EMC 410 Trauma Management
Study Guide for Exam #1

Chapter 1. Epidemiology of Injuries
What is the annual death rate due to trauma?
What age group is most at risk for trauma death?
What other demographic traits are associated with trauma risk?
Which type of injury, blunt (MVC) or penetrating (firearm), is most prevalent? Why? What is the predicted trend?
What is epidemiology?
What are incidence and prevalence?
What is the difference between mortality and morbidity?
How available are morbidity data compared to mortality data?
What are E-codes and N-codes?
What role do paramedics have in injury data collection?
What is the annual cost of trauma?
How much of the annual cost burden of trauma is borne by public funds?
What is YPPL and what does it mean?
How does the U.S. compare with other industrialized nations in firearm fatality rates?
Where do most unintentional shootings occur?
What impact does a firearm in the home have on the likelihood of suicide and homicide?

Chapter 2. Injury Prevention
What is injury prevention?
How does an A accident≅ differ from an A unintentional injury?≅
Be familiar with Haddon=s Matrix and be able to apply it to a trauma-related public health problem.
Be able to devise an injury prevention program using the A five E=s≅.

Chapter 3. Overview of Trauma Care
What percentage of injured patients will actually require prehospital ALS and a level 1 trauma center?
Why do trauma patients die? Be familiar with the trimodal distribution of death, the types of injuries in each mode, and what interventions are available to reduce deaths in each group.
What is the A White Paper≅ and what does it cover?
What was the significance of the EMSS Act of 1973?
What has been the military=s contribution to modern trauma care?
What are the differences among the 4 levels of trauma centers?
What is the A golden hour≅ and what does it mean?
What is meant by the term A platinum ten minutes≅ and what does it mean?

Chapter 6. Biomechanics of Trauma
What are the 5 forms of energy?
Be familiar with Newton=s 3 laws of motion.

What is force and how is it measured?
What is a Ag force≅.
What is the law of conservation of energy?
What is kinetic energy and how is it calculated? What is the significance of each component in the equation?
Be able to list and provide an example of the 4 types of blunt injury mechanisms: tensile strain, shear, torsion, and compression.
What is the rule of thumb that correlates vehicle deformity with impact velocity?
How much G-force can the human body tolerate without injury?
Be able to describe the mechanism of injury and injury patterns of frontal (up and over/down and under), rear, lateral, angular, and rollover collisions.
What is the significance of ejection?
How do restraints work?
How should restraints be worn?
What types of injuries may result from restraints and air bags?
Be able to describe primary, secondary, tertiary and quaternary impacts of pedestrian-MVC collisions.
Compare and contrast adult vs. pediatric pedestrian injuries.
Discuss the injury mechanisms associated with motorcycles.
Discuss the biomechanics of gunshot wounds (weapon energy, distance, tissue density, surface area, profile, tumble, fragmentation, cavitation, and ricochet).
Be able to describe the types of blast injuries (primary, secondary, tertiary, blast associate injury) and their mechanisms.

Chapter 2 (PHTLS) Patient Assessment
Be thoroughly familiar with the rapid trauma assessment.
Be able to triage patients using the START system.
Communications and Telemetry
Know the following terms: simplex, duplex, multiplex, telemetry, VHF, UHF, low band, high band, tone coded squelch, repeater

Chapter 33. Tissue and Organ Donation
What is orthotopic transplantation? Heterotopic?
What is Cyclosporine and what is its significance in transplantation?
What determines whether a patient is an organ donor vs. a tissue donor?
What is hyperacute rejection?
What is hystocompatibility?
How are organs Amatched≅ to recipients?
How should a potential organ donor be managed in the field?
How is immunosuppression accomplished and what are its complications?

Chapter 11. Spinal Injuries
Describe the bony anatomy of the vertebral column.
Be able to describe the 3 major ascending tracts and the 3 major descending tracts of the spinal cord.
List the major plexuses of the spine.

Describe the following mechanisms of injury: axial loading, flexion, hyperextension, hyperrotation, lateral bending and distractions.
Describe the pathophysiology and physical findings of complete cord lesions.
Describe the pathophysiology and physical findings of Brown-Sequard syndrome, anterior cord syndrome, and central cord syndrome.
Describe the pathophysiology, physical findings, and treatment of neurogenic shock.
Contrast primary and secondary cord injury.
Discuss the pharmacologic treatment of secondary cord injury.
Be able to correctly calculate the dosage of Solu Medrol.

Chapter 19. Airway and Ventilatory Management
Be prepared to discuss the anatomy of the respiratory system.
What physical mechanisms are responsible for spontaneous ventilation?
What is normal tidal volume and minute volume?
What is anatomic, pathologic, and physiologic dead space?
How is oxygen delivered to the tissues?
What are normal hematocrit and hemoglobin values?
What are normal PaO2, PaCO2, and SpO2 values?
What is CaO2 and how is it calculated?
What is DO2 and how is it calculated?
Discuss how airway, ventilatory, and circulatory management inter-relate in oxygen delivery.
What are chemoreceptors and what is their function?
Be able to interpret ABG values.
Be able to discuss the limitations of ABGs and SpO2.
Be able to describe the various V/Q mismatches and their management.
Discuss FBAO management.
What is laryngospasm and how is it managed?
How can head injury and spinal injury impair ventilation?
Describe how mechanical dysfunction (pneumothorax, diaphragmatic rupture, hemothorax, flail segment, chest wall compression) can impair ventilation.
Describe the pathophysiology, mortality, prevention, and treatment of aspiration.
Be able to discuss in general terms the various airway adjuncts and techniques, their indications, contraindications, advantages, and disadvantages (EOA, EGTA, PTLA, Combitube, oral intubation, nasal intubation, LMA, transtracheal jet insufflation, surgical cricothyrotomy).
Be able to discuss the indications, contraindications, side effects, reversal drugs, and procedure for RSI.
Be able to describe the procedure for setting up a chest drainage system.
List and describe the 4 major ventilator modes discussed in class (CMV, ACV, IMV, SIMV).
What are the initial ventilator settings for an adult trauma patient?
What are the physiologic responses to positive pressure ventilation?
Be able to describe the oxyhemoglobin dissociation curve.