
 - ii. Pelvic Inflammatory Disease/Tubo-ovarian Abscess
<http://cdemcurriculum.com/pelvic-inflammatory-disease-and-tubo-ovarian-abscess/>
 - iii. Ovarian Torsion
<http://cdemcurriculum.com/ovarian-torsion/>
 - iv. Testicular Torsion
<http://cdemcurriculum.com/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
<http://cdemcurriculum.com/shock/>
 - b. Define anaphylaxis and recall emergent medical treatment methods
<http://www.stitch.luc.edu/lumen/restricted/er/Anaphylaxis.pdf>
8. *Sepsis*

[Sepsis video podcast](#) (60 min)
<http://cdemcurriculum.com/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.stitch.luc.edu/lumen/restricted/er/AlgorithmReview.pdf>
 - a. State initial approach to a patient in suspected cardiopulmonary arrest
<http://cdemcurriculum.com/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*
<http://cdemcurriculum.com/trauma/>
 - 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
10. *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 andodynophagia
 - 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
<http://cdemcurriculum.com/hyperglycemia/>
 - ii. Hypoglycemia
<http://cdemcurriculum.com/hypoglycemia/>
 - iii. Thyroid Storm
<http://cdemcurriculum.com/thyroid-storm/>
 - iv. Hyperkalemia
<http://cdemcurriculum.com/hyperkalemia/>
14. *Toxicology*
 Toxicology video podcast (60 min)
<http://www.stritch.luc.edu/lumen/restricted/er/Toxicology.pdf>
<http://cdemcurriculum.com/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
<http://cdemcurriculum.com/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
<http://cdemcurriculum.com/hyperthermia/>

- 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*
- 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
 - 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
<http://cdemcurriculum.com/104-2/>
 - b. Recognize patients at high risk for suicide
<http://cdemcurriculum.com/suicidal-patient/>
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
 - b. Exercise Associated Syncope and Death video [Part 1](#) [Part 2](#)
22. *Legal*
<http://www.stitch.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