EMC 410 Trauma Management
Study Guide for Exam #2

Chapter 13. Chest Trauma

What proportion of trauma deaths are the result of chest trauma?
How does chest trauma compare with other types of trauma in terms of mortality?
How often do chest trauma patients require surgery?
Be able to describe the anatomy of the chest.
Be able to describe the mechanics of respiration.
How can oxygenation be improved?
Be able to describe the initial assessment and treatment of the patient with chest trauma?
What is the immediate mechanism by which a tension pneumothorax poses a threat to life?
What are the most common causes of tension pneumothorax?
What are the signs and symptoms of tension pneumothorax?
Define pulsus paradoxus.
Describe the procedure for needle decompression.
Define open pneumothorax.
What is the immediate mechanism by which an open pneumothorax poses a threat to life?
What is the treatment for open pneumothorax?
Should a chest tube be inserted through the wound of the open pneumothorax? Why or why not?
Define massive hemothorax.
What is the most common etiology of massive hemothorax?
How may a blood clot in the pleural space actually increase bleeding?
What are the signs and symptoms of hemothorax?
Compare and contrast hemothorax and tension pneumothorax.
What size and where should a chest tube be placed to drain a hemothorax?
How much blood should be allowed to drain before clamping off the chest tube?
Describe autotransfusion.
Define flail chest.
What is the mortality rate associated with flail chest? Why is it so high?
What are the 3 types of flail segments and what is the mechanism of injury for each?
Describe paradoxical chest wall motion. When should we expect to see it?
How does positive pressure ventilation affect flail chest?
What injury typically accompanies flail chest and what is its significance?
What is the treatment for flail chest?
Describe cardiac tamponade.
Which portion of the heart is usually injured that results in cardiac tamponade? Why?
Which is more likely to result in cardiac tamponade, knife wounds or GSW? Why?
What are the signs and symptoms of cardiac tamponade?
Which signs and symptoms are referred to as Beck=s triad? How reliable is Beck=s triad?
What is Kussmaul's sign?
Which EKG changes are associated with cardiac tamponade?
Describe the medical and surgical management of cardiac tamponade.

Define myocardial rupture.
What are the most common mechanisms of injury for myocardial rupture?
During what phase of the cardiac cycle is cardiac rupture most likely to occur?
What are the signs and symptoms of cardiac rupture?
By what mechanism is cardiac tamponade protective in the setting of cardiac rupture?
What are the most common mechanisms of injury in aortic rupture?
Which portion of the aorta is most likely to rupture?
What is the treatment for aortic dissection?
What are the most common mechanisms of injury for pulmonary contusion?
Describe the pathophysiology of pulmonary contusion.
What are the signs and symptoms of pulmonary contusion?
How should pulmonary contusion be managed?
What other associated injuries are likely to accompany pulmonary contusion?
Compare and contrast myocardial contusion.
What are the signs and symptoms of myocardial contusion?
How sensitive is the EKG in detecting myocardial contusion?
What EKG changes are associated with myocardial contusion?
What is the treatment for myocardial contusion?
Describe the mechanism, signs and symptoms, and management of injuries to the heart valves.
Define diaphragmatic rupture.
What are the signs and symptoms of diaphragmatic rupture.
Describe the mechanisms of injury and pathophysiology of diaphragmatic rupture.
On which side is diaphragmatic rupture most likely to occur?
What abdominal organs are most likely to be herniated?
What are the signs and symptoms of diaphragmatic rupture?
What is the treatment of diaphragmatic rupture?
Describe tension viscerothorax.
What is the mechanism of injury usually associated with tracheobronchial disruption?
What portion of the respiratory tree is usually involved in tracheobronchial disruption?
What is Hamman's sign?
What are the signs and symptoms of tracheobronchial disruption?
In what manner should patients with tracheobronchial disruption be intubated?
What effect does positive pressure ventilation have on pneumothorax?
What is the usual mechanisms of injury in esophageal disruption?
What is the mortality rate of esophageal disruption? Why is it so high?
What are the signs and symptoms of esophageal disruption?
What is the field treatment of esophageal disruption?
Describe the clinical picture of traumatic asphyxia.
Describe the pathophysiology of traumatic asphyxia.
What types of rib fractures are considered serious injuries? Why?
What is the significance of fractures of the lower ribs? Of multiple ribs? Of the first rib?
Describe the procedure for pericardiocentesis.
Describe the procedure for pleural decompression.

Chapter 14. Abdominal and Genitourinary Trauma

Why is there a difference in the mortality rate for blunt versus penetrating abdominal trauma?
What are the most prevalent mechanisms of injury in blunt and penetrating abdominal trauma?
Be able to describe the anatomy of each of the organs within the abdominal cavity and retroperitoneal space, including their location and function.
Which solid organs are most susceptible to injury?
Which hollow organs are most susceptible to injury?
What is the primary concern when dealing with injuries to a solid organ?
Why is the mortality rate so high in the setting of pancreatic trauma?
When is the stomach most susceptible to injury?
Which portion of the stomach is most prone to rupture?
Which abdominal vascular structures are most prone to injury?
In the setting of unexplained hypotension, where is the source of bleeding assumed to be located?
What aspects of the scene should you investigate in the setting of blunt abdominal trauma associated with MVC?
What information should you attempt to obtain from the scene of a stabbing with penetration into the abdomen?
Describe the focused assessment of the abdomen.
Describe the treatment of blunt and penetrating abdominal trauma.
Describe the treatment of abdominal evisceration.
Describe the treatment of abdominal impaled objects.
What is the long term risk of patients with splenic injury who require splenectomy?
Describe the significance of Kehr's sign, Cullen's sign, and Grey-Turner's sign.
Describe the signs and symptoms of traumatic diaphragmatic herniation.
Which organ is most commonly injured in genitourinary trauma?
What other injuries are usually associated with genitourinary trauma?
Be able to describe the anatomy and physiology of the genitourinary system.
What are the typical injury mechanisms in renal trauma?
Be able to describe the mechanisms, signs and symptoms, and management of injuries to the genitalia.
What are the long-term consequences of injury to the genitourinary system?

Chapter 15. Extremity Trauma.

Why is extremity injury now receiving greater attention in trauma care than in years past?
Who is at most risk for fracture? Does this trend hold true throughout the lifespan?
Be able to describe the anatomical features of the skeletal system.
Be able to list, describe, and provide an example of each of the 6 types of joints.
What are the blood losses associated with pelvic and femur fractures?
What are the mechanisms by which fractures can disrupt distal circulation?
What are the signs and symptoms of compromised distal circulation?
Be able to describe sensory and motor testing of the upper extremity and hand.
Be able to describe sensory and motor testing of the lower extremity.
Describe the physical exam of extremity trauma.
How should amputations be managed in the field?

Define dislocation and sprain.
What is the significance of sternoclavicular joint dislocation?
What are the signs and symptoms and treatment of sternoclavicular joint dislocation?
Be able to describe the clinical presentation and treatment of anterior glenohumeral dislocation.
Be able to describe the clinical presentation and treatment of elbow dislocation.
Be able to describe the MOI, clinical presentation, and treatment of posterior hip dislocations.
Be able to describe the clinical presentation and treatment of anterior hip dislocations.
Describe the anatomy of the knee joint.
What are the main concerns in the setting of a dislocated knee?
What is the incidence of neurovascular injury and amputation in the setting of knee dislocation?
What is spontaneous reduction in the setting of knee dislocation?
What are the signs and symptoms of medial collateral ligament sprain?
How does one test the MCL for stability?
What are the signs and symptoms of lateral collateral ligament sprain?
How does one test the LCL for stability?
What are the signs and symptoms of posterior cruciate ligament sprain?
How does one test the PCL for stability?
What are the signs and symptoms of anterior cruciate ligament sprain?
How does one test the ACL for stability?
Describe the anatomy and function of the menisci.
What are the signs and symptoms of meniscal injury?
What are the long term consequences of meniscal injury?
How often are fractures associated with ankle dislocation?
How does one test the stability of the ankle?
Be able to define the various types of fractures (Table 16-3 in the chapter).
What is the significance of a scapular fracture? How is it treated?
How often is the clavicle fractured?
What are the signs and symptoms and treatment of clavicular fracture?
Compare and contrast Colle's and Smith fractures.
What are the signs and symptoms and treatment for fractures humerus, radius, and ulna?
What are the most common mechanisms of pelvic fracture?
What are the signs and symptoms of pelvic fracture?
What are the most immediate concerns in field management of pelvic fracture?
What other injures are frequently associated with pelvic fracture?
What are the most common mechanisms of femur fracture?
What are the most immediate concerns in field management of femur fracture?
What are the signs and symptoms of femur fracture?
How should femur fractures be managed in the field?
What are the signs and symptoms of fractures of the tibia and fibula?
What is the most serious complication associated with tib/fib fractures?
Be able to describe the general principles of splinting and the procedures for applying rigid, traction, and air splints, and the PASG.
How do the principles of splinting an injury to a joint differ from splinting a long bone?

Chapter 16: Compartment Syndrome and Crush Injuries

Define compartment syndrome.
What is the most common cause of compartment syndrome?
What are other causes of compartment syndrome?
Describe the anatomical structures that lead to the development of compartment syndrome?
Describe how oncotic pressure, hydrostatic pressure, and capillary wall permeability are affected in compartment syndrome.
Describe the pathophysiology of compartment syndrome.
How much pressure is required to develop compartment syndrome?
How is the pressure within the compartments measured?
How long does the pressure have to be elevated before compartment syndrome develops?
What are the signs and symptoms of compartment syndrome?
What systemic complications may result from compartment syndrome?
Define crush injury.
What are the typical mechanisms of injury in crush injury?
What are the signs and symptoms of crush injury?
What is the pathophysiology of crush injury and crush syndrome? How is it different from compartment syndrome?
What are the signs and symptoms of crush syndrome?
What are the system complications of crush injury and crush syndrome?
What are the 5 P's of ischemia?
What are the other components in the physical exam for a victim of crush injury?
What is the treatment of crush injury and crush syndrome?

Chapter 21. Pneumatic Anti-shock Garment

When was the PASG first developed and by whom?
How did the PASG come to be a prehospital treatment for shock?
Where and when was the PASG first used in prehospital care?
Be able to discuss the mechanisms of action of the PASG including its effect on systemic vascular resistance, the rate of blood flow through a lacerated vessel, and autotransfusion.
What are some of the controversies surrounding the present day use of the PASG?
Describe how the PASG can be used to stabilize a pelvic fracture?
What are the indications and contraindications to use of the PASG?
What are some of the complications associated with PASG use?
What are the procedures for inflation and deflation of the PASG?
How can the ambient environment affect the performance of the PASG?