



**CENTERS FOR DISEASE™
CONTROL AND PREVENTION**

SAFETY, SECURITY, AND RESILIENCY TRAINING

Centers for Disease Control and Prevention

Atlanta, GA



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Safety, Security, and Resiliency

Lesson 5: Tactical Medicine

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, Centers for Disease Control and Prevention (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.

Purpose

The Safety, Security, and Resiliency Training (SSRT) was developed to address growing concerns that personnel could find themselves in dangerous situations, without nearby medical providers or formally trained first responders. The SSRT course that will assist CDC employees develop skills that will help prevent or minimize the impact of a life-threatening emergency medical event. This course includes lessons covering topics such as 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.

In Lesson 5 of Safety, Security, and Resiliency Training, the learners receive basic Tactical Medicine (TACMED) training. This lesson focuses on how the learner can quickly respond to a situation and provide pre-hospital care to an injured party. Specifically, TACMED training focuses on the unique patterns and types of wounds that casualties incur in hostile or austere environments, such as gunshot wounds and massive hemorrhaging.

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 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.

Instructor Notes

General Overview

The Safety, Security, and Resiliency Training (SSRT) is a highly intensive training program requiring a physical demand on the student which consists of lecture, labs, and skill practice covering each Enabling Objective (EO) of the Tactical Medical Lesson Plan.

As the instructor, you will guide students through hands-on interactions, exercises, and evaluations. Since immediate feedback on each student’s evaluation performance is appropriate, it is recommended that all activities and assessments be graded, if applicable, and reviewed with the class prior to presenting the next lesson.

Suggested skill practice drills include, but not limited to, Treatment Across a Barricade, Remote Care, Self-Aid and Buddy Care (SABC). Techniques included within the drills, include use of commercial and field expedient tourniquets, pressure dressings, bleeding control, sucking chest wound seals, hemostatic agents/quick clot gauze, drags, and carries.

Course Materials

Course materials are located on the *SSRT Team Worksite* on the QCB SharePoint (SP) page. The following course materials will be required for successful facilitation of Lesson 5: TACMED.

Instructor Guide

Location – SP Folder: *Instructor Guide*

- Instructor Notes (for each presentation slide)
- Learner Engagement Prompts/Questions
- Written Scenarios
- Demonstration and Activity Instructions
- Practical Application Instructions

Student Handouts

Location – SP Folder: *Handouts*

- SSRT Student Guide
 - * *Learners should receive these binders on Day One of the course*
- “Save a Life” Flowchart
- “Stop The Bleed – Save A Life” Handout
 - * *Spanish version is available upon request*

Digital Training Aids

Location – SP Folder: *Presentation Materials*, Subfolder: *Lesson 5 - TACMED*

- Lesson 5 Presentation (PowerPoint Slides)
- Media
 - Tourniquet Application Demonstration Timer
 - Filename: Lesson 5_TACMED_ACT2_Tourniquet Timer
 - Video: *How Long Does It Take to Bleed to Death?*
 - YouTube Video - <https://www.youtube.com/watch?v=yjBk1RBtptg>
 - Video: *How to Use a Tourniquet*
 - YouTube Video - <https://www.youtube.com/watch?v=y81aJ81ln5Q>
 - This video is to be used when COVID restrictions prevent learners from being close enough to the instructor to view the demonstration of the

tourniquet application. This video link may also be included in the post-course email, along with the “SSRT 2022 Student Links” handout.

- SSRT 2022 Student Links

** Digital copy should be made available to learners at the end of the course*

Physical Training Aids

Location – International Safety Training Supply Closet

- MARCH Posters
- Instructor/Training Coordinator Preparation Checklists (Binder)
- Combat Application Tourniquet (CAT)
- Special Operations Tactical Tourniquet (SOFTT-W)
- Sharpie/Permanent Marker
- BLS Airway Trainer
- Nasopharyngeal Airway (NPA)
- Lubricant
- QuikClot Trauma Trainer with Wounds (Thigh)
- HyFin Vent Chest Seal
- Duct Tape
- TRUECLOT® Gunshot Wound Task Trainer
- QuikClot Trauma Trainer with Wounds (Thigh)
- QuickClot Combat Gauze
- Celox Trauma Gauze
- Compression Combat Dressing (4" Pressure Bandage)
- Israeli 4" Compression Bandage
- Emergency (Mylar) Blanket
- Trauma Manikin Simulator
 - TOMManikin
 - TAMIKIN™
 - Wireless Remote (iPad)

Instructors should read and or review the instructor guide and lesson plans prior to the commencement of the course. The instructor guide is designed to be a comprehensive tool for facilitating the course. Thoroughly reviewing this document, as well as all related course materials and resources, will prepare you to teach the course.

The class grade sheet, recording each student’s grades for each test and/or exercise, is completed by the Lead Instructor and retained by the CDC. All completed student tests, quizzes, checklists, etc. must be returned to the CDC. Blank testing materials must be either destroyed or returned to the CDC.

Instructor Preparation

SSRT Day Two begins in a CDC conference room (locations will be provided by the registrar prior to the start of the course) and after lunch, moves to an outdoor area to conduct the ***Bleed Control Drill*** and ***EOC Practical Application*** (final assessment). Instructors should take into

consideration the current environmental conditions, such as weather and heat index level, and COVID-19 Community Levels. 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. In the case that community levels are high at the course location, the International Safety team will provide alternate instructions.

Conduct appropriate site surveys of the proposed outdoor activity area before training starts. Ensure the training does not pose a risk to the public or alarm the public*. Place appropriate training in progress signs or yellow tape to alert potential bystanders.

** The Manikins will spray blood and screen for help. This can cause alarm in unknowing passersby or onlookers from other buildings. Ensure location security is aware of the course activities prior to the start of the course.*

Practical Application of Training (Activities)

Learners will have an opportunity to practice the life-saving techniques discussed Lesson 5 through the use of demonstrations and real-world simulation scenarios using Manikins.

This course uses group activities to meet learning needs and promote interaction. The following are tips for assembling groups:

- Form groups using the fewest number of students necessary to conduct the exercise.
 - Keeping the group size small will help avoid potential group-dynamics issues and establish a comfortable environment for the exchange of ideas.
 - Example: Tourniquet Application Practice, Bleed Control Drill, and EOC should have no more than two people per group
- Form new groups for each activity.
 - Changing group members among activities promotes class cohesion, avoids situations in which one or more participant feels left out, and keeps friendships from taking precedence over learning.
- If Day Two is still conducted in person, group members and instructors must wear masks while conducting or participating in activities that prohibit individuals from staying 6 feet apart.

Activity 1 - TCCC-CLS Program

Overview

The Tactical Combat Casualty Care Combat Lifesaver (TCCC-CLS) program is a 16-week course for non-medical personnel deploying in support of combat operations. The course is designed to be accompaniment to the Safety, Security, and Resiliency Training (SSRT) course for any CDC personnel that may be deployed in a tactical operation and requires additional

training. All instructors are current and former firefighters, military special operations medics, law enforcement and private military contractors with real world experience.

This course trains CDC personnel in foundational skills necessary to respond to and care for patients in a civilian tactical environment, to apply techniques to control life threatening bleeding and how to provide pre-hospital care to treat life threatening and non-life-threatening injuries. Students are trained in limited primary care, medical care for patients exposed to weapons of mass destruction, (Chemical, Biological, Radiological, Nuclear, and high-yield Explosives - CBRNE), and casualty triage and processing. The program culminates with a rigorous Field Training Exercise (FTX) using realistic combat scenarios to validate what the students have learned through practical, real-world applications.

Students begin their training by participating in job shadowing. Shadowing provides the opportunity to experience the day-to-day life of a first responder. A variety of shadowing experiences is encouraged for exposure to different types of care and settings. Students should participate in a minimum of 40 hours of job shadowing prior to being assigned a mentor. This ensures the student has exposed to the roles and responsibilities of the duty prior to committing to the program. If personnel do not feel they have the stomach to handle such a duty, they are encouraged to reach out to their Branch Chief at this point to request removal from the course. Making this decision by week two of the course helps reduce the number of students who are recycled, drop-out, or fail.

Students will participate in mentorship and apprenticeship programs to allow consistent feedback on learning, observation of the application of learning, and to identify the need for additional or remedial training. Mentors will be clinical staff and certified Law Enforcement (LE) personnel, Emergency Medical Technicians (EMT), or CDC clinical staff. Each student will be observed and assessed on the same processes and techniques; however, the experience may vary based on training location. Student Observation checklists will be provided to mentors as they are assigned a learner (mentee).

Cognitive Apprenticeship

Stage	Activities	Timeline
Modeling	<ul style="list-style-type: none"> ● Job shadow combat medic, CDC first responders, or NAEMT personnel through ride-alongs, response calls, and daily work (Minimum of 40 hours) ● Review roles and responsibilities of TCCC Combat Lifesaver (TCCC-CLS) ● Review CDC emergency medical response procedures & processes 	Weeks 1-2
Coaching	<ul style="list-style-type: none"> ● CLS trainee will be assigned a mentor back on their position at the CDC, deployable, and/or first responder preference <ul style="list-style-type: none"> • Mentor must be current on certifications ● Attend four-hour mentor program introduction seminar (Day 1) ● Mentoring Schedule <ul style="list-style-type: none"> • Week 3 – Mentor/Mentee Meet • Weeks 4-6 – Daily Check-ins • Weeks 7-15 – Weekly Check-in • Week 16 – Mentor attends graduation. Program feedback exchange between mentor/mentee 	Weeks 3-15

Stage	Activities	Timeline
Scaffolding	<ul style="list-style-type: none"> ● Week 3-4: Observe real-world triage and first response activities on CDC installation (foreign or domestic), at Emory University Hospital, or while on deployment (must have prior approval) ● Week 5-9: Assist with real-world triage and first response activities on CDC installation (foreign or domestic), at Emory University Hospital, or while on deployment (must have prior approval). ● Week 10-12: Work as apprentice with CDC Law Enforcement (LE), Emory EMT, and/or clinical staff on CDC Roybal campus. ● Week 13: Observed conducting real-world triage and first response activities on CDC installation (foreign or domestic), at Emory University Hospital, or while on deployment (must have prior approval). 	Weeks 3-13
Articulation	<ul style="list-style-type: none"> ● Assessment of learning via examinations ● Practical Application of learning in real-world situations ● Student demonstration/performance using scenario-based training. 	Weeks 14-15
Reflection (Certification)	<ul style="list-style-type: none"> ● Testing for certification through practical application of learning. ● Graduation with TCCC Combat Lifesaver Certification ● Work with International Safety Team and individual branch mentors for continued mentorship and for identification of upgrade, ancillary, and/or remedial training. 	Week 16

Assessment

To gauge the level of skills and abilities acquired during the program, this program has an assessment-based certification requirement. The assessment-based certification puts focus on the training and education the learner obtained during the program, versus a standardized knowledge check or written test. This assessment tests the learners on the specific knowledge, skills, and/or competencies taught during the program and ensure they meet intended learning outcomes.

The certificate will be awarded to the learner following the completion of all program requirements. The learner must obtain mentor recommendation prior to applying for certification.

Upon successful completion of the skills assessment (see attachment: TCCC-CLS Skills Assessment), the learner will be presented with proof of certification during a graduation ceremony.

Activity 2 – Bleed Control Drill

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 casualty 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. Learners will use their training from the remainder of the MARCH mnemonic to assess the patient and provide pre-hospital care.

Activity Instructions – Part-Task Practices

In teams of two, learners will demonstrate the proper application of a tourniquet. Learners will each take a turn as victim and as responder. Each learner must apply a Special Operations Tactical Tourniquet (SOFTT-W) tourniquet to the chosen injury location (femoral or brachial artery) in order to stop blood loss.

Individually or in teams, the learners will conduct a blood rake on TOMManikin or TAMIKIN™ and upon discovery of a sucking chest wound (SCW), demonstrate the proper application of a non-vented or improvised chest seal.

Learners will demonstrate the proper use of hemostatic agents in a bleed control drill. Learners will demonstrate this skill using the contents of their Individual First Aid Kit (IFAK), combat gauze, and a pressure bandage to control bleeding in a simulated gunshot wound victim.

Assessment – Performance Integrated into Practices

Using the training manikins, TOMManikin and TAMIKIN™ (aka Tom and Tami), learners will be immersed in a scenario in which Tom and Tami have sustained (simulated) injuries. The learners must assess and provide care for Tom or Tami using the information and techniques learned in this lesson.

The learner will:

- Identify massive hemorrhage
- Apply SOFTT-W tourniquet to the extremity to control the bleed

NOTE: The manikin will stop spurting blood if the tourniquet is applied correctly and with enough pressure

- Perform a blood rake to identify additional wounds
- Upon discovery of a gunshot wound, the learner will:
 - Apply pressure to the wound
 - Use combat gauze to pack the wound
 - Apply a pressure bandage

NOTE: The manikin will stop gushing blood if the wound is treated correctly

- Upon discovery of a SCW, the learner will use the contents of their IFAK (specifically a chest seal) to prevent pneumothorax

Activity 3 – Tourniquet Application

Overview

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.

Activity Instructions – Procedural Information

Instructors will ask learners to identify the parts of a SOFTT-W tourniquet. Instructors may query the class as a group or ask for volunteers to answer.

- Strap
- Connector
- Windlass (“stick”)
- Locking Mechanism (Tri-ring)

In teams of two, learners will demonstrate the proper application of a tourniquet. Learners will each take a turn as victim and as responder. Each learner must apply a Special Operations Tactical Tourniquet (SOFTT-W) tourniquet to the chosen injury location (femoral or brachial artery) in order to stop blood loss.

Learners will demonstrate self-application of a SOFTT-W tourniquet. Learners will apply the tourniquet to the extremity of their choice and the instructor will walk around providing immediate feedback and real-time corrections in order for the learner to hone the skill.

NOTE: The instructor will time each learner on their tourniquet application, in both team and individual exercises, using the timer provided in the Presentation Materials folder on the SSRT Worksite. At the end of each round, the instructor will identify who bled out and who had a chance at survival.

Instructors should check the placement of the tourniquet is 2-fingers about the wound site and they cannot fit a finger under the strap. Once the instructor has verified this, instruct the learner to remove or, at a minimum, loosen the device to prevent cutting of circulation to the extremity.

Assessment – Demonstration of Learning

By applying a tourniquet, the goal is to restrict blood flow to the injured limb to prevent life-threatening blood loss, but the learner must be aware that there are situations in which you neither have access to an actual tourniquet nor have access to the injured party.

The instructor will provide the learner with an active shooter scenario. The assailant has been apprehended and they must find and attend to any casualties. The learner will find someone yelling for help but will soon find they are separated by an impassable barrier. Upon learning of the person’s “spurting blood” the learner must recognize this as a sign of a massive hemorrhage and begin providing step-by-step instructions. The instructor will be timing the scenario to reinforce the urgency of pre-hospital in their post-exercise feedback session.

The learners will be assessed on their tourniquet application skills by providing verbal instructions to an injured party trapped in an inaccessible room on how to apply an improvised tourniquet. The “victim” will follow the exact steps provided by the learner. At the conclusion of the assessment, the “victim” will present the results to each learner. Feedback will be provided to each learner individually and also as a class to encourage peer lessons-learned conversations.

Activity 4 – MARCH Mnemonic

Overview

MARCH: Massive Hemorrhage, Airway, Respiration, Circulation, Hypothermia Prevention

The easy to remember mnemonic MARCH teaches learners the priorities in treating casualties during TCCC situations. MARCH provides a framework to address immediate life threats and gives an organized approach to begin a casualty evaluation. The MARCH mnemonic is preferable to the ABCDE model because it takes into consideration the reason you need an airway and to be breathing is to circulate blood to the casualty's brain. Recognizing that, the first step in our casualty evaluation should be to look for massive hemorrhage.

The MARCH mnemonic can be applied to any patient, as the initial casualty evaluation usually rules out massive hemorrhage. 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.

Activity Instructions – Supportive Information

Instructors will provide the learners with these resources to aid them in their application of pre-hospital care, including urgency of care and proper techniques.

Handouts/Training Aids

- CDC Educational Material: Life-Threatening Hemorrhage Assessment
- SOFTT-W Tourniquet Application (Instructions for Use: Two-handed Application)
- MARCH Mnemonic Diagram
 - M (Massive Hemorrhage)
- All Safety, Security, and Resiliency Training (SSRT) course materials, current and previous lessons
- Tactical Combat Casualty Care (TCCC) Tactical Field Care Guidelines presentation
- Video: *How Long Does It Take to Bleed to Death?*

Assessment – Interpretation/Application

As part of a group think activity, the 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 and provide the answer at that time.

Learners will discuss the reasonings behind their selected victim with the instructor and other learners. After reviewing the MARCH mnemonic, the instructor will re-ask the question. This time the instructor will provide feedback reinforcing the use of MARCH in the assessment of pre-hospital care.

Answer

If faced with choosing between a drowning victim or someone with a massive hemorrhage, you should provide aid to the massive hemorrhage victim first.

Reasoning

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.

Evaluative Plan

Activity 1

To evaluate the learner at the conclusion of the TCCC-CLS program, learners will be presented with a Skills Assessment. This will be a practical application of skills acquired during the program and will be tested using the TCCC-CLS Skill Assessment Checklist (attached).

Activity 2

After the instructor has completed reviewing the content covering the topics of *Respiration* and *Circulation*, the instructors will conduct a hands-on exercise, “Bleed Control Drill” with the learners. The learners will complete the steps as covered in the section, Activity 2 – Assessment.

Activity 3

This learning topic is evaluated in two parts.

The first part of an evaluation the learner’s comprehension of tourniquet application, the learners will participate in a Tourniquet Drill. This evaluation is a hands-on, timed activity, meant to simulate the urgency associated with this pre-hospital procedure. The activity will be performed in groups – providing care to another person – and individually. The multiple application types assist the learner with the challenges faced in applying a tourniquet to themselves (such as having the use of only one hand) and the challenges (simulated) associated with providing critical care to another person (such as screaming, squirming, blood flow, etc.).

The second part is the assessment of the learner’s comprehension and part of the *Treatment Across a Barricade* training. The learner is faced with a situation in which they cannot physically

access the injured person but he or she is still conscious enough to follow instructions. The learner must first recognize that it is a “massive hemorrhage” scenario and then walk the injured party through the process of applying a tourniquet. If the injured party does not have a tourniquet, the learner must walk the injured through the process of creating an improvised tourniquet. The learner will unknowingly be timed as to not add immediate or additional stress to the situation. After no more than three (3) minutes have elapsed, the instructor will end the activity and provide feedback. As part of the feedback, the instructor will remind the learner that if this were a real situation, the injured would have lost consciousness at the 60 second point and identify where the learner was in the process – did they save the person’s life or not.

Activity 4

This activity is conducted in two parts.

Prior to covering the topic of MARCH mnemonic, the 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?” While part of this activity is to encourage learner engagement, it is also to get the learner thinking about order of care.

The instructor will not provide the answer at this point. The instructor will only ask the learner to elaborate on their answers and then move on to cover the rest of the lesson.

At the conclusion of the review of Hypothermia (H in MARCH mnemonic), the instructor will re-ask the question “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 learners should provide the correct answer at this time (see [Activity 4 – Assessment](#) for answer). The instructor will ask the learners to provide their reasonings before providing or confirming the answer.