# APPLIED COMBAT MEDIC SKILLS – POINT OF CARE ULTRASOUND

## ACMS-POCUS COURSE

## CURRICULUM & SYLLABUS

| **Course Length** | 20 Hours (2 Days) |
|---|---|
| **Format** | Hands-On Lab Stations |
| **Student:Instructor Ratio** | Maximum 5:1 (ACMS) / 4:1 (POCUS) |
| **Maximum Class Size** | 25 Students |
| **Prerequisites** | Current TCCC Certification (CLS or CMC) |
| **Assessment** | Skills (ACMS) and Live Scanning (POCUS) Sign-Off |

*"The fate of the wounded rests with the one who applies the first dressing."*
— Dr. Nicholas Senn, 1897

# SECTION 1: COURSE OVERVIEW

## Purpose

Applied Combat Medic Skills (ACMS) provides 16-hours of hands-on procedural training program designed for tactical medical providers who hold current TCCC certification at the Combat Lifesaver (CLS) or Combat Medic/Corpsman (CMC) level. The course exists to close the gap between TCCC knowledge and actual procedural mastery by providing supervised, repetitive practice in increasingly challenging situations with the same CoTCCC approved equipment participants carry in the tactical environment. Combat Point of Care Ultrasound (C-POCUS) skills adds an additional four-hours of hands-on training and teaches combat-relevant ultrasound skills using the same portable equipment participants will carry in the tactical environment.

TCCC training provides the cognitive foundation. ACMS provides mastery of the gear. POCUS changes the calculus at the point of injury. When evacuation is delayed — whether in an austere OCONUS environment or a domestic mass casualty event — the difference between guessing about internal bleeding, pneumothorax, cardiac tamponade or a femur fracture and knowing can determine whether a casualty survives to definitive care.

## Philosophy

The in-person component of this course is not a clinical judgment course. It is not a scenario course. It is a procedural proficiency course. Instructional time is spent on demonstration, supervised practice, and repetition with increasingly challenging conditions that result in mastery. Instructors do not lecture — they demonstrate, coach, and correct. Students do not watch — they perform.

This course is designed with the knowledge that participants' performance of these complex skills deteriorates rapidly with almost 100% loss of competency within 1 year of initial education without ongoing training and practice. Therefore, this course is not just a one-time event but rather a competency-maintaining educational system. Participants will elevate their skills performance from competent to mastery during the in-person training and then leave with the equipment, self-directed training and assessment materials, and low fidelity simulators necessary to preserve proficiency through a 12-month self-directed skill maintenance cycle.

## Mixed Practice Levels

CLS and CMC/Corpsman participants train together at all stations. For skills outside the CLS scope of practice, CLS participants serve in an active supporting role: holding airways, managing equipment, monitoring patients, and documenting care. No student is ever a passive observer.

## Learning Objectives

Upon successful completion of the ACMS component of this course, participants will be able to perform or assist in the performance of the following:

- Demonstrate proficient application of windlass and ratchet tourniquets under time pressure using one hand and two hands.
- Perform hemorrhage-controlled wound packing using hemostatic gauze and appropriate pressure dressing layering.
- Apply improvised and commercial junctional hemorrhage control techniques to axillary, neck, and inguinal wounds.
- Deploy XSTAT wound filler correctly.
- Insert a properly sized nasopharyngeal airway and manage an unconscious casualty's airway.
- Operate a bag-valve-mask device as a single rescuer and as part of a two-person team.
- Perform manual suction.
- Perform colorimetric $ETCO_2$ confirmation.
- Insert an extraglottic airway device and troubleshoot placement.
- Perform a surgical cricothyrotomy using the Cric-Key and blunt dissection technique.

- Apply a vented chest seal and perform needle chest decompression.
- Assemble and apply HPMK components and warming devices.
- Manage a penetrating eye injury with rigid eye shield.
- Dress burn wounds and integrate burn management with hypothermia prevention.
- Apply conformable aluminum splints and a cervical collar.
- Establish a casualty collection point with proper documentation and patient preparation.
- Obtain peripheral IV access and perform IO insertion on a task trainer (CMC/primary; CLS/supporting)
- Administer simulated medications via intranasal, intramuscular, and intravenous/intraosseous routes (CMC/primary)
- Complete a DD Form 1380 TCCC Casualty Card and prepare a 9-Line MEDEVAC request.

Upon successful completion of the C-POCUS component of this course, participants will be able to:

- Correctly handle and orient an ultrasound probe; adjust depth, gain, and freeze/cine functions.
- Obtain an interpretable subxiphoid cardiac view and identify the presence or absence of pericardial effusion.
- Obtain bilateral RUQ and LUQ FAST views and identify free fluid at the hepatorenal and splenorenal interfaces.
- Obtain a bladder FAST view and identify pelvic free fluid.
- Perform bilateral lung scanning for pneumothorax using lung sliding sign and M-mode interpretation.
- Identify hemothorax using dependent thoracic scanning in the supine patient.
- Identify femur fractures using cortical disruption technique (EFAST/O extension)
- Differentiate abscess from cellulitis on soft tissue ultrasound.
- Identify a hematoma and estimate its size on ultrasound.
- Localize a foreign body (shrapnel, bullet, glass, etc.) in a soft tissue POCUS assessment.
- Identify a target vein for IV access and confirm vessel identity (artery vs vein) using compressibility and pulsatility.
- Perform ultrasound-guided peripheral IV catheter placement using the short-axis and long access approaches.
- Document POCUS findings on a structured documentation card.
- Note on scope of practice: POCUS interpretation to guide clinical decision-making (e.g., needle decompression for identified pneumothorax) is within CMC scope. CLS participants performing POCUS in this course are trained to obtain images and communicate findings to medical personnel — not to make independent treatment decisions based on those findings.

## Prerequisites

All participants must hold current TCCC certification at one of the following levels:

- TCCC Combat Lifesaver (CLS) — current or recently expired certification.
- TCCC Combat Medic/Corpsman (CMC) — current or recently expired certification.
- TCCC Combat Paramedic / Provider (CPP) — current or recently expired certification.

No pre-course study materials are required. All instruction is delivered on-site. Participants should arrive in appropriate duty uniform and be prepared for a full day of physical activity at each station. On Day 2, students should have clothing available to change into that allows access to the abdomen, upper chest, arms, and femurs so that fellow students may learn POCUS study (not procedural) techniques on each other.

## Instructor Requirements

- Minimum 1 instructor per 5 students (ACMS) / 1 instructor per 4 students (C-POCUS).
- Instructors must demonstrate proficiency in all station skills prior to course delivery.
- Each station should have a dedicated instructor for the duration of that station.

- All C-POCUS instructors must hold current POCUS certification / credentialing or demonstrated clinical POCUS proficiency.
- C-POCUS Instructors must be able to teach probe handling, image optimization, and pathology identification for all three study types.
- At least one instructor will have emergency medicine, critical care, or military medical POCUS background.
- Lead instructor is responsible for course administration, sign-off coordination, and quality oversight.

# SECTION 2: CURRICULUM STRUCTURE

## Course Architecture

The ACMS component of the course is organized into 10 lab stations delivered across two days. All students move through the course simultaneously, divided into groups of up to 5 students per station. Each station has one dedicated instructor. All participants are present at their station for the full duration of that block before rotating.

Station design follows the MARCH sequence to reinforce TCCC clinical logic: Massive hemorrhage → Airway → Respiration → Circulation → Hypothermia/Head Injury. As applicable, the PAWS (Pain, Antibiotics, Wound Management, Splinting) component of care will be identified. Documentation and evacuation are integrated into care.

The C-POCUS component of the course runs as a single four-hour block at the end of day 2, organized into three sequential skill modules plus a sign-off rotation. All students scan live partners throughout the course (with consent). Each module begins with a brief instructor demonstration on a volunteer, followed by immediate partner scanning practice.

Groups of 2 students share one ultrasound unit. Students rotate the probe so every participant obtains each view on a live partner. Instructors circulate continuously within each group of 4.

## Station Overview

### ACMS:

| STN | SKILL(S) | KEY EQUIPMENT | CLS ROLE | CMC/CORPSMAN ROLE |
|---|---|---|---|---|
| **1A** | 1-hand & 2-hand windlass TQ; Ratchet TQ | CAT TQ, RMT, trauma shears | Primary performer; time trials | Primary performer; coach CLS peers |
| **1B** | Wound packing; pressure bandage | (Chitosam gauze or equivalent, 4x4s, Israeli bandage, H-bandage, cohesive wrap, ABD pad, cloth tape | Primary performer | Primary performer; demonstrate advanced packing depth |
| **2** | Axillary, neck, inguinal junctional hemorrhage; XSTAT | CRoC, SAM JT, JETT, roller gauze, ChitoSAM, XSTAT Large + trainer | Improvised techniques primary; observe commercial device demos | Primary performer all devices; teach improvised to CLS |
| **3** | NPA; 1- & 2-person BVM; manual suction | 28 Fr NPA, lube jelly, BVM, manual suction, | NPA + 1-person BVM primary; 2-person BVM supporting | All skills primary; operate suction; coach CLS |
| **4** | EGA; Surgical cric | iGel sz 3, Cric-Key, tenaculum, #11 scalpel, 6 Fr TT, 7.5 ETT, bougie, $ETCO_2$ | Observer/assistant; support airway | Primary performer all; cric per CMC scope |
| **5** | Chest seal; NCD | Vented chest seal trainer, 14g NCD needles, Capnospot, chest drain set, Turkel, Pneumodart | Chest seal primary; assist NCD | All skills primary; drain set orientation |
| **6** | Hypothermia prevention | HPMK, Ready Heat II, Mylar bag | Primary performer | Primary performer; instruct layering strategy |

| APPLIED COMBAT MEDIC SKILLS (ACMS) – POINT OF CARE ULTRASOUND (POCUS) COURSE | | | | |
|---|---|---|---|---|
| **STN** | **SKILL(S)** | **KEY EQUIPMENT** | **CLS ROLE** | **CMC/CORPSMAN ROLE** |
| **7** | Eye shield; burn care; splinting; cervical collar | Eye shields, paper tape, 4x4s, conformable splint, elastic bandage, Ambu Perfit ACE, HeadBed II | Primary performer all | Primary performer |
| **8** | IV/IO access; fluid warming | 22g caths, IV start kit, NS 100-500 ml, maxi-drip set, pressure bag, SAM IO driver, IO needles, IO trainer, stabilizer, extension tubing, flush | Observer/assistant at IV; assist IO setup | Primary performer all IV and IO; demonstrate fluid warming |
| **9** | IN, IM, IV/IO medication administration | MAD, 1/3/5 ml syringes, 25g needle, blunt fill, saline flush, DD Form 1380 | IN and IM routes primary; IV/IO observer | Primary performer all routes; document on 1380 |
| **10** | CCP; litter; MEDEVAC card; vitals; evacuation | Talon II litter, M10 backpack, , DD 1380, MIST card, 9-Line card, pulse ox, BP cuff, stethoscope, trauma shears | CCP marking; litter carry primary; DD 1380 | All tasks primary; lead 9-Line and MIST reporting |

## CLS vs. CMC/Corpsman Role Framework

CLS and CMC/Corpsman participants train at every station. The following framework governs participation:

- PRIMARY PERFORMER: The participant performs the skill as the lead operator
- ACTIVE SUPPORT: The participant plays an essential supporting role (airway holder, equipment manager, monitor, documenter) — not a passive observer
- OBSERVER/ASSIST: The participant actively assists or observes and is ready to be coached through the skill if time allows.

| SKILL CATEGORY | CLS ROLE | CMC/CORPSMAN ROLE |
|---|---|---|
| Tourniquet application (all types) | Primary performer | Primary performer |
| Wound packing & pressure dressings | Primary performer | Primary performer |
| Improvised junctional hemorrhage control | Primary performer | Primary performer |
| Commercial junctional devices (CRoC, SAM JT, JETT) | Observe; assist with device handling | Primary performer |
| XSTAT deployment | Observe; assist | Primary performer |
| NPA insertion | Primary performer | Primary performer |
| BVM (1- and 2-person) | Primary performer | Primary performer |
| Manual suction | Primary performer | Primary performer |
| iGel extraglottic airway | Active support (device management) | Primary performer |
| Surgical cricothyrotomy | Active support (equipment, airway) | Primary performer |

| APPLIED COMBAT MEDIC SKILLS (ACMS) – POINT OF CARE ULTRASOUND (POCUS) COURSE | | |
|---|---|---|
| **SKILL CATEGORY** | **CLS ROLE** | **CMC/CORPSMAN ROLE** |
| Chest seal placement | Primary performer | Primary performer |
| Needle chest decompression | Assist; observe technique | Primary performer |
| Hypothermia prevention / treatment | Primary performer | Primary performer |
| Eye shield / burn care / splinting | Primary performer | Primary performer |
| IV/IO vascular access | Active support; observe technique | Primary performer |
| Medication administration (IN, IM, IV/IO) | IN and IM primary; IV/IO observe | Primary performer all routes |
| CCP / litter / documentation / MEDEVAC | Primary performer | Primary performer (leads 9-Line/MIST) |

### C-POCUS

| MODULE | TITLE | STUDY TYPES COVERED | PROBE(S) | TIME |
|---|---|---|---|---|
| **1** | EFAST/O | Cardiac, abdominal, pelvic, pulmonary, femur | Phased array + curvilinear | 60 min |
| **2** | Soft Tissue POCUS | Abscess, hematoma, foreign body | Linear high-freq | 60 min |
| **3** | Ultrasound-Guided PIV | Vessel identification, short-axis & long-axis guided PIV | Linear high-freq | 60 min |
| **S/O** | Skills Sign-Off | Selected views from all 3 modules | All probes | 60 min |

## View and Study Reference

The following table summarizes all scanning views taught in the course, the probe used for each, the window and patient position, the positive finding definition, and whether scanning is performed on live partners or task trainers.

| VIEW / STUDY | PROBE | WINDOW / POSITION | POSITIVE FINDING | PERFORMED ON |
|---|---|---|---|---|
| Subxiphoid Cardiac | Phased array | Probe below xiphoid, indicator to patient's right, angled toward left shoulder | Anechoic stripe around heart = pericardial effusion / tamponade | Live partner (clothed scan) |
| Parasternal Long Axis (confirmation) | Phased array | Left sternal border, 3rd–4th ICS, indicator toward right shoulder | Pericardial effusion; RV/LV assessment | Live partner |
| RUQ — Morrison's Pouch | Curvilinear | Right mid-axillary line, 8th–11th ICS, indicator cephalad | Anechoic stripe at hepatorenal interface = hemoperitoneum | Live partner |
| LUQ — Splenorenal | Curvilinear | Left posterior axillary line, 8th–11th ICS, indicator cephalad | Anechoic stripe at splenorenal interface | Live partner |

| APPLIED COMBAT MEDIC SKILLS (ACMS) – POINT OF CARE ULTRASOUND (POCUS) COURSE | | | | |
|---|---|---|---|---|
| **VIEW / STUDY** | **PROBE** | **WINDOW / POSITION** | **POSITIVE FINDING** | **PERFORMED ON** |
| Pelvic (Retrovesical / Rectouterine) | Curvilinear | Suprapubic transverse and longitudinal, bladder as acoustic window | Anechoic fluid posterior to bladder = pelvic free fluid | Live partner |
| Bilateral Lung — PTX | Linear or curvilinear | 2nd–3rd ICS MCL bilateral; patient supine | Absent lung sliding + stratosphere sign (M-mode) = pneumothorax | Live partner |
| Bilateral Lung — Hemothorax | Curvilinear | Posterior axillary line, lowest ICS, supine | Anechoic space above diaphragm = hemothorax | Live partner |
| Femur (EFAST/O extension) | Linear or curvilinear | Anterior thigh, transverse and longitudinal at mid-shaft and neck, slide technique along length | Cortical disruption / step-off = fracture | Live partner |
| Soft Tissue — Abscess vs Cellulitis | Linear high-freq | Over area of concern; transverse sweep then longitudinal | Cobblestoning = cellulitis; anechoic cavity + posterior enhancement = abscess | Live partner (arm/leg) / phantom |
| Soft Tissue — Hematoma | Linear high-freq | Over area of trauma | Hypoechoic/mixed echoic collection; no posterior enhancement | Live partner / phantom |
| Soft Tissue — Foreign Body | Linear high-freq | Perpendicular to suspected object plane | Hyperechoic focus + dirty shadow (metal) or clean shadow (glass) | Phantom / task trainer |
| US-Guided PIV — Short Axis | Linear high-freq | Antecubital or basilic vein, transverse probe orientation | Needle tip visible in vein lumen; vessel compresses fully (vein vs artery confirmation) | Live partner / task trainer |
| US-Guided PIV — Long Axis | Linear high-freq | Longitudinal probe alignment over target vessel | Full needle shaft visible tracking into vein; catheter tip advancement confirmed | Live partner / IV arm trainer |

## Scanning Live Partners — Safety & Consent

Because students scan each other, the following protocols are mandatory:

- Signed consent is obtained from every scanning partner at the start of the course.
- Scanning is limited to areas relevant to each study: chest/abdomen/pelvis (clothed where possible for EFAST), extremities/limbs (soft tissue), and upper extremity (PIV access)
- No student is required to be scanned in any area they are not comfortable with; instructors serve as substitute scanning partners if needed.
- Study windows require probe-on-skin contact; participants should wear comfortable, accessible clothing.
- Ultrasound gel is applied and wiped cleanly between partners; probes are disinfected per manufacturer instructions between each student; probe covers are available.

- No findings from live scanning are to be communicated as diagnoses — this is a training environment, not a clinical encounter.
- No clinical procedures (PIV, NCD, pericardiocentesis, etc.) will be performed on live partners.

# SECTION 3A: ACMS STATION DESCRIPTIONS

## Escalating Challenge Philosophy

The intention of the in-person component of this course is for participants to master each skill. However, mastery in a controlled environment is not adequate to support retention. Therefore, after each student demonstrates mastery of a skill in a controlled baseline environment, a series of progressive challenges will be added in which the student is expected to show, at a minimum, competency in performance of the procedure. Progressive challenges may include (will vary depending on the skill)

- Sensory deprivation
  - Visual / auditory / tactile
- Restrictive clothing / accessories
  - Hoods, mittens, etc.
- Disruptive environments
  - Noise / light / odors / air movement

All students must be monitored for acute stress reactions from the exposures.

## Station 1A — Tourniquet Application

### Duration: 105 minutes | Day 1, 0730–0915

The station begins with a brief instructor demonstration of each device, emphasizing correct high-and-tight placement, wrist lock, and time standards. All remaining time is student practice.

**Skills Practiced:**

- CAT Tourniquet: one-handed windlass application (self-aid simulation)
- CAT Tourniquet: two-handed windlass application (buddy-aid)
- Ratcheting Medical Tourniquet (RMT): single-bar ratchet system application
- Side-by-side double tourniquet application when single TQ is insufficient.
- Timed trials: students must complete one-hand CAT application within 60 seconds.
- Conversion: high-and-tight CUF tourniquet to deliberate TFC tourniquet (with skin-to-skin repositioning)

**Key Instructor Points:**

- Tourniquet must be applied high and tight in CUF — no exceptions.
- Windlass lock must be confirmed before moving; demonstrate the failure mode.
- Ratchet system does not use a windlass — demonstrate proper strap feed and click confirmation.
- Document time on DD Form 1380 at conclusion.

## Station 1B — Wound Packing & Pressure Bandages

### Duration: 75 minutes | Day 1, 0915–1030

Participants practice packing technique on wound simulators using hemostatic gauze. Emphasis is on tight, methodical packing with three minutes of sustained manual pressure followed by a complete pressure dressing layering sequence.

**Skills Practiced:**

- Hemostatic gauze packing: ChitoSAM technique (contact layer first, pack into wound cavity, sustained pressure)
- Pressure dressing layering: ABD compress base, Israeli bandage primary wrap, H-bandage alternate, cohesive or transparent wrap finish.
- Wound without hemostatic gauze: sterile 4x4 packing with cloth tape hold.
- Documentation on DD Form 1380

**Key Instructor Points:**

- Three full minutes of manual pressure before releasing — use a timer.
- Do not lift hand to check — have a partner time it.

- Bandage must cover the entire wound site with no gaps.

## Station 2 — Junctional Hemorrhage Control

### Duration: 120 minutes | Day 1, 1030–1230

This station covers all three junctional zones across multiple scenarios: a GSW to the axilla in a deployed setting, a neck laceration secondary to a drone attack, and an inguinal blast injury. Improvised techniques are taught first, followed by commercial devices.

**Skills Practiced:**

- Axillary hemorrhage: improvised deep packing with (Chitosam gauze or equivalent + pressure dressing; wound anatomy orientation
- Neck hemorrhage: improvised wound packing technique; direct pressure hold positioning
- Inguinal hemorrhage — improvised: 2" roller gauze + hemostatic gauze deep packing + cohesive wrap.
- Inguinal hemorrhage — Combat Ready Clamp (CRoC) (if available): device orientation, placement, and lock.
- Inguinal hemorrhage — SAM Junctional Tourniquet: strap routing, pelvic pad positioning, pump-up technique
- Inguinal hemorrhage — JETT (if available): device assembly and inguinal application
- XSTAT: Large deployer technique; trainer pack deployment; recognition of adequate fill

**CLS Participation:**

- Primary performers for improvised techniques at all three junctional zones
- Active support (device handling, pressure holding) during commercial device demos.

**Key Instructor Points:**

- Axillary packing depth is critical — the gauze must reach the wound cavity, not just fill the surface.
- Neck hemorrhage: never circumferentially bind the airway or both carotids simultaneously.
- All commercial devices require device-specific training before operational use — this station is familiarization plus hands-on with expected mastery of the SAM Junctional Tourniquet
- Emphasize that the use of weaponized drones has greatly increased head, neck, upper torso, and upper extremity injuries.

## Station 3 — Airway Management

### Duration: 90 minutes | Day 1, 1300–1430

Covers all airway skills within the CLS scope of practice plus BVM and suction skills at the CMC level. Station uses low-fidelity manikins. Emphasis on technique repetition and correct NPA sizing.

**Skills Practiced:**

- NPA insertion: sizing, lubrication, bevel orientation, insertion technique, recovery position check
- One-person BVM: mask seal technique, squeeze rate (10–12 breaths/minute), chest rise confirmation.
- Two-person BVM: mask-holder hand position (C-E clamp or two-thumb); bag-squeezer technique; coordinated rate.
- Manual suction: pump technique, catheter insertion depth, interval reassessment
- $ETCO_2$ attachment: colorimetric cap application to BVM; color change interpretation

**Key Instructor Points:**

- Sizing the NPA before insertion is non-negotiable — demonstrate size selection from nostril to earlobe. Then acknowledge that most NPAs in an individual / small group medical kit will be a 28 Fr.
- One-person BVM requires both mask seal and squeeze — demonstrate common failure modes (leak, poor seal)
- Two-person BVM: role clarity matters — one person does nothing but hold the mask.
  - C-E vs. 2 handed thenar eminence vs. hybrid (dominant hand CE with nondominant TE) techniques.

- Emphasize the need to pull the face into the mask, not push the mask onto the face.

## Station 4 — Advanced Airway & Surgical Airway

### Duration: 90 minutes | Day 1, 1430—1600

CMC-primary station. CLS participants serve in active support roles. Surgical airway is the highest-stakes skill in this course — pacing and repetition are essential.

**Skills Practiced:**

- iGel EGA (Size 3): package inspection, lubrication (if used), insertion technique, depth check, securing.
- iGel troubleshooting: failed initial insertion, repositioning technique, failure-to-advance scenario
- Surgical cricothyrotomy — Cric-Key technique: landmark identification, skin incision, key insertion and rotation, tube advancement
- Surgical cricothyrotomy — Blunt dissection technique: landmark identification, horizontal stab incision with lateral extension +/- vertical extension PRN, tenaculum hook and retraction, Kelly airway spreading, tube insertion with bougie assist.
- Tube selection and confirmation: 6 Fr cuffed trach tube vs 7.5 ETT; cuff inflation check; securing.
- $ETCO_2$ attachment: colorimetric cap application to BVM; color change interpretation

**CLS Active Support Role:**

- Hold airway position during iGel insertion practice.
- Manage equipment hand-off during cric procedure.
- Call out steps from checklist.

**Key Instructor Points:**

- Cricothyroid membrane identification must be confirmed before incision — drill this repeatedly.
  - Use inferior approach from sternal notch.
- The blunt dissection technique is taught as primary in this course due to available equipment.
- Tube depth matters — demonstrate partial insertion failure mode.

## Station 5 — Chest Injuries

### Duration: 120 minutes | Day 1, 1600-1800

Covers both penetrating chest wound management and tension pneumothorax decompression. Uses chest seal application trainer for realistic procedural feel. CMC participants additionally orient to the chest drain set.

**Skills Practiced:**

- Chest seal placement: wound site preparation, vented chest seal application, seal-to-skin technique
- Chest seal burping: timing, technique, reassessment after burp
- Chest seal removal and reapplication
- Needle chest decompression — Turkel safety needle: 2nd ICS MCL landmark, needle insertion angle, plunger release.
- Needle chest decompression — Enhanced Pneumodart: device orientation, spring-loaded deployment, reassessment.
- Needle chest decompression — Standard 14g catheters: technique, depth, catheter security.
- Capnospot decompression indicator: application, positive color change interpretation
- CMC: Chest drain set orientation — tubing connection, water seal / Heimlich valve concept, extension tubing.

**Key Instructor Points:**

- Landmark identification (2nd ICS – MCL and 5$^{th}$ ICS - AAL) must be confirmed before needle insertion — drill this.
  - Use invisible ink / black light / sticker technique.
- Seal application best if done at end-expiration — demonstrate timing.

- Reassessment after every intervention or with any clinical change: breath sounds, chest rise, seal integrity

## Station 6 — Hypothermia Prevention / Treatment

### Duration: 60 minutes | Day 2 0715—0815

Covers the full hypothermia prevention kit and warming device application. Emphasis on layering sequence and device activation technique.

**Skills Practiced:**

- HPMK: contents inventory, sequence of application, securing technique.
- Mylar bag: opening, wrapping technique, securing without restricting airway or circulation.
- Ready Heat II Half-Body: activation, placement, orientation for torso injury vs extremity
- Ready Heat II Large Blanket: full-body wrap technique, securing for litter transport.
- Reusable heat pack placement: chest and axilla
- Layering strategy: active + passive combined application

**Key Instructor Points:**

- Hypothermia prevention begins at point of injury — do not wait for transport.
- Activation timing matters on Ready Heat
- Head must remain exposed and airway accessible in all wrapping configurations.

## Station 7 — Wounds, Eyes & Burns

### Duration: 75 minutes | Day 2, 0815—0930

Covers three distinct wound management topics in one station using a carousel format within the group: all three topics are covered sequentially within the 60-minute block.

**Skills Practiced:**

- Penetrating eye injury: rigid eye shield placement (no patch over penetrating injury), 2" paper tape securing technique, bilateral shield application, documentation of laterality on DD Form 1380
- Burn care: stop the burn process (concept review), dry sterile dressing application technique, 12x12 ABD compress for large surface burns, hypothermia co-management initiation.
- Splint application: conformable aluminum splint shaping, padding technique, 4" elastic bandage wrap and securing; ankle/wrist/forearm configurations.
- Cervical collar: Ambu Perfit ACE sizing, application sequence, Laerdal HeadBed II positioning

**Key Instructor Points:**

- Do NOT patch a penetrating eye injury — rigid shield only.
- Burns and hypothermia are co-managed — after dressing, initiate warming.
- Splints immobilize the joint above and below the fracture.

## Station 8 — Vascular Access

### Duration: 90 minutes | Day 2, 0930—1100

CMC-primary station on low-fidelity task trainers. CLS participants actively assist with setup, equipment management, and documentation. Covers both IV and IO access with fluid administration and warming devices.

**Skills Practiced:**

- Peripheral IV: tourniquet placement, site selection (antecubital primary), 22g catheter insertion on IV arm trainer, flash confirmation, catheter advance technique, hub security, saline flush
- IV fluid administration: drip set spike technique, priming, rate setting (10 gtt/ml set), pressure bag inflation and use.

- IO access: SAM IO Driver — proximal humerus site, 25 mm needle for standard adult, 45 mm for obese/large patient; driver technique, needle confirmation, IO stabilizer application, extension tubing connection, saline flush confirmation.
- Fluid warming: inline fluid warmer connection to IV/IO set; warming bag preparation (discuss concept, demonstrate heat pack wrap)

**CLS Active Support Role:**

- Prepare IV equipment and hand off to CMC performer in sequence.
- Document access site, time, and fluid type on DD Form 1380
- Assist IO stabilizer application.

**Key Instructor Points:**

- IO placement must be confirmed before infusion: correct landmark, driver resistance, flush without extravasation.
- Pressure bag is used when gravity flow is inadequate — inflate to 300 mmHg and monitor.
- All fluids should be warmed whenever a warming device is available.

## Station 9 — Medication Administration

### Duration: 60 minutes | Day 2, 1100—1200

Covers three routes of administration used in the tactical environment. CLS participants are primary performers for IN and IM routes; CMC participants lead all routes including IV/IO push.

**Skills Practiced:**

- Intranasal (IN) route: MAD assembly (mucosal atomizer + 1 ml syringe), priming technique, dose calculation and split-dose technique, naris positioning, atomizer activation.
- Intramuscular (IM) route: 25g 1.5" needle technique; deltoid site (upper outer third); anterolateral thigh site; aspiration practice; post-injection pressure
- Intravenous/Intraosseous push: blunt fill needle + 3 ml syringe; flush before and after medication; push rate awareness; documentation
- Medication safety cross-check: allergy check, drug-dose confirmation, route confirmation, documentation on DD Form 1380

**Key Instructor Points:**

- IN route requires correct positioning and atomizer technique to be effective — demonstrate failure modes (runoff, wrong angle)
- IM technique: needle perpendicular to skin, aspirate (per unit protocol), inject slowly, apply pressure.
- All medications documented: drug name, dose, route, time on DD Form 1380

## Station 10 — Casualty Collection Point, Documentation & Evacuation

### Duration: 75 minutes | Day 2, 1230—1345

Integrative station covering CCP establishment, patient preparation, documentation, and litter operations. Uses both OCONUS deployment and domestic MCI contexts depending on student group.

**Skills Practiced:**

- CCP establishment: site selection criteria (cover/concealment, access, marking), casualty staging by urgency.
- DD Form 1380 completion: front (casualty data, mechanism, injuries) and back (treatments, medications, evacuation information)
- MIST report card preparation: Mechanism, Injury, Signs/Symptoms, Treatments rendered.
- 9-Line MEDEVAC request: all nine lines in sequence; Line 3 (number/urgency), Line 4 (special equipment), Line 9 (NBC contamination)
- Vital signs: pulse oximetry application and reading, BP by auscultation, respiratory rate count; documentation.

- Talon II litter: assembly, patient loading (log-roll technique), strap securing, casualty position for injury type.
- Helmet-off procedure, HeadBed II application, cervical spine precautions.
- M10 or ALS Extreme backpack: contents inventory, pack organization for PACE access
- Litter carries: 4-person carry technique, movement over uneven ground, hand-off to evacuation asset.

**Key Instructor Points:**

- CCP marking use available materials (chemlights, VS-17 panel, clothing) — mark the CCP for aerial and ground identification.
- 9-Line must be memorized sequence — drill by recitation before the station begins
- Document before you move the patient whenever tactically possible.

# SECTION 3B: C-POCUS MODULE DESCRIPTIONS

## Module 1 — EFAST/O (Extended Focused Assessment with Sonography for Trauma / Orthopedics)

### Duration: 60 minutes | 1400-1500

Module 1 is the most clinically consequential block of the course. It covers the life-threat detection capabilities that make POCUS transformative in the tactical environment: rapid identification of tamponade, hemoperitoneum, pneumothorax, and hemothorax — injuries that may be clinically silent in the early post-injury period.

The EFAST/O designation reflects the addition of orthopedic assessment (femur fracture) to the traditional EFAST protocol — a modification with direct relevance to combat trauma where femur fractures are common, hemorrhage can be severe, and X-ray is unavailable.

Instructor demonstrates each view in sequence on a volunteer. After each demo, all student pairs scan immediately.

- Probe selection and setup: phased array selected for cardiac windows; curvilinear selected for abdominal, pelvic, and lung windows; orientation marker conventions reviewed.
- Subxiphoid cardiac view: probe below xiphoid, indicator toward patient's right, steep cephalad angulation; identify right ventricle, left ventricle, liver acoustic window; identify pericardial stripe; positive = anechoic stripe around heart (pericardial effusion); tamponade signs (RV diastolic collapse) discussed conceptually
- Parasternal long-axis view: left sternal border 3rd-4th ICS, indicator toward right shoulder; confirms cardiac findings; identify mitral valve, aortic root, left atrium
- RUQ — Morrison's Pouch: right mid-axillary line 8th–11th ICS; coronal view of hepatorenal interface; positive = anechoic stripe between liver and right kidney
- LUQ — Splenorenal: left posterior axillary line 8th–11th ICS; positive = anechoic stripe at splenorenal interface; note: spleen is harder to image — coach probe rocking technique
- Pelvic view: suprapubic transverse and longitudinal; bladder as acoustic window; positive = anechoic fluid posterior to bladder (retrovesical in males; rectouterine / Pouch of Douglas in females)
- Bilateral lung — pneumothorax: 2nd–3rd ICS MCL; identify pleural line; assess for lung sliding (present = no PTX); absent sliding with stratosphere sign on M-mode = pneumothorax; seashore sign = normal
- Bilateral lung — hemothorax: posterior axillary line lowest ICS supine; identify diaphragm; anechoic space above diaphragm = hemothorax
- Femur — fracture: linear or curvilinear probe; anterior thigh transverse sweep mid-shaft to lesser trochanter; identify cortical line; disruption or step-off = fracture

**Key Instructor Points:**

- EFAST does NOT replace clinical assessment — it adds to it.
- A negative EFAST does not exclude injury — reinforce this explicitly.
- Common failure: probe pressure insufficient for cardiac views — demonstrate the required angulation and pressure.

- LUQ view is consistently the most difficult — allow extra coaching time.

## Module 2 — Soft Tissue POCUS

### Duration: 60 minutes | 1500-1600

Module 2 shifts from life-threat detection to injury characterization — a capability that becomes critical under prolonged field care when a provider must make treatment decisions about wounds, infections, and retained foreign bodies without laboratory or radiology support.

High-frequency linear probe is used throughout this module for its superior near-field resolution.

- Soft tissue layer orientation: probe perpendicular to skin surface; identify epidermis, dermis, subcutaneous fat (hyperechoic), fascial planes (hyperechoic lines), muscle (hypoechoic with fibrillar texture)
- Abscess vs cellulitis: cellulitis — intact architecture with cobblestoning (edema in subcutaneous fat, no discrete collection); abscess — anechoic or hypoechoic cavity with irregular walls, internal debris, posterior acoustic enhancement; use probe compression to demonstrate fluid movement within abscess.
- Hematoma: hypoechoic or mixed echoic collection; no posterior enhancement (contrast with abscess); acute = more homogeneous; chronic = more heterogeneous with internal echoes; depth estimation using caliper function
- Foreign body localization: metal (shrapnel, bullet fragment) — hyperechoic with reverberation artifact and dirty shadow; glass — hyperechoic with clean acoustic shadow; wood — variable, often poorly seen (discuss limitations); scanning technique: perpendicular passes, marking skin surface over the identified object, depth annotation.
- Phantom practice: students scan gelatin or commercial phantom with embedded objects; localize objects and describe depth and acoustic characteristics.

**Key Instructor Points:**

- Teach the acoustic shadow rules clearly: clean shadow = acoustic impedance difference (glass, bone); dirty/reverberation shadow = metallic reflector
- Compression test is key to differentiating abscess from cellulitis — demonstrate it explicitly.
- Foreign body scanning has real limitations — wood is notoriously unreliable; teach students to document uncertainty.

## Module 3 — Ultrasound-Guided Peripheral IV Access (US-PIV)

### Duration: 60 minutes | 1600-1700

Module 3 addresses a concrete procedural problem: difficult vascular access in trauma patients who are vasoconstricted, obese, or have poor surface veins. US-guided PIV dramatically improves first-pass success rates and reduces the need for IO in less critically ill patients under prolonged field care conditions.

Students perform live scanning on partners' upper extremities. IV catheter insertion is performed on IV arm task trainers.

- Vessel identification: probe transverse over antecubital fossa and basilic vein regions; identify circular anechoic structures; differentiate artery from vein — veins collapse completely with probe pressure (compressibility test); arteries pulsate, do not collapse fully; color flow Doppler used if available on unit.
- Target vein selection: optimal target = largest compressible vessel within 1 cm depth; deeper vessels require angled needle approach; identify bifurcations to avoid
- Short-axis (out-of-plane) approach: probe transverse, needle inserted midpoint of probe; needle appears as bright dot in tissue; track dot into vessel lumen; advance catheter off needle; limitations: easy to confuse needle shaft for tip — demonstrate 'jiggle' technique for tip confirmation.
- Long-axis (in-plane) approach: probe rotated longitudinal over vessel; entire needle shaft visible; tip tracking maintained throughout; requires more probe-needle coordination; advantage: tip location always known.

- Tourniquet application and vein distension for POCUS-guided PIV — demonstrate effect on vein diameter before and after tourniquet.
- Flash and catheter advancement: identify flash in hub; advance catheter while maintaining ultrasound visualization; confirm catheter tip in vessel with saline flush; catheter security technique.
- Documentation: note vessel targeted, approach used, attempts, and confirmation method on POCUS documentation card

**Key Instructor Points:**

- The single most common error is advancing the needle too far and transfixing the posterior wall — demonstrate this failure mode in real time.
- Short-axis is faster to learn but long-axis gives better tip control — teach short-axis first.
- Never assume the bright dot is the needle tip — teach the jiggle/hydrolocation technique.

# SECTION 4: COURSE SCHEDULE

## Day 1 Schedule

| TIME | BLOCK / STATION | CONTENT | DURATION |
|---|---|---|---|
| 0700—0715 | **Course Opening / Admin** | Introductions, safety brief, course overview, sign-in | 15 min |
| 0715–0730 | **BSI & Equipment Orientation** | Gloves, eye pro, gown use; equipment layout; bag familiarization; DD Form 1380 overview | 15 min |
| 0730—0915 | **STATION 1A: Tourniquet Application** | CAT one-hand windlass; CAT two-hand windlass; RMT ratchet application; high-and-tight placement; time trials | 105 min |
| 0915—1030 | **STATION 1B: Wound Packing & Pressure Bandages** | Hemostatic gauze packing; ABD pad layering; Israeli bandage; H-bandage; cohesive wrap finishing | 75 min |
| 1030—1230 | **STATION 2: Junctional Hemorrhage Control** | Axillary packing (improvised); neck hemorrhage control (improvised + iTClamp concept); inguinal — improvised packing, CRoC, SAM JT, JETT; XSTAT Large deployer; XSTAT trainer pack | 120 min |
| 1230—1300 | **LUNCH (provided)** | 30 Minute Lunch Break | 30 min |
| 1300—1430 | **STATION 3: Airway Management** | NPA sizing & insertion (28 Fr); head-tilt/chin-lift & jaw-thrust review; one-person BVM; two-person BVM with NPA; manual suction; colorimetric $ETCO_2$ attachment | 90 min |
| 1430–1600 | **STATION 4: Advanced Airway & Surgical Airway** | iGel EGA insertion; troubleshooting/repositioning; Cric-Key surgical cric; blunt dissection cric (tenaculum technique); tube selection (6 Fr cuffed TT / 7.5 ETT); bougie-assisted technique | 90 min |
| 1600-1800 | **STATION 5: Chest Injuries** | Chest seal placement (vented); burping & resealing; Turkel/Enhanced Pneumodart NCD (10g & 14g); Capnospot decompression indicator; chest drain set orientation (CMC) | 120 min |

## Day 2 Schedule

| APPLIED COMBAT MEDIC SKILLS (ACMS) – POINT OF CARE ULTRASOUND (POCUS) COURSE | | | |
|---|---|---|---|
| **TIME** | **BLOCK / STATION** | **CONTENT** | **DURATION** |
| 0700--0715 | **Day 2 Opening / Review** | Quick review of Day 1 skills; any questions; preview of Day 2 stations | 15 min |
| 0715—0815 | **STATION 6: Hypothermia Prevention** | HPMK assembly; Ready Heat II half-body and large blanket application; Mylar bag; layering strategies; monitoring considerations | 60 min |
| 0815--0930 | **STATION 7: Wounds, Eyes & Burns** | Penetrating eye injury: rigid eye shield; 2" paper tape securing method. Burn care: dry sterile dressing; hypothermia co-management. Splinting: conformable aluminum splint; elastic bandage wrap; cervical collar (Ambu Perfit ACE) | 75 min |
| 0930—1100 | **STATION 8: Vascular Access** | IV access: 22g & 18g PIV; IV start kit technique; saline flush; IV drip set (10 gtt/ml); pressure bag use; fluid warming inline device. IO access: SAM IO Driver; 25 mm & 45 mm needles; proximal humerus IO trainer; IO stabilizer; extension tubing | 90 min |
| 1100—1200 | **STATION 9: Medication Administration** | IN route: mucosal atomizer device (MAD), 1 ml syringe technique. IM route: 25g 1.5" needle, deltoid & anterolateral thigh. IV/IO push: blunt fill needle, 3 ml & 5 ml syringe; medication safety checklist; DD Form 1380 documentation | 60 min |
| 1200—1230 | **LUNCH (provided)** | 30 Minute Lunch Break | 30 min |
| 1230—1345 | **STATION 10: Casualty Collection Point** | CCP site selection principles (OCONUS/domestic); M10 or ALS Extreme backpack layout; Talon II litter assembly & patient loading; Team Wendy Exfil LTP; casualty card completion (DD Form 1380 / MIST); 9-Line MEDEVAC card; vital signs ($SpO_2$, BP, auscultation); ambulatory vs litter triage; litter team carries | 75 min |
| 1345—1400 | **Course Opening** | Introductions; safety brief (scanning live humans — consent, privacy, scope); equipment orientation; ultrasound physics review (probe types, orientation marker, depth, gain, freeze/cine); image quality fundamentals | 15 min |
| 1400—1500 | **MODULE 1 — EFAST/O** | Probe: phased array (cardiac) + curvilinear (abdominal/lung). Views in sequence: subxiphoid cardiac (pericardial effusion/tamponade), parasternal long axis (confirmation), RUQ | 60 min |

| APPLIED COMBAT MEDIC SKILLS (ACMS) – POINT OF CARE ULTRASOUND (POCUS) COURSE | | | |
|---|---|---|---|
| **TIME** | **BLOCK / STATION** | **CONTENT** | **DURATION** |
| | | (Morrison's pouch / hepatorenal), LUQ (splenorenal), pelvic (retrovesical / rectouterine), bilateral lung (pneumothorax — sliding sign, seashore sign, stratosphere sign), bilateral lung (hemothorax — supine technique), femur (fracture — cortical disruption sign) | |
| 1500—1600 | **MODULE 2 — Soft Tissue POCUS** | Probe: linear high-frequency. Techniques: skin/soft tissue layers orientation; abscess vs cellulitis (cobblestoning vs anechoic cavity with posterior acoustic enhancement); hematoma identification; foreign body localization (shrapnel, bullet, glass — hyperechoic with shadow vs dirty shadow); depth estimation and documentation technique | 60 min |
| 1600—1700 | **MODULE 3 — Ultrasound-Guided PIV** | Probe: linear high-frequency. Technique: out-of-plane (short-axis) vs in-plane (long-axis) approach; vessel identification (artery vs vein — pulsatility, compressibility, color flow if available); tourniquet application; antecubital and basilic vein targeting on live partners; dynamic needle tip tracking; catheter confirmation (flash, blood return, flush); documentation | 60 min |
| 1700--1800 | **SKILLS SIGN-OFF** | Rotating instructor assessment: each student demonstrates 3 required views (1 EFAST cardiac, 1 EFAST lung, 1 soft tissue); documents findings on POCUS documentation card; ultrasound-guided PIV demonstration on task trainer | 60 min |

# SECTION 5A: ACMS ASSESSMENT & COMPLETION

## Sign-Off Requirements

Completion of the ACMS component requires successful sign-off on all applicable skills checklists. Sign-off occurs during each station rotation. Students who do not pass on the first attempt are given an immediate second attempt at the same station.

CLS participants are assessed on skills within the CLS scope of practice. CMC/Corpsman participants are assessed on all CMC-scope skills. For skills performed in an active support role, instructors document participation but do not apply the primary-skill standard to those participants.

## Completion Standard

Students must PASS all critical tasks (marked "C") on each applicable checklist. There is no percentage score — a single failed critical task constitutes a non-pass for that checklist. Non-passing students are given one immediate additional attempt. If the second attempt is not successful, the lead instructor documents the finding and determines whether remediation can be completed within remaining course time.

Successful completion of all applicable checklists results in course completion documentation. There is no tiered certification — completion is binary (complete / not complete).

## Documentation

- Lead instructor maintains a course roster with sign-off status for each student and retains copies of signed assessment checklists.
- Each student receives a completion record indicating course date, location, and skills completed.
- Incomplete participants are documented with the specific skill(s) requiring remediation.
- Participants successfully completing the course are issued certificates of completion.

# SECTION 5B: POCUS ASSESSMENT & COMPLETION

## Sign-Off Requirements

Completion of the C-POCUS component requires successful demonstration of scanning competency during the 60-minute sign-off rotation at the end of the course. The sign-off is not a written test and does not require interpretation of pathology on a live partner — it requires demonstration of correct scanning technique and the ability to identify normal vs abnormal on instructor-provided reference images or available task trainers.

Students who do not demonstrate competency on the first attempt are given one immediate second attempt. If second attempt is not successful, the lead instructor documents the findings. Targeted remediation may be offered within remaining course time if instructors are available.

## Sign-Off Checklist

| SKILL | COMPETENCY STANDARD | ATTEMPTS | SIGN-OFF |
|---|---|---|---|
| Probe handling & orientation | Correct orientation marker alignment; appropriate depth/gain setting for target | 1 (2nd if needed) | Instructor initials |

| APPLIED COMBAT MEDIC SKILLS (ACMS) – POINT OF CARE ULTRASOUND (POCUS) COURSE | | | |
|---|---|---|---|
| **SKILL** | **COMPETENCY STANDARD** | **ATTEMPTS** | **SIGN-OFF** |
| Subxiphoid cardiac view | Obtains interpretable 4-chamber or subxiphoid view; correctly identifies or rules out pericardial effusion | 1 (2nd if needed) | Instructor initials |
| Lung PTX view (bilateral) | Identifies lung sliding on at least one side; correctly interprets seashore vs stratosphere sign | 1 (2nd if needed) | Instructor initials |
| RUQ / LUQ view | Obtains hepatorenal and splenorenal interface views; correctly identifies presence or absence of free fluid | 1 (2nd if needed) | Instructor initials |
| Femur view | Obtains cortical view over the length of the femur; correctly identifies presence or absence of cortical disruption | 1 (2nd if needed) | Instructor initials |
| Soft tissue assessment | Demonstrates scan technique; differentiates abscess from cellulitis OR identifies foreign body in phantom | 1 (2nd if needed) | Instructor initials |
| US-guided PIV (short-axis and long-axis) | Identifies target vein; confirms compressibility; demonstrates dynamic needle tracking during PIV attempt | 1 (2nd if needed) | Instructor initials |
| POCUS documentation | Completes POCUS documentation card with view, finding, and clinical interpretation for at least 2 studies | 1 | Instructor initials |

## Documentation

- Each student completes a POCUS documentation card for at least two live scans during the course (required for sign-off)
- Instructor initials each sign-off item on the student's assessment card.
- Lead instructor maintains a course roster with sign-off status.
- Completion records are issued indicating course date, location, and skills completed.
- No findings from live scanning are retained or shared outside the training environment — POCUS documentation cards are returned to students at course end.

# SECTION 6: EQUIPMENT & SUPPLY REQUIREMENTS

## ACMS Equipment List by Category

### Hemorrhage Control

- CAT Tourniquet
- Ratcheting Medical Tourniquet (RMT)
- Combat Ready Clamp (CRoC)
- SAM Junctional Tourniquet
- Junctional Emergency Treatment Tool (JETT)
- XSTAT Training Kit (Large deployer)
- XSTAT Trainer Pack
- ChitoSAM Hemostatic Gauze
- 2" Roller Gauze (box of 12)
- 4" Cohesive Bandage
- Compression H-Bandage
- Israeli-Type Compression Bandage
- 12x12 ABD Compress Bandage (5-pack)
- Sterile 4x4 Gauze Packs (50-pack)
- Cloth Tape: 1", 2", 3" (assorted boxes)

### Airway Management

- AMBU SPUR BVM
- NPA 28 Fr
- Lubricating Jelly
- Colorimetric ETCO$_2$
- Manual Suction Device
- iGel Size 4

### Surgical Airway

- Control Key (Cric-Key)
- Blunt Dissecting Tenaculum
- #11 Scalpel Blades (box of 100)
- Scalpel Handle (2-pack)
- Pediatric Bougie
- 6 Fr Cuffed Tracheostomy Tube
- 7.5 ETT (box of 10)

### Chest Injuries

- Vented Chest Seal
- Chest Seal Application Trainer
- 14g Decompression Needle
- 10g Decompression Needle
- Turkel Safety Needle
- Enhanced Pneumodart
- Capnospot Decompression Indicator
- CMC Chest Drain Set with Extension Tubing

### Vascular Access

- SAM IO Driver
- SAM IO Needle 25 mm
- SAM IO Needle 45 mm
- SAM IO Stabilizer
- IO Trainer — Proximal Humerus
- Extension Tubing
- 22g IV Catheters
- IV Start Kit
- IV Drip Set (10 gtt/ml)
- IV Pressure Bag
- Normal Saline IV bags
- Saline Flush

### Medication Administration

- Mucosal Atomizer Device (MAD)
- 1 ml, 3 ml, 5 ml Syringes
- Blunt Fill Needle
- 25g 1.5" Needle

### Hypothermia Prevention

- HPMK (Hypothermia Prevention and Management Kit)
- Mylar Bag
- Ready Heat II Half-Body
- Ready Heat II Large Blanket
- Reusable heat packs (large and small)

### Eye, Burns & Splinting

- Rigid Eye Shield (box of 12)
- 2" Paper Tape (box of 6)
- Conformable Aluminum Splint (orange)
- 4" Elastic Bandage
- Ambu Perfit ACE Cervical Collar
- Laerdal HeadBed II

### Monitoring & Vital Signs

- Pulse Oximeter
- BP Cuff
- Stethoscope
- Replacement Earpieces

### Documentation & Evacuation

- DD Form 1380 (MIST) — RIR
- Call for MEDEVAC Card — RIR
- Trauma Shears (4-pack)
- Magnum Med Organizer
- Talon II Litter
- Team Wendy Exfil LTP

## POCUS Required Equipment

Because the C-POCUS Course is a scanning-on-live-partners course, each group of 4 students requires a functioning portable ultrasound unit with appropriate probes. The course does not specify a particular vendor —

any portable unit capable of B-mode imaging with phased array and linear transducer capability is acceptable. M-mode capability is required for pneumothorax assessment.

| ITEM | PURPOSE | QTY (per group of 4) |
|---|---|---|
| Portable ultrasound unit (phased array + linear probes) | All EFAST/O views and soft tissue scanning | 2 per group |
| Curvilinear probe (if separate) | Abdominal EFAST, hemothorax | 2 per group |
| Ultrasound gel | All scanning | 2 bottle per group |
| Probe covers / probe wipes | Infection control between live scans | Box per group |
| IV arm task trainer | US-guided PIV practice (alternative to live partner) | 2 per group |
| 18g & 22g IV catheters | US-guided PIV | 10 per group |
| IV tourniquet | Venous distension for US-guided PIV | 2 per group |
| Saline flush | PIV confirmation | 5 per group |
| Soft tissue / foreign body phantom (gelatin or commercial) | Foreign body localization practice | 2 per group |
| POCUS documentation card | Recording views, findings, and interpretation | 2 per student |
| Paper towels / gel wipes | Gel cleanup between partners | Roll per group |

## Probe Minimum Requirements

- Phased array transducer (cardiac and limited abdominal windows) — required.
- Linear transducer, high-frequency (soft tissue and US-PIV) — required.
- Curvilinear transducer (abdominal EFAST, hemothorax) — preferred; phased array may substitute.
- M-mode capability — required for lung PTX assessment.
- Freeze and cine-loop capability — required.
- Color Doppler — preferred for vessel identification in US-PIV; not required.
- Minimum screen size adequate for two-person viewing during instructor demonstrations.

## Soft Tissue Phantom Construction (If Commercial Phantom Not Used)

A ballistic gelatin or unflavored gelatin phantom can be fabricated for the foreign body localization, abscess, and IV exercise. Instructions:

- Prepare 10% gelatin solution in water; pour into a mold (bread pan works well)
- Before gelatin fully sets, embed:
  - A metal staple or BB (shrapnel analog), a small glass bead or fragment, and a wooden toothpick (FB) Objects should be placed at varying depths (1–3 cm) for realistic depth estimation practice.
  - Injection of conditioner (abscess)
  - Long skinny fluid filled ballons (vascular abscess) – May use fileted loin instead.
- Allow to set fully (refrigerate overnight); seal in a clear plastic bag or wrap for scanning.
- Gel surface should be covered with plastic wrap during scanning to prevent probe contact with gelatin.

# SECTION 7: ADMINISTRATIVE GUIDANCE

## Facility Requirements

- Indoor training space large enough to simultaneously run 5 stations of 5 students plus instructors.
- Tables or benches at each station for equipment layout
- Low-fidelity manikins: minimum 1 per student group (5 recommended); suitable for airway, BVM, IO, and chest seal stations.
- IV arm task trainers: minimum 1 per student group (5 recommended)
- Wall power or extension cords available for any warming devices that require activation.
- Adequate lighting for procedural practice
- Storage area for consumables and resupply between sessions

For POCUS

- Adequate lighting — room should be dimmable if possible, as screen visibility improves in lower light.
- Power outlets accessible at each table for ultrasound unit charging/operation
- Minimum one table per group of 4 (4 tables for max class of 16); each table accommodates 2 ultrasound units, 4 participants, and instructor circulation space.
- Privacy screen or curtain available for any participant who requests additional privacy during abdominal scanning.

## ACMS Staffing Plan For 25 Students

| ROLE | QUANTITY | RESPONSIBILITIES |
|---|---|---|
| **Lead Instructor** | 1 | Course admin, schedule management, sign-off coordination, quality oversight |
| **Station Instructor** | 1 per 5 students (1 may be lead instructor if class size is ≤ 10) | Dedicated to station for full block duration; demonstration, coaching, correction |
| **Total Instructors** | 6 (minimum) for 25 student class | 1 lead + 5 station instructors for 25-student class |

## POCUS Staffing Plan

| ROLE | QUANTITY | RESPONSIBILITIES |
|---|---|---|
| **Lead Instructor** | 1 | Course admin; overall quality; sign-off coordination; backup instructor at any table |
| **Table Instructor** | 1 per 4 students (1 may be lead instructor if class size is ≤ 8) | Dedicated to one group of 4 for full course duration; demonstration, coaching, image quality feedback, sign-off |
| **Total Instructors** | 7 minimum | 1 lead + 6 table instructors for 25 student class |

## Safety Considerations

- All sharps (needles, scalpel blades) are used on task trainers/manikins only — never on persons.

- Sharps containers must be available at Station 4 (surgical airway), Station 5 (NCD), Station 8 (IV/IO), and Station 9 (medication admin)
- BSI precautions are observed at all times — gloves required for all station work.
- Eye protection required at all stations involving needles, blades, or fluid.
- Scalpel blade handling protocol: always mount and dismount with a hemostat or blade remover, never by hand.
- Commercial junctional devices (CRoC, SAM JT, JETT) can generate significant pressure — instructors brief safe application limits before station begins.
- Any student who appears physically unwell or injured during training must stop and be evaluated.

## ACMS CLS Scope of Practice Clarification

This course is not a scope expansion course. CLS participants are not being trained to perform CMC-level skills independently. Their active support role at CMC-primary stations is designed to build familiarity with the equipment and procedures so they can effectively support CMC providers in the tactical environment. This does not constitute authorization to perform those skills outside their certified scope.

## POCUS Scope of Practice Clarification

CLS participants may perform POCUS scanning and image acquisition as a trained skill in this course. Clinical interpretation of POCUS findings to guide independent treatment decisions remains within the CMC scope of practice. In practice, this means:

- CLS: obtains images, reports what they see ("I see a dark stripe here"), communicates findings to medical personnel.
- CMC: obtains images, interprets findings, integrates POCUS into clinical decision-making.

This distinction should be reinforced throughout the course without limiting CLS participation in scanning practice.

## ACMS Equipment Reset Between Days

- All consumable supplies (gauze, tape, saline, syringes) must be restocked at the end of Day 1
- Task trainers must be inspected and cleaned per manufacturer guidance.
- Sharps containers must be secured and replaced if approaching capacity.
- Commercial hemorrhage devices (CRoC, SAM JT, JETT, XSTAT) must be returned to training configuration.
- Lead instructor conducts station walk-through at end of Day 1 to confirm Day 2 readiness.

## POCUS Equipment Care and Maintenance Notes

- Ultrasound probes are sensitive to impact — no dropping, no pressure on the probe face, no folding of cables.
- Gel must be removed from probe surface and cable after each student session using approved probe wipes — do not use alcohol directly on probe face unless manufacturer approves.
- Unit battery should be checked before the course begins; bring charging cable or confirm power availability.
- Probe covers, if used, should be applied and removed without touching the internal probe surface.
- Any probe damage should be reported to the lead instructor immediately and that unit removed from use.