Emergency War Surgery Course (EWSC)
Advanced Surgical Skills for Exposure in Trauma (ASSET+)
Course Objectives

EWSC Objectives

►Explain the concepts & elements of triage & teamwork within the battlefield trauma system

- Review injuries, levels of care and theater evacuation concepts specific to military care
- Explain the concepts and elements of triage and teamwork within the battlefield trauma system

►Describe the principles, indications, & procedures for damage control in the management of combat casualties

- Apply trauma principles to surgery in austere environments
- Describe the principles, indications and procedures for damage control in the management of combat casualties

►Demonstrate surgical techniques required to manage combat injuries to the head, face, eye, neck, torso, & extremities

- Demonstrate hands-on surgical techniques in the laboratory
- Demonstrate surgical techniques required to manage combat injuries to the head, face, eye, neck, torso and extremities

Pre-Course

1.1 EWSC Introduction

- Explain the concepts and elements of the battlefield trauma system.
- Describe principles, indications, and procedures for damage control management of combat casualties.
- Demonstrate surgical techniques required to manage combat injuries.

1.2 War Wounds

- Recognize injury patterns caused by weapons of war – high-powered rifles and explosive devices.
- Recognize need for repeat debridement surgeries of war wounds.
- Recognize risk factors for Invasive Fungal Infections (IFI).
- Be familiar with management of Unexploded (UXO) Ordnance.

1.3 Abdominal, Urologic, and Gynecologic Trauma

- Indications for laparotomy on the battlefield
- Use of FAST exam in the evaluation of the combat casualty
- Management of injuries to major abdominal, genitourinary and gynecological organs

1.4 Vascular Injuries

- Describe evaluation of the patient with a potential vascular injury.
- Explain the general principles for vascular injuries.
- Describe the management techniques of specific vascular injuries.
- Define the management techniques appropriate at different levels of care.

1.5 Thoracic Injuries

- Recognize and manage specific thoracic and cardiac injuries on the battlefield.
- Describe the indications and technique for performing a resuscitative thoracotomy.
- Describe common thoracic and cardiac exposures and recognize which injuries they address.

1.6 Transfusion Medicine for Combat Trauma

- Define “emergency release” blood.
- Review massive transfusion protocols.
- Review whole blood use.
- Review blood product availability at different roles.

1.10 REBOA

- Discuss what REBOA is, what it is used for, and who is it for.
- Describe the placement procedures for REBOA.
- Discuss REBOA used in combat situations.
- Describe the keys to success for REBOA.
- Discuss the contraindications of REBOA.

1.11 Traumatic Brain Injury

- Be facile with medical treatment options for traumatic brain injuries.
- Be familiar with indications for surgical intervention.
- Know limitations in the treatment of host nationals.
- Know limitations involving aeromedical evacuation of traumatic brain injury (TBI) patients.
- Know to contact theater neurosurgeon for expert advice.

1.12 Face and Neck Injuries

- Discuss the spectrum, evaluation, and management of injuries to the face and neck.

1.13 Eye Trauma

- Prevent ocular injuries by wearing military combat eye protection (MCEP), ballistic protective eyewear (BPE), EyePro or Eye Armor
- “Keep an eye out” for ocular trauma: Maintain high index of suspicion
- Do NOT put pressure on eye with suspected open globe injury
- Teleophthalmology can improve and extend ophthalmic trauma care
- SHIELD AND SHIP
- Recognize and treat the 2 ocular emergencies

1.14 Field Critical Care

- Airway and anesthesia in the trauma patient
- Principles of critical care on battlefield
- Management of battlefield infections

1.15 Soft Tissue and Extremity Injuries

- Understand principles of debridement and management of soft tissue injuries.
- Recognize the clinical pattern of crush injuries.
- Understand the principles of amputation.

1.16 Extremity Fracture Management

- Describe the initial evaluation and management of extremity fractures of upper and lower extremities.
- Debride non-viable tissue in open fractures.
- Spare viable tissue in open fractures.
- Use early antibiotics with cephazolin.
- Give tetanus toxoid as soon as possible.
- Describe the diagnosis and management of compartment syndrome.

1.17 Spine Injury Management

- Understand the initial management of spine fractures and spinal cord injuries in the deployed setting.
- Understand medical management of patients with spinal cord injury.
- Understand the principles of transportation of patients with spinal cord injury.

1.18 Pelvic Fracture Management

- Identify patients at risk for pelvic fractures.
- Learn initial pelvic fracture management.
- Identify need for aggressive resuscitation and use of blood products.
- Identify early need for multi-disciplinary approach involving trauma and orthopedic surgery.

1.19 EnRoute Care

- Understand capabilities at each level of care.
- Understand military medical evacuation terminology.
- Understand risks and limitations of aeromedical evacuation.

1.20 Burn Care

- Estimate burn size based on the Lund-Browder Chart.
- Resuscitate using Rule of 10’s and Joint Trauma System’s (JTS) Clinical Practice Guidelines (CPGs).
- Prevent hypothermia.
- Learn the indications for and how to perform escharotomies.
- Learn basics of wound care.

1.21 Mass Casualty & Triage

- Define mass casualty.
- Review triage principles: triage set-up, staff support, triage constraints
- Apply triage to a series of patients.
- Conduct a mass casualty and triage exercise.

1.22 Pediatric Trauma

- Pediatric resuscitation
- Anatomic and physiologic considerations of pediatric patients

1.23 Military Health Systems

- Be familiar with the military medical system.
- Understand organizational structures within the system.
- Understand the military surgeon's role in the organization.
- Tactical Casualty Combat Care

1.24 Tactical Casualty Combat Care

- Identify the three objectives of TCCC.
- Describe the key factors influencing combat casualty care.
- Identify the evidence that documents the lifesaving impact of TCCC use.
- Describe the three phases of care in TCCC.
- Identify the most common causes of preventable death among combat casualties.

1.25 Prolonged Field Care

- Define PFC definitions and operational context.
- Identify the capabilities and limitations Role 1 providers are using to help mitigate mortality and morbidity.
- Describe the limits of PFC contingency planning and training.
- Identify specific Role 1 PFC Clinical Practice Guidelines (CPGs) with emphasis on "Min, Better, Best" construct.
- Describe telemedical consult techniques and assets.
- Identify future direction and research gaps.

Day 1 ASSET+

1.26 Surgical Skills Laboratory

- Introduction
  - Describe student skill performance expectations
  - Discuss skill lab procedures for use of fresh human cadaver models and simulated tissue models
  - Discuss IACUC Protocols

- Skills Laboratory – Part 1 – Neck and Upper Extremity (Human Cadaver Model)

- Demonstrate knowledge of key neck and upper extremity anatomical exposures for the care of injured and acutely ill surgical patients.
- Demonstrate his or her technical ability to expose important structures that may require acute surgical intervention to save life or limb.
- Gain confidence in performing anatomic exposures independently.
- Labs performed:

1) Cricothyroidotomy
2) Right/Left Carotid Exposure
3) Right/Left Axillary Artery Exposure
4) Exposure of Esophagus in Neck
5) Exposure of Trachea in Neck
6) Expose Subclavian above Clavicle
7) Brachial Artery Exposure
8) Radial and ulnar artery exposure
9) Upper Extremity Fasciotomies

▶ Skills Laboratory – Part 2 – Lower Extremities and Pelvis (Human Cadaver Model)

- Demonstrate knowledge of the lower extremity and pelvis anatomical exposures for the care of injured and acutely ill surgical patients.
- Demonstrate his or her technical ability to expose important structures that may require acute surgical intervention to save life or limb.
- Gain confidence in performing anatomic exposures independently.
- Labs performed:

1) Femoral Artery Exposure Right/Left Groin
2) Popliteal Artery Exposure Right/Left Leg
3) Fogarty & Exposure and Shunting SFA Injury
4) Fasciotomy Lower Leg
5) Fasciotomy Thigh
6) Expose Iliacs in Retroperitoneum
7) Pelvic Packing
8) REBOA

▶ Skills Laboratory – Part 3 – Chest (Human Cadaver Model)

- Demonstrate knowledge of the chest and thoracic anatomical exposures for the care of injured and acutely ill surgical patients.
- Demonstrate his or her technical ability to expose important structures that may require acute surgical intervention to save life or limb.
- Gain confidence in performing anatomic exposures independently.
- Labs Performed:

1) Median Sternotomy
2) Resuscitative Thoracotomy
3) Extension to Clamshell
4) Cross Clamp Aorta
5) Manage Cardiac Injury

6) Pulmonary Tractotomy and Hilar Twist
7) Resect Clavicle to Control Subclavian

▶ Skills Laboratory – Part 4 – Abdomen (Human Cadaver Model)

- Demonstrate knowledge of the abdominal anatomical exposures for the care of injured and acutely ill surgical patients.
- Demonstrate his or her technical ability to expose important structures that may require acute surgical intervention to save life or limb.
- Gain confidence in performing anatomic exposures independently.
- Labs Performed:

1) Trauma Laparotomy
2) Splenectomy
3) Supraceliac Control of Aorta
4) L to R Visceral Medial Rotation
5) Aorta Exposure to Root of Mesentery
6) R to L Visceral medial Rotation
7) Manage IVC Injury
8) Control Iliacs in Abdomen
9) Manage Liver Trauma
10) Ureteral Stenting/Repair

Day 2

▶ Skills Laboratory – Part 5 – Round Robin Skills (Practical Models, not performed on Cadaver)

- Perform and demonstrate surgical techniques related to trauma in a deployed setting
- Perform and demonstrate his or her technical ability to provide stability to the extremity in the form of External Fixation.
- Perform and demonstrate his or her technical ability to perform an emergency C-Section and control post-partum hemorrhage.
- Perform and Demonstrate his or her technical ability to surgically treat traumatic brain injury by alleviate intracranial pressure due to internal bleeding in the form of a Decompressive Craniotomy.
- Perform and demonstrate his or her technical ability to perform a lateral canthotomy and cantholysis for retrobulbar hematoma.

1.27 Post Test/Test Review/Course Critiques

▶ TLO: Students will complete the post rest with review and course critique.