

High Level Design Document

Design Project Working Title Safety, Security, and Resiliency Training (SSRT),
Lesson 5: Tactical Medicine (TACMED)

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Instructional Problem/Need

The Centers for Disease Control and Prevention (CDC) has identified a shortcoming in the area of post-Covid deployment readiness and have requested a basic course that will assist CDC employees develop skills that will help prevent or minimize the impact of a life-threatening, emergency medical event - including how to use tools typically found in an Individual First Aid Kits (IFAK) - avoid heat stress and foodborne illnesses, build psychological resilience, and implement security precautionary measures for a variety of situations faced by deployers.

Goal

At the conclusion of SSRT Lesson 5: Tactical Medicine (TACMED), the learners will have gained the knowledge and skills necessary to help prevent the loss of their life, or the life of another, while in a domestic, deployed, or austere location with limited equipment, lack of medically trained personnel, and prolonged time to evacuation.

Objectives

Terminal Performance Objective:

Given a scenario, the learner will recognize life-threatening injuries and, using tactical medicine strategies, apply the appropriate techniques to save life or limb.

Enabling Objectives:

Upon the completion of the unit, learners will be able to:

- Identify the three (3) conditions that are the primary causes of preventable deaths.
- Label the trauma types that make up the mnemonic “MARCH.”
- Identify the components of an Individual First Aid Kit (IFAK).
- Demonstrate the proper application of a tourniquet.

- Demonstrate a Nasopharyngeal Airway (NPA) insertion.
- Identify the signs and symptoms of a sucking chest wound (SCW).
- Demonstrate the proper application of a non-vented or improvised chest seal.
- Demonstrate the use of hemostatic agents to control bleeding.
- Apply and/or present techniques to control life-threatening bleeding.
- Perform and/or present techniques to treat life threatening and non-life-threatening injuries.

Target Participants

Audience

- Center for Disease Control and Prevention (CDC) employees, CDC contractors, and other government personnel who may travel or deploy to domestic, international, or austere locations.

Student Count

- The course has a Min/Max defined in the CDC Learning Portal*
- Minimum: 6 Students
- Maximum: 12 Student

*These numbers are based on the [COVID-19 Community Level](#) of the campus, as determined by CDC OSSAM Office on the Friday prior to the class start date.

Prerequisites

- None

Motivation

Today, anyone could be a first responder at a terrorist attack, a natural disaster, or in an active shooter situation. To successfully navigate and respond to these issues, CDC personnel, especially those deploying to austere locations, need to have the skills and training to operate in hostile environments, while providing lifesaving trauma care.

Tactical Medicine (TACMED) is the pre-hospital care rendered to a casualty in a tactical, combat, or deployed environment. TACMED training focuses on the unique patterns and types of wounds that casualties incur in hostile environments and the tactical conditions CDC personnel face in these, sometimes austere, locations.

Outline of Course (Lesson 5: TACMED)

Topic/Instructional Activity	Description	Delivery & Timeline	Technology	Assessment
Introduction	<ul style="list-style-type: none"> • Day One Review • Day Two/Lesson 5 Overview: <ul style="list-style-type: none"> ○ Objectives ○ Practical Application Expectations 	<ul style="list-style-type: none"> • ILT (Classroom) <ul style="list-style-type: none"> ○ 15 Minutes 	<ul style="list-style-type: none"> • Classroom Setup <ul style="list-style-type: none"> ○ U-Shape configuration ○ Laptop/Computer ○ Projector ○ Screen/Projection Wall ○ Wireless Presenter Remote • Training Aids <ul style="list-style-type: none"> ○ MARCH Posters ○ IFAK Training Kit ○ Trauma Manikin Simulator <ul style="list-style-type: none"> ▪ TOMManikin ▪ TAMIKIN™ ▪ Wireless Remote (iPad) ○ TRUECLOT® Gunshot Wound Task Trainer 	<ul style="list-style-type: none"> • None

			<ul style="list-style-type: none"> ○ QuikClot Trauma Trainer with Wounds (Thigh) ○ BLS Airway Trainer • Handouts 	
Overview	<ul style="list-style-type: none"> • Anyone Can Be a First Responder <ul style="list-style-type: none"> ○ CDC Deployments ○ Locations & Environments ○ Disaster Response ○ Your Role • Introduction to Tactical Medicine (TACMED) 	<ul style="list-style-type: none"> • ILT (Classroom) <ul style="list-style-type: none"> ○ 30 Minutes 	<ul style="list-style-type: none"> • Classroom Setup <ul style="list-style-type: none"> ○ U-Shape configuration ○ Laptop/Computer ○ Projector ○ Screen/Projection Wall ○ Wireless Presenter Remote 	<ul style="list-style-type: none"> • None
Individual First Aid Kit (IFAK)	<ul style="list-style-type: none"> • What is an IFAK? • Contents • Storage & Availability 	<ul style="list-style-type: none"> • ILT (Classroom) <ul style="list-style-type: none"> ○ 15 Minutes 	<ul style="list-style-type: none"> • Classroom Setup <ul style="list-style-type: none"> ○ U-Shape configuration ○ Laptop/Computer ○ Projector ○ Screen/Projection Wall ○ Wireless Presenter Remote • Training Aids 	<ul style="list-style-type: none"> • None

			<ul style="list-style-type: none"> ○ IFAK Training Kit 	
M.A.R.C.H.	<ul style="list-style-type: none"> • Framework of MARCH Mnemonic 	<ul style="list-style-type: none"> • ILT (Classroom) <ul style="list-style-type: none"> ○ 15 Minutes 	<ul style="list-style-type: none"> • Classroom Setup <ul style="list-style-type: none"> ○ U-Shape configuration ○ Laptop/Computer ○ Projector ○ Screen/Projection Wall ○ Wireless Presenter Remote • Training Aids <ul style="list-style-type: none"> ○ MARCH Posters 	<ul style="list-style-type: none"> • Recall MARCH mnemonic <ul style="list-style-type: none"> ○ Group Activity ○ Oral ○ Post-topic
Massive Hemorrhage	<ul style="list-style-type: none"> • Definition • Treating Massive Hemorrhage <ul style="list-style-type: none"> ○ Identification <ul style="list-style-type: none"> ▪ Femoral Artery ▪ Brachial Artery • Using a Tourniquet <ul style="list-style-type: none"> ○ Anatomy of Tourniquet ○ Application <ul style="list-style-type: none"> ▪ Do's & Don'ts 	<ul style="list-style-type: none"> • ILT (Classroom) <ul style="list-style-type: none"> ○ 1.5 Hours • Group Activity 	<ul style="list-style-type: none"> • Classroom Setup <ul style="list-style-type: none"> ○ U-Shape configuration ○ Laptop/Computer ○ Projector ○ Screen/Projection Wall ○ Wireless Presenter Remote • Training Aids <ul style="list-style-type: none"> ○ Combat Application Tourniquet (CAT) 	<ul style="list-style-type: none"> • Individual Tourniquet Drill (Timed) <ul style="list-style-type: none"> ○ Hands-on Exercise ○ Post-topic

	<ul style="list-style-type: none"> ▪ Improvised Device ○ Practice ▪ Individual Tourniquet Drill ▪ Team Tourniquet Drill* 		<ul style="list-style-type: none"> ○ Special Operations Tactical Tourniquet (SOFTT-W) ○ Sharpie/Permanent Marker 	
Airway	<ul style="list-style-type: none"> • Recognizing Signs of Airway Obstruction • Airway Interventions <ul style="list-style-type: none"> ○ Recovery Position ○ Nasopharyngeal Airway (NPA) Insertion ○ Practice <ul style="list-style-type: none"> ▪ Nasopharyngeal Airway (NPA) Insertion 	<ul style="list-style-type: none"> • ILT (Classroom) <ul style="list-style-type: none"> ○ 30 Minutes • Group Activity 	<ul style="list-style-type: none"> • Classroom Setup <ul style="list-style-type: none"> ○ U-Shape configuration ○ Laptop/Computer ○ Projector ○ Screen/Projection Wall ○ Wireless Presenter Remote • Training Aids <ul style="list-style-type: none"> ○ BLS Airway Trainer ○ Nasopharyngeal Airway (NPA) ○ Lubricant 	<ul style="list-style-type: none"> • Nasopharyngeal Airway (NPA) Insertion <ul style="list-style-type: none"> ○ Hands-on Exercise ○ Post-topic
Respiration	<ul style="list-style-type: none"> • Penetrating Thoracic Trauma <ul style="list-style-type: none"> ○ Pneumothorax 	<ul style="list-style-type: none"> • ILT (Classroom) <ul style="list-style-type: none"> ○ 30 Minutes 	<ul style="list-style-type: none"> • Classroom Setup <ul style="list-style-type: none"> ○ U-Shape configuration ○ Laptop/Computer 	<ul style="list-style-type: none"> • None

	<ul style="list-style-type: none"> ○ Sucking Chest Wound ● Treatment <ul style="list-style-type: none"> ○ Non-Vented Chest Seal ○ Improvised Chest Seals 		<ul style="list-style-type: none"> ○ Projector ○ Screen/Projection Wall ○ Wireless Presenter Remote ● Training Aids <ul style="list-style-type: none"> ○ QuikClot Trauma Trainer with Wounds (Thigh) ○ HyFin Vent Chest Seal ○ Duct Tape 	
Circulation	<ul style="list-style-type: none"> ● Shock ● Circulation Improvement <ul style="list-style-type: none"> ○ Controlling the Bleed <ul style="list-style-type: none"> ▪ “Blood Rake” Method ▪ “Skin Rake” Method ▪ Hemostatic Agents ▪ Pressure Bandages ○ Practice <ul style="list-style-type: none"> ▪ Apply Chest Seal ▪ Use Hemostatic Agent 	<ul style="list-style-type: none"> ● ILT (Classroom) <ul style="list-style-type: none"> ○ 1 Hour ● Group Activity 	<ul style="list-style-type: none"> ● Classroom Setup <ul style="list-style-type: none"> ○ U-Shape configuration ○ Laptop/Computer ○ Projector ○ Screen/Projection Wall ○ Wireless Presenter Remote ● Training Aids <ul style="list-style-type: none"> ○ TRUECLOT® Gunshot Wound Task Trainer ○ QuikClot Trauma Trainer with Wounds (Thigh) ○ QuickClot Combat Gauze 	<ul style="list-style-type: none"> ● Bleed Control Drill <ul style="list-style-type: none"> ○ Hands-on Exercise ○ Post-topic <ul style="list-style-type: none"> ▪ Covers topics of Respiration and Circulation

	<ul style="list-style-type: none"> ▪ Apply Pressure Bandage 		<ul style="list-style-type: none"> ○ Celox Trauma Gauze ○ Compression Combat Dressing (4" Pressure Bandage) ○ Israeli 4" Compression Bandage 	
Hypothermia	<ul style="list-style-type: none"> • Hypothermia in Trauma Patients • Signs & Symptoms • Prevention Methods • Recovery Position <ul style="list-style-type: none"> ○ Practice <ul style="list-style-type: none"> ▪ Recovery Position ▪ Use Emergency Blanket 	<ul style="list-style-type: none"> • ILT (Classroom) <ul style="list-style-type: none"> ○ 30 Minutes • Group Activity 	<ul style="list-style-type: none"> • Classroom Setup <ul style="list-style-type: none"> ○ U-Shape configuration ○ Laptop/Computer ○ Projector ○ Screen/Projection Wall ○ Wireless Presenter Remote • Training Aids <ul style="list-style-type: none"> ○ Emergency (Mylar) Blanket 	<ul style="list-style-type: none"> • Hypothermia Treatment Demonstration (Team) <ul style="list-style-type: none"> ○ Hands-on Exercise ○ Post-topic
EOC Practical Application	<ul style="list-style-type: none"> • Learners must apply their learning from Lesson 5 and demonstrate the following: <ul style="list-style-type: none"> ○ Apply and/or present techniques to control 	<ul style="list-style-type: none"> • ILT (Outdoors) <ul style="list-style-type: none"> ○ Field Exercise ○ 1 Hour 	<ul style="list-style-type: none"> • Classroom Setup <ul style="list-style-type: none"> ○ U-Shape configuration ○ Laptop/Computer ○ Projector ○ Screen/Projection Wall 	<p>Practical Application</p> <ul style="list-style-type: none"> • Hands-on Exercise • Post-lesson/post-course <p><i>Assessment:</i> Applying the skills learned in Lesson 5, the learner will assess the</p>

	<p>life-threatening bleeding.</p> <ul style="list-style-type: none"> ○ Perform and/or present techniques to treat life threatening and non-life-threatening injuries. 		<ul style="list-style-type: none"> ○ Wireless Presenter Remote • Training Aids <ul style="list-style-type: none"> ○ Trauma Manikin Simulator <ul style="list-style-type: none"> ▪ TOMManikin ▪ TAMIKIN™ ▪ Wireless Remote (iPad) 	<p>victim for life-threatening injuries and render aid.</p>
	•	<p>Total Course Instruction: 6H 15M</p>	•	

*Use of team or group activities depend on the [COVID-19 Community Level](#) of the campus, as determined by CDC OSSAM Office on the Friday prior to the class start date.

Sample Activity

Description of One Sample Activity to be Included in Your Course

*(Note: Please use the following outline and questions to **guide** the creation of your description. Aim 1-2 pages in length.)*

Prerequisite Skills or Prior Knowledge

This course is required for CDC employees or contractors preparing for deployment overseas and/or to an austere location. No prior knowledge or skills are required.

Body of the Lesson - Massive Hemorrhage

Topic Overview

Tactical Combat Casualty Care (TCCC) dictates that massive hemorrhage is the first treatment priority in an incident of trauma for several reasons, as it is more common than any other life-threatening emergency in combat or hostile environment.

Massive hemorrhage must be assessed and addressed rapidly and thoroughly before moving on to the next step. First responders must look for signs of massive bleeding and upon seeing such signs, apply a tourniquet, positioning it high and tight on the injured limb.

Placing a tourniquet is not typically enough to prevent a causality so responders will need to re-examine the casualty and look for missed major bleeding, especially in critical areas such as the neck, armpits, and groin. This training will be reviewed with the learners as the instructor covers the remainder of the MARCH mnemonic.

Introduction & Attention-grabber

The Route 91 Harvest music festival. The Boston Marathon. Hurricane Katrina. All of these incidents have one thing in common – they all turned everyday citizens into first responders providing pre-hospital casualty care to life-threatening injuries.

On October 1, 2017, a 64-year-old man opened fire on the crowd attending the Route 91 Harvest music festival on the Las Vegas Strip in Nevada. From his 32nd-floor suites in the Mandalay Bay hotel, he fired more than 1,000 bullets, killing 60 people and wounding 411, with the ensuing panic bringing the number of injured to 867.

While waiting for emergency services to arrive on the scene, concertgoers and event staff instinctively acted as first responders. They quickly began applying makeshift tourniquets and improvised bandages then, understanding the urgency, loaded wounded into POVs and began transporting them to nearby hospitals.

- Course materials (Instructor Guide and presentation) will include a photo of concertgoers as first-responders.
- Instructor will elaborate on the following:
 - The incident at the music festival happened on US soil and unfortunately have become more common than we would like. And seeing as much, we need to be prepared to save ourselves – and others – both home and abroad.
 - The most common injury seen at mass casualty events are life-threatening injuries to the femoral or brachial artery, causing massive hemorrhaging.

Learner Engagement

- Open-ended question to encourage the learner to think about emergency care and medical priorities.
- Instructor will ask the class, “If you are faced with a scenario in which one individual is drowning and another has a lacerated artery (spurting blood); which person do you render aid to first?”
 - The instructor will listen to answers and ask for the learner to elaborate on their reasoning for whom they render aid to first.
 - The instructor will not provide the answer at this time. The instructor will re-ask the question at the end of the lesson (topic) and provide the answer at this time.
 - If faced with choosing between a drowning victim or someone with a massive hemorrhage, you should provide aid to the massive hemorrhage victim first.
 - The reason: a person bleeding out only has approximately 30 seconds before they go into shock, about 60 seconds before they lose consciousness, and approximately 60-90 seconds before they bleed out, resulting in loss of life.
- Demonstration of Tourniquet Usage
 - Instructor will review the components of both the Combat Application Tourniquet (CAT) and Special Operations Tactical Tourniquet (SOFTT-W)
 - Instructor will demonstrate the individual application of each tourniquet on themselves
 - Due to the learner’s IFAK containing the SOFTT tourniquet, the instructor will focus on this version for learner activities and assessment

Activity – Tourniquet Application

- Phase I
 - Learners will choose their injury location (femoral or brachial artery) and then practice applying the tourniquet to the injured area.
 - Upon start, an instructor or training coordinator will note the time either on a clock or using a timer (on phone or stopwatch).
 - The instructor will walk around, checking to see if they can place a finger under the strap. If so, the learner must tighten the tourniquet by turning the windlass more. If the instructor cannot fit their fingers under the strap and the tourniquet is in the correct location, the learner may remove the device.
 - The instructor will ask for feedback such as how difficult the learner perceived the task and how long it took them to complete.
 - The instructor will pass along how long it took most people to apply the tourniquet...and how many died.
 - The instructor will also provide hints as to what would help them in speeding up the process, such as showing the students that they can use the wall or floor or other hard surfaces to place pressure on the strap to get the tourniquet quicker. using a wall or hard surface to lean against to provide additional pressure that that the tourniquet can be more easily tightened.
- Phase II
 - The learner will repeat the activity with the other extremity.
- Phase III
 - The learners will repeat the activity with their choice of extremity, but they will now be timed.
 - A timer will be displayed on the screen.

Learner Engagement

- Open-ended question to encourage the learner to think about scenarios in which a massive hemorrhage may occur and the things around them that could be used for an improvised tourniquet.
 - Examples: Improvised strap could be a belt, tie, scarf, or bandana. The windlass could be a carabineer, stick, broom handle, shoe, or pocket-knife. A securing mechanism may be a hair tie, key ring, or rubber band.
 - **Note:** A pen is not an adequate substitution because it can break under pressure.

Assessment – Individual Tourniquet Drill (Timed)

A bleeding injury can happen anywhere. We've all seen it happen too often—on the news or in everyday life. Life-threatening bleeding can happen in people injured in serious accidents or disasters. Instead of being a witness, you can become an immediate responder

When faced with a traumatic incident, CDC employees will need to do more than just recognize the signs and symptoms of massive hemorrhage, they will need to be able to quickly and correctly apply the appropriate techniques to save life or limb, namely the application of a tourniquet.

Formative Assessment

Bleeding control is the top priority in trauma care. A massive hemorrhage gives a clear picture and means the same thing to pretty much everyone; immediate, active, life-threatening bleeding that will kill a patient if not stopped. This assessment is designed to practice tourniquet application while under the pressure of the clock.

- With a timer on the screen, the learners will re-attempt individual application of the tourniquet. Learners will be given 60 seconds to complete the task.
- Instructors will call out when lapsed time would mean loss of consciousness, shock, and then death.
- At the conclusion, the instructor will encourage the learners to practice at home until it becomes second nature.