

**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.