



UN Buddy First Aid Course (UNBFAC)

Course Handbook

First Edition 2018



United Nations

FORWARD

The operating environment faced by United Nations peacekeepers is increasingly demanding and volatile. Peacekeepers are exposed to risks such as being targets of malicious acts; and encounter injury, illness and loss of life in their duties. In this environment, the importance of receiving effective medical treatment at the earliest possible time becomes critical.

The United Nations is committed to providing a consistent level of high quality medical care to all mission personnel; regardless of the country, situation or environment in which medical treatment is received. This care commences from the point of injury or illness and continues, if necessary, through to specialist surgical support. First aid is the first step in this chain of care and may be the critical difference in casualty survivability.

Many national, international, civilian and military first aid programmes were reviewed in the development of the United Nations Buddy First Aid Course. Content from these were then selected and adapted to meet the specific and likely casualty environment of peacekeeping missions. The Buddy First Aid Course sets out clear standards for the first aid skill sets required.

In recognition of the language and resource variety across missions and nations, this Course has been developed to enable you to apply your verified first aid skills in a manner which suits your national training environment and to provide the best training option for your unit, contingent or organization. By undertaking this course, you have committed to deliver Buddy First Aid and apply this for immediate treatment of casualties and until a higher level of medical care is available.

All competencies taught are then assessed through a practical activity which will demonstrate your ability to apply learnt concepts and skills sets and their application through a variety of casualty scenarios.

The Course is delivered through a combination of plenary discussions, case studies, simulations, visual aids and practical exercises, utilizing Bloom's Taxonomy learning framework. By the end of this course you will be able to analyze and evaluate concepts, processes, procedures, and principles of first aid, and be able to apply these with precision, as appropriate, during your deployment with the United Nations.

United Nations Policy References

Both the UN Buddy First Aid Course and this Training-of-Trainers Course have been developed and delivered in accordance with the United Nations training framework, in particular:

- United Nations, Department of Peacekeeping Operations/Department of Field Support. *Policy. Operational Readiness Assurance and Performance Improvement* Ref. 2015.16
- United Nations, Department of Peacekeeping Operations/Department of Field Support. *Policy. Training for all United Nations Peacekeeping Personnel* Ref. 2010.20
- United Nations, Department of Peacekeeping Operations/Department of Field Support. *Standard Operating Procedure. Training of Trainers* Ref. 2009.24
- United Nations, Department of Peacekeeping Operations/Department of Field Support. *Guidelines. Design, Delivery and Evaluation of Training (Training Cycle)* Ref. 2014.3
- United Nations, Department of Peacekeeping Operations/Department of Policy Evaluation and Training. Integrated Training Service. Members States Support Team. *Standard Operating Procedures. Training of Trainers (DRAFT)* 2012

The UNBFAC Course Handbook has been independently reviewed and endorsed by:

College of Remote and Offshore Medicine Foundation
PO Box 4
Birżebbuġa, BBG1522
MALTA
www.corom.org



AMENDMENTS

Number	Subject	Brief Description	Date of Effect

ACKNOWLEDGEMENTS

The *Division of Healthcare Management and Occupational Health and Safety (DHMOSH)* of the *Office of Support Operations, Department of Operation Support of the United Nations Secretariat* would like to specially thank the Permanent Mission of Japan to the United Nations and the Permanent Mission of Israel to the United Nations for their contributions to the United Nations Buddy First Aid Course.

Additional acknowledgement goes to the BFAC Project Team:

Dr. Adarsh TIWATHIA, MD
UN Buddy First Aid Project Manager
Senior Medical Officer
Chief Clinical Governance Section, DHMOSH

Dr. Stefan GOEBBELS, MD
Medical Adviser, DHMOSH

Mr. Trent O'BRIEN, Tactical Paramedic (TP-C)
Medical Coordinator (Rapid Deployment)
United Nations Mine Action Service
UN Buddy First Aid Course –Author & Technical Adviser

Wing Commander Rowena ACHER
Project Support Officer,
UK

Squadron Leader Claire BOOKER,
Project Support Officer,
UK

TABLE OF CONTENTS

Course Administration	
Forward	
External Validation	IIV
Amendments	IV
Acknowledgements	V
Course Entry Standards	1
Course Aim	1
Course Success Criteria	1
Assessments	2
Retesting Procedures	2
Instructor Qualifications	2
Instructor Responsibilities	3
Skills Maintenance and Recertification	3
Record Keeping	3
Quality Assurance	3
Training Material	
Course Learning Objectives	4
Module 1 – First Aid and the Medical Evacuation Chain	5
Module 2 – General Scene and Primary Assessment	11
Module 3 – Tourniquets for Extremity Hemorrhage	18
Module 4 – Wound Packing for Limb Injuries not Amenable to Tourniquet Application	23
Module 5 – Airway Management	27
Module 6 – Chest Injuries	30
Module 7 – Emergency Pressure Bandages	33
Module 8 – Heat Disorders	37
Module 9 – Casualty Movement Techniques	42
Annexes	
Annex A – Competency Based Assessment Matrix	A-1
Annex B – Trainee Assessment Tool	B-1
Annex C – Training Record Template	C-1
Annex D – Course Logistics List	D-1
Annex C – Bibliography	E-1

CAVEAT: This handbook is intended to be used as a teaching reference to support face-to-face practical UNBFAC training. The Course Handbook serves as a primary reference document and has been intentionally written using terminology that is easily understood by non-medical personnel. Medical terminology (eg. distal/proximal, superior/inferior, rhabdomyolysis) has been intentionally substituted with common every day terms that are more easily translated between languages

Course Title:	Buddy First Aid Course (UNBFAC)			
Course Designator:	United Nations (UN/DM/DHMOSH)			
Course Duration:	Training Days	10 Hours	Total Days	2
Course Class Size:	Maximum	1:10	Minimum	1:4
Course Entry Standards				
All trainees of the UNBFAC must:				
<ul style="list-style-type: none"> a) Be able to read and speak in the language in which the training will be conducted; and b) Be available and committed to at least 10-hours of classroom and practical instruction. c) Be able to bend, kneel, crawl, walk unaided and lift, drag or move an unconscious adult casualty. 				
Course Aim(s)				
The aim of the UNBFAC is to reduce the incidents of preventable in-service death and disability of United Nations personnel by ensuring that all deployed personnel possess the knowledge, skills and capability to provide life-saving interventions to sick or injured colleagues, or others, during the initial 10-minutes until more highly trained care provider arrive.				
Background				
<ul style="list-style-type: none"> • Following recommendations contained within the Report of the High-Level Independent Panel on Peace Operations (2015), the Division of Health Management and Occupational Safety and Health (DHMOSH) of the United Nations Secretariat has developed the UN Buddy First Aid Course (UNBFAC). The UNBFAC is a 10-hour training course intended to be delivered, prior to deployment, for all peacekeeping personnel and formed police units deploying to UN Missions. The UNBFAC standards have been developed by MSD and will be promulgated after close consultation with Member States. • While implementation, evaluation and record management will be the responsibility of respective contingents, units and organizations, Quality Assurance (QA) will be conducted periodically by the Integrated Training Service (ITS) of the United Nations Department of Peace Operations (DPO) and/or DHMOSH. 				
Success Criteria				
In order for a UNBFAC trainee to be deemed competent, they must:				
<ul style="list-style-type: none"> a) Attend a minimum of 10-hours of BFAC training, and b) Successfully demonstrate competency in all course learning objectives 				
Upon successful completion, certification is valid for a period of 2-years.				

Course Assessments

- a) Summative – Trainees should undergo criterion referenced (Practical/Theory) testing/assessments to achieve the course aim as detailed in the assessment rubric. BFAC Instructors will evaluate trainees in accordance with the competency-based learning objectives outlined in Annex A.
- b) Formative – Trainees should be continuously assessed throughout the course by Instructors using Practical/Theoretical Methods. This should enable Instructors and Trainees to identify areas of strengths and weakness, then temper /tailor training or additional study accordingly.

Retesting Procedure

- a) In the event a trainee is unsuccessful in one or more of the course learning objectives the Instructor shall, to the best of their ability:
 - i. Provide an opportunity for re-training or additional training on the competency in question.
 - ii. Conducts a single re-test of the practical casualty assessment exercise (using another Instructor if possible).
- b) In the event a trainee is deemed not competent during re-testing, the trainee should be scheduled to retake the complete UNBFAC as soon as practical. In the interim, his/her assignment in the field environment may require review.

Instructor Qualifications

The UNBFAC must be delivered under the supervision of a certified Instructor who meets the following minimum requirements:

- a) Possess a current medical qualification that includes all competencies outlined in the UNBFAC curriculum (e.g. Emergency Medical Technician equivalent or higher) in accordance with a Member State national standard, and
- b) Successfully completed at least 24-hours of training and certification as a training provider in accordance with a Member State national standard, within the past 3-year period including the following subjects:
 - i. Competency-based learning theory
 - ii. Adult learning theory and practice
 - iii. Planning and promoting training events
 - iv. Presentation skills
 - v. Planning and delivery of practical psychometric training activities
 - vi. Realty based training theory
 - vii. Scenario safety planning and the role of the Safety Officer
 - viii. Training Evaluation
 - ix. Report writing and record keeping
- c) Successfully complete a BFAC Training of Trainers (ToT) course recognized by the United Nations Division of Health Management and Occupational Safety & Health (DHMOSH), including all learning objectives of the UN BFAC curriculum, or

Instructor Responsibilities

- a) Ensuring the training event is adequately planned and logistics are available
- b) Verifying that course trainees meet all pre-requisites prior to beginning training
- c) Ensuring a safe training environment
- d) Ensuring a maximum instructor to student ratio of 1:10
- e) Delivering all necessary training modules in accordance with course syllabus
- f) Evaluating all trainees as per the guidelines outlined in this document
- g) Completing Trainee Assessment Tool for each trainee (Annex A)
- h) Producing a Training Record on conclusion of training (Annex C)

Skills Maintenance and Recertification

- First Aid skills maintenance on deployment is the responsibility of the contingent’s medical personnel. As a guide, this should be conducted at least bi-monthly for a period of at least 4-hours.
- BFAC certification is valid for a period of 2-years at which point personnel must repeat the entire 10-hour BFAC course.

Record Keeping

All training activities shall be concluded with a written training report that should be submitted to UN Headquarters within no more than 5 business days of training being completed. Training reports must be submitted digitally to the email account: unbfac@un.org

This report shall include, as a minimum:

- a) The date, time and place of the training event.
- b) The name of the Instructor and Safety Officer,
- c) A record of all trainees’ attendance.
- d) All assessment completed during the training.
- e) Any injuries sustained during the training activity.

An example of a course attendance record is attached (Annex C).

Individual BFAC Instructors are responsible for ensuring that they retain accurate training records for a period of at least 3-years from the date of completion.

Quality Assurance (QA)

The Integrated Training Service (ITS) of the United Nations Department of Peace Operations (DPO) and/or DHMOSH may conduct Quality Assurance review of BFAC training including:

- a) Random request and review of BFAC Instructor qualifications.
- b) Random requests and review of BFAC training records.
- c) Direct observation of BFAC training (e.g. in conjunction with pre-deployment visits).

Upon such request, BFAC Instructors must provide the required evidence within a 30-day period. Failing to do so may result in suspension or termination of an Instructors authorization to conduct BFAC training and a potential finding of non-compliance for trainees of those training events in question.

Learning Outcomes

Ref.	Description	Time
------	-------------	------

1.0	Define the trainee's role in providing first aid and the medical evacuation chain	01:00
2.0	Discuss the General and Primary Survey of a trauma casualty	01:00
3.0	Apply an arterial tourniquet to control life-threatening limb haemorrhage	01:00
4.0	Correctly use conforming gauze dressing to control external torso haemorrhage from junctional wounds	01:00
5.0	Maintain a casualty's airway using positional techniques and manual stabilization	01:00
6.0	Identify and seal open chest injuries with an occlusive dressing	01:00
7.0	Apply an Emergency Pressure Dressing	01:00
8.0	Identify and treat a casualty with heat disorders	01:00
9.0	Demonstrate urgent and emergency casualty movement techniques	01:00
10.0	Manage a simulated trauma casualty for a minimum of 10 minutes	01:00
Total Time Allocated to Training		10:00

MODULE 1

FIRST AID AND THE MEDICAL EVACUATION

Introduction

Every year, thousands of people suffer sickness or injury while working for the United Nations around the world. This includes conditions ranging from minor bumps and scratches to vehicle accidents and life-threatening medical and trauma emergencies. While many of these conditions will fix themselves with rest and hydration, some will also require professional medical treatment by a Doctor, either at a local medical clinic, or a higher level of medical care. It's important that you understand your role in the continuum of care.

By the end of this module, you will be able to:

- a) **Explain** the terms '*First Aid*' and define the role of the '*First Aider*'
- b) **State** the various levels of qualification within pre-hospital emergency medicine
- c) **Explain** "10-1-2 Doctrine" of emergency evacuation in the United Nations
- d) **Explain** the three phases of care as they relate to tactical medicine
- e) **Define** the various levels of Medical Treatment Facilities within the UN Evacuation system

The role of the First-Aider

First Aid is defined as '*the initial care or treatment to the sick or wounded*'. First aid is often provided by non-medical personnel who are first present at the Point of injury (POI). This could include fellow peacekeepers or other civilians. The role of the First-Aider includes:

- (i) Sending an effective alert message
- (ii) Provide initial care and
- (iii) Provide continued care until the casualty is delivered to the next appropriate 'level of care'.

Levels of Pre-Hospital Medical Qualifications

Countries around the world adopt different approaches to ensure that a victim receives adequate care on their journey from injury to the hospital. As each country and operation is different, the following five levels of pre-hospital medical qualifications should be used as a guide only:

Levels of Pre-Hospital Emergency Qualifications	
First Aider	This person receives basic training of approximately 10-hours and is not considered to be a healthcare professional. It often comprises of people present at the point of injury.
First Responder	With approximately 30-hours of training, First Responders are responsible for providing emergency medical intervention in the earliest stages of an incident and caring for people who are injured or suffering a medical emergency ¹ .
Medical Technicians & Field Medics (EMTs, CMTs, FMAC)	Medic /EMT is often the first level of a healthcare provider. They are often able to provide a range of ‘non-invasive’ medical procedures and are used most often in rapid transport systems where their scope includes treatment within the ‘Golden Hour’ of trauma care.
Paramedic	This person receives over 800-hours of Advanced Life Support (ALS) training and experience. Paramedics can often administer a range of medications and provide more invasive medical procedures than an EMT, either independently or under medical direction.
Emergency Physician	This person is a fully qualified medical doctor specialized in pre-hospital and emergency care

While these five levels of pre-hospital medical qualification are not exclusive, they serve as an important distinction when evaluating the levels of care to be expected in a particular country or Area of Operations.

As the specialty of pre-hospital medicine continues to advance, you will continue to see additional ‘sub-levels’ adopted. Such titles include *Advanced, Tactical or Remote EMTs; Critical Care Paramedics, Nurse Practitioners and Physicians Assistants*, to name just a few functions that have been developed to address specific needs in a respective system’s evacuation chain.

¹ UNSMS Guidelines on First Responder Programmes (2017), pg.4, para 11.

The “10-1-2 Doctrine” for Trauma Care

It is evidence-based medicine that the risk of death or permanent disability is significantly reduced if people are treated as soon as possible after the onset of a life-threatening injury or illness. Based on this evidence, it is of utmost importance that appropriate life, limb and eyesight saving procedures are provided within specific timelines along with the survival chain appropriate for the event. This has become known as the 10-1-2 timeline.

The Survival chain in line with this timeline is described as follows:

10	Represents the recommended maximum time, in minutes, to provide the necessary immediate lifesaving measures at POI after the onset of injury/illness. This is often referred to as the ‘Platinum 10 Minutes’.
1	Represents the recommended maximum time that necessary damage control resuscitation procedures are provided by emergency medical personnel. This should be completed within 1 hour of the onset of injury/illness and is often referred to as the ‘Golden Hour’.
2	Represents the recommended maximum time that necessary Damage Control Surgery (DCS) is provided. This should start within 2 hours of the onset of injury/illness.

For the purposes of this training manual, we will divide casualties into two broad categories being those of either *medical* or *trauma* victims. *Medical* victims are often referred to as being ‘sick’, while *trauma* victims have experienced an injury as a result of influence of an outside force such as a vehicle accident, gunfire, explosions or falling from a high place. The main focus of the training will remain on *trauma*.

Remembering that the role of the *First Aider* is to initiate the evacuation chain and provide initial care until medical help arrives, we must understand that the ultimate goal is one of medical transport and evacuation to a medical facility appropriate to the casualty’s condition. In short, the casualty needs to get to hospital and see an appropriate physician. Various studies over the past century have repeatedly identified a significant increase in survivability if a casualty is able to receive surgical intervention, if needed, within a 2-hour period from the time of injury.

While trauma victims will receive the treatment that they need in a hospital (or other Medical Treatment Facility(MTF), they are often saved in the field by First Aider’s and other *pre-hospital medical professionals* who provide critical treatments that ensure the person remains alive long enough to get to hospital.

Tactical Medicine

First-aid and pre-hospital medical guidelines have long been developed by the civilian medical systems of the country and rely on the assumption that the First Aider and responders are able to provide care without putting their own lives at risk. In recent years, the role of military medicine has been further defined to address circumstances where the treatment of the casualty must be weighed against other considerations including Mission goals and ongoing hostility². Additionally, the operational context of military medicine means that some treatments and interventions that may be appropriate in the civilian setting could lead to additional loss of life and increased risk in a military setting. With this in mind, the following three phases of care have been widely recognized to apply in the tactical setting:

Three Phases of Tactical Medicine	
Care Under Fire	Care Under Fire relates to medical treatment provided while actively engaged in a hostile environment. Treatments will often be limited to application of tourniquets, and self-aid at this point due to the overwhelming priority of Engaging and Suppressing the Threat , which should include the casualty if possible.
Tactical Field Care	Tactical Field Care is delivered when the casualty and responders are no longer under direct fire, though the environment around them may still be hostile or their situation may become hostile again. It will often be carried out by the First Aider or Medic, using equipment that was being carried at the time including airway adjuncts, chest decompression and fluid resuscitation
Evacuation Care	Evacuation Care occurs when evacuation assets arrive with additional medical supplies and/or the casualty is removed from the hostile environment. This may include access to more advanced emergency medical professionals and equipment.

Levels of Medical Treatment Facility within the United Nations

People often experience sickness or injury great distances from medical care, sometimes not being able to see a doctor for days and sometimes having to travel to other countries to receive advanced levels of care. It is simply not possible to have advanced hospitals and well-trained specialty doctors in every town or village around the globe.

² BUTLER, 1996, Military Medicine, Tactical Combat Casualty Care

The United Nations defines four levels of Medical Treatment Facility (MTF). These four levels are intended to ensure that casualties can access initial care quickly; to ensure they are stable and healthy enough to travel further to receive high levels of specialty care. These four levels³ are:

- Level 1 – These MTFs provide stabilization and resuscitation services to prepare patients for transport to a larger MTF (damage control resuscitation). Role 1 facilities can:
 - Managing 5 patients for up to 2 days
 - Casualty collection, basic sick calls, resuscitation and stabilization at the point of injury/collection
- Level 2 – These MTFs can provide stabilization surgery (damage control surgery):
 - Manage 10-20 patients for up to 7 days
 - Provide surgery, intensive care, dental laboratory, x-ray, stabilization and basic pharmaceutical capacity
 - Climate controlled storage and cold chain blood products
 - Administers blood and blood products with appropriate hygiene precautions
- Level 3 – is capable of
 - Managing 50 patients for up to 30 days
 - Provides advanced surgical and intensive care and dental treatments
 - Provides laboratory services and basic x-ray services
 - Contains wards and pharmaceutical supplies
- Level 4 – Hospital with all specialties and super specialties including burn unit.

Conclusion

First-Aiders play a crucial role in the treatment of trauma casualty given their proximity and rapid access to the victim. The ability of a First-Aider to send an adequate alert message, control bleeding, keep a victim breathing and keep them warm within the *Platinum-10* minutes makes the difference between life and death for the casualty reducing mortality up to 30%. Thereby in a tactical setting, the treatment of the victim, or the ability to coach the victim to provide self-aid, must be weighed against Mission goals and any on-going potential threats.

Treatments provided by a First-Aider must also be weighed against the need for rapid transport to a MTF, ideally to ensure access to a surgical capability and blood products within 2-hours. An understanding of the Levels of MTF available within the Area of Operations and various levels of pre-hospital qualification available will assist in developing functional casualty and medical evacuation plans to support UN operations and activities.

³ Medical Support Manual, Ch3, Section C, United Nations, New York.

MODULE 2

GENERAL SCENE AND PRIMARY ASSESSMENT

Introduction

Whether witnessing an injury first hand or arriving soon after, the initial moments can be confusing for even the most experienced responders. During this time, it's important that you as a responder, control the urge to 'jump right in' taking adequate precautions to first make sure you do not cause further injuries to the victim or to yourself. It is important that you as a First-Aider take a structured and systematic approach to ensuring your own safety, managing the scene and addressing life threats to the victim in the most efficient manner.

By the end of this module you will be able to:

- a) **Explain** the SCENE-MARCH acronym (in appropriate language)
- b) **Provide** an Emergency Alert Message
- c) **Explain** the "AVPU" scale for assessing responsiveness
- d) **State** various techniques for controlling external haemorrhage

General Scene Assessment

The General Scene Assessment is the first evaluation you will make as a First-Aider upon arriving at or witnessing an injury. The word SCENE as an acronym to guide us in our initial priorities and stands for:

- **S**afety
- **C**ause
- **E**nvironment
- **N**umber of Casualties
- **E**xtra Resources

Safety –

As a First-Aider you may be required to respond to a wide variety of situations and environments. In your assessment of the *SCENE* you need to identify hazards and control them, before turning your attention to the treatment of the casualty. In the event of ongoing hostility or gunfire, your primary role may be to continue to engage threats to increase the security and safety of the scene. Being distracted from this role, may lead to additional injury. In small-unit operations, the additional firepower provided by the medic may be essential to obtaining the tactical fire superiority needed to negate or reduce the hostile attack.⁴

When the threat is reduced, and it is safe to treat the victim, one of the most important aspects of personal safety is ensuring that you are taking appropriate precautions for body substance isolation (BSI). Body fluids can contain organisms known as pathogens. Pathogens are

⁴ BUTLER et al,1996, Military Medicine, page 4

organisms such as viruses and bacteria that can cause disease. At the core of proper BSI precautions is appropriate Personal Protective Equipment (PPE), which includes:

- Gloves
- Eye protection

The Individual First Aid Kit (IFAK) contains nitrile protective gloves. While eye protection is not included in your IFAK, eye and ear protection should form part of your operational Personal Protective Equipment (PPE) along with your body armor and helmet. **BSI precautions should be taken as early as possible**

Cause –

Look at the scene around the casualty for clues to what happened and what caused the casualty's injuries. Here we are attempting to classify the casualty as either a *Trauma* or *Medical* casualty. Trauma casualties are those that have been affected by outside forces impacting the body. In the United Nations, the most common causes of traumatic injury are:

- Road Traffic Accident
- Gunshots
- Explosions
- Drowning, and
- Snakebites

Medical casualties on the other hand, are those that are suffering from a malfunction of one or more of the systems of the body. This may include:

- Disorders of consciousness (e.g.s seizures)
- Respiratory disorders
- Heart disorders, and
- Heat disorders

The distinction between trauma and medical casualties is an important one as it will dictate how you will approach and manage the casualty. **Always assume that trauma casualties from vehicle accidents and falls from high places have sustained injuries to the neck and spine and treat accordingly.**

Environment –

Are there environmental factors impacting on the victim? Environmental factors may include:

- Standing water or wet victims
- Extreme heat, cold or direct exposure to the sun or hot surfaces
- Electrical cables or fallen power lines
- Oncoming traffic
- Fire or flammable liquid and vapors

Number of Casualties –

In circumstances where the number of casualties outweighs the number of responders and resources, decisions must be made to prioritize casualties to ensure the best is done for the most victims.

Extra Resources –

Some incidents may require additional resources to be delivered to the scene to aid in the treatment and evacuation of victims. As a First-Aider, you are uniquely positioned to identify these needs early, having a direct impact on the time taken to deliver these resources to the incident scene. Additional resources may include:

- Medical Personnel
- Specialist extrication equipment to remove victims trapped in vehicles
- Fire Suppression assets
- Quick Reaction Force
- Fire Support (heavy, direct, indirect or close air)
- Electricity or Utility stabilization services
- Helicopters or air evacuation assets

Alert Message

An alert message must be transmitted as soon as possible, and no later than 10-minutes after casualties are sustained to ensure rapid access to evacuation assets. The United Nations has adopted a basic 4-line situation report. Receipt of the alert message by the designated mission Operational Centre triggers the speedy deployment of the Medical Emergency Response Team (MERT) trained and equipped to provide Advanced Lifesaving Support (ALS)⁵, principally to stabilize a casualty.

As a *First-Aider*, you are expected to be able to initiate this alert message. The four parts of the alert message are:

ALERT MESSAGE
Location. Provide the exact location of desired pick-up (e.g. UTM, MGRS, Lat/Long)
Incident: This should include the radio frequency, phone or satellite phone on-scene
Actions being taken. What are you doing (e.g. “We are providing first aid on the side of the road”, or “We are self-driving to nearest hospital”).
Recourses Required. What do you want? Is there any special equipment needed at the site (e.g. Hoist, Extrication Equipment, Ventilators)?

⁵ For the purposes of this document, Advanced Life Support (ALS) capacity is defined in paragraphs 22-26 of the “10-1-2 Doctrine”.

Primary Assessment

Once the *SCENE* has been adequately assessed and stabilized, you should turn your attention to the treatment of the casualty or casualties at hand. The *Primary Assessment* can be described as ‘*the rapid assessment and treatment of immediate threats to life*’. The Primary Assessment is completed by dealing with those injuries that will likely kill a casualty quickest. Treatment is carried out in manner where one problem is addressed before moving on to the next. For this we use the *MARCH* acronym:

- **M**assive Bleeding
- **A**irway
- **R**espirations
- **C**irculation
- **H**ypothermia

Massive Bleeding –

Any bleeding that is life threatening should be stopped and controlled immediately. A victim with massive bleeding can die in as little as 2-3 minutes if the bleeding is not controlled quickly. At this stage of the Primary Assessment, the preferred treatments are:

1. Tourniquet for any massive bleeding from the arms or legs.
2. Wounds that are not amendable to Tourniquet placement should be packed using conforming gauze dressing with direct pressure for at least 3-5 minutes.

Airway –

The casualty’s airway should be evaluated next to ensure that it is open and free from obstruction which could be in the form of blood, saliva or any other substance gathering in the airway and interfering with the supply of air to and from the lungs. The fastest way to open a casualty’s airway is to use manual maneuvers such as the ‘head tilt/chin lift’ or ‘recovery position’. If the casualty is talking, crying or screaming, these behaviors themselves can indicate that the victim has control of their airway and that it is open.

Respirations –

The brain begins to suffer irreversible damage in as little as 3-4 minutes, if it does not receive enough oxygen. Oxygen enters the body through the airway and is exchanged in to the blood through the lungs. For this to occur a victim must be able to breath at both a normal speed and depth. It is pointless to evaluate breathing if the airway is obstructed so, after first clearing and opening the airway, you as a First-Aider must evaluate breathing (aka. Respirations) and assist the casualty to breathe if necessary.

Circulation –

Once oxygen reaches the lungs, it is then transferred into the circulating blood where it must return to the heart and be pumped to the brain and other organs of the body. In addition to having an open airway and breathing, the body's *Circulation* must be enough to deliver this oxygen carrying blood to the brain. This must be measured and may require the support of a Medic. The Level of Responsiveness (LoR) is measured against one of four levels in the AVPU Scale and is a rapid assessment of circulation. The AVPU scale is explained in further detail below.

In addition to evaluating Circulation (using AVPU), it is at this stage of treatment that non-life-threatening bleeding will be addressed using dressings and bandages.

Hypothermia –

Most victims with blood loss lose body heat quickly, even in hot environments. When the body loses blood, it draws what blood is left, toward the center of the body, leaving the skin feeling cold to touch. A drop in the victim's body temperature leads to the casualty bleeding more and must be controlled quickly. Keep the victim warm by exchanging wet clothing for dry clothing and wrapping the casualty in blankets or other warm material.

Hypovolemic Shock

Hypovolemic shock is a life-threatening condition that results when you lose more than 20% (one-fifth) of your body's blood or fluid supply. This severe fluid loss makes it impossible for the heart to pump a sufficient amount of blood to your body.

When a casualty goes into Hypovolemic Shock, the organs of the body must work harder to 'compensate' for the loss of blood. The length of time that a casualty can effectively 'compensate' before tiring and 'decompensating', will depend on the general health of the casualty and seriousness of their injuries. Once the body begins to decompensate, oxygen supply to critical organs is reduced and eventually the body will begin to die.

AVPU Scale

The AVPU scale is a simple 4-level scale that is used commonly by pre-hospital professionals around the world, to evaluate a casualty's Level of Responsiveness (LoR). The AVPU test is used to evaluate *Circulation* within the *MARCH* protocol.

- **Alert** – casualty is able to converse and answer simple questions/hand gestures
- **Voice / Sound** – casualty response spontaneously to sound or noise stimulus
- **Pain** – casualty responds to painful stimulus
- **Unresponsive** – casualty does not respond to painful stimulus

Care Under Fire Decision Making Flow Chart

This drill should be learned and remembered: if you need to read a guideline whilst under fire your training has failed

All personnel (including casualties where able) to return and maintain fire to suppress the enemy

Both medic and casualty in the open

Deploy smoke upwind if available

Consider:

- Tourniquet for catastrophic haemorrhage
- Roll casualty face down (postural airway opening) until ready to move

Evacuate to cover

Only the casualty in the open: medic in cover

If casualty unable to return effective fire, tell them to lie as still as possible

Plan rescue, considering:

- Support from friendly forces
- Use of vehicles
- Use of smoke
- Best use of cover
- Use of rope line
- Quickest route

MODULE 3

TOURNIQUETS FOR EXTREMITY HAEMMORHAGE

Introduction

External bleeding is the Number #1 cause of preventable death on the battlefield, accounting for more than half of preventable combat deaths. A casualty suffering from severe arterial bleeding can lose consciousness and die from blood loss in as little as 2-3 minutes therefore, the ability to control extremity bleeding by applying arterial tourniquets, saves lives if done correctly and quickly.

By the end of this module you will be able to:

- a) **Identify** the parts of an arterial tourniquet
- b) **Prepare** and store a tourniquet effectively for 1-handed application
- c) **Apply** a tourniquet using 1-handed technique (self-application)
- d) **Apply** a tourniquet to a casualty using 2-handed technique
- e) **Apply** an effective improvised windlass tourniquet

Nomenclature of the Combat Application Tourniquet (C.A.T.)

The Combat Application Tourniquet®, originally invented in 2005 for the United States military is now the most prolific arterial tourniquet in military application with millions distributed around the world annually.

The ability to rapidly apply the CAT using a single-handed technique and gross motor skills makes its design, the choice of military forces in over 100 countries.

The CAT tourniquet has the following important parts:

- Self-adhering hook and loop band
- Single-routing buckle
- Reinforced 'Windlass rod'
- Rigid 'Windlass Clip'
- 'Windless Strap' to record the time of the application
- An easily identifiable red colored 'Running end'



Preparation and Storage of the Tourniquet

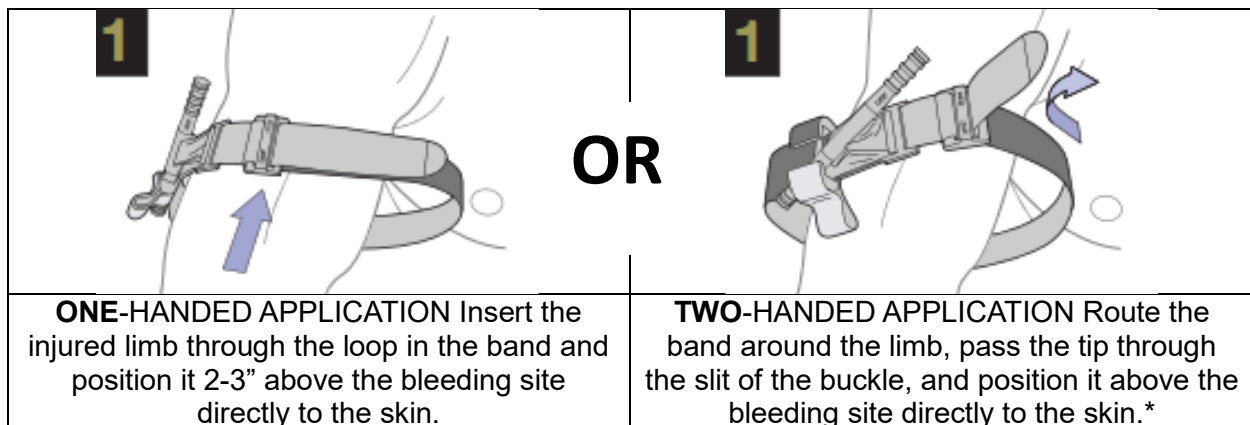
The CAT can be found in your Individual First Aid Kit (IFAK). The tourniquet should be carried on your person in a location and manner that allows for rapid access and application by either the left or right hand, ideally, in less than 30 seconds. The center of the chest or body is a good location that can be reached by either hand. Tourniquets should be carried in a fully enclosed pouch to protect them from direct sunlight which may, over time, have a degrading effect on the tourniquet. The CAT should be prepared in the following configuration:

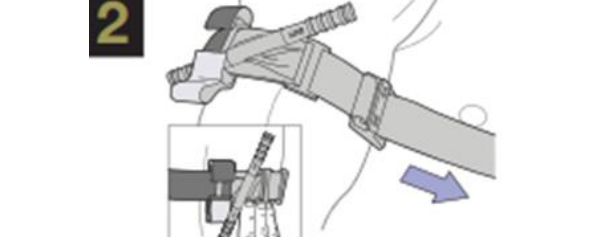
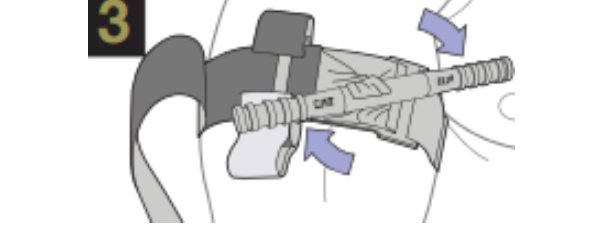
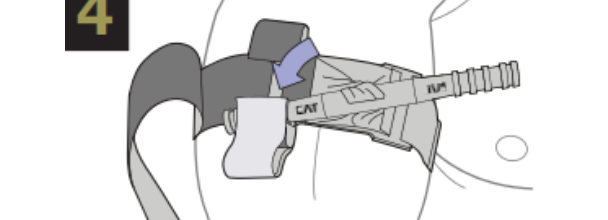
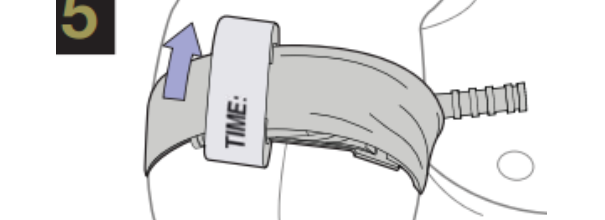


- a) Place approximately 10-15cm (5-6in) of the red colored *Running End* through the *Single-Routing Buckle* and apply it back on itself.
- b) Fold the tourniquet so that the self-adhering material holds the tourniquet in a compact size.
- c) Lock the *Windless Rod* into the *Windless Clip*
- d) Secure the *Windless Strap* in the open configuration to enable more rapid 1-handed application.

Applying the CAT Tourniquet

The Tourniquet should be applied directly to the skin approximately 5cm (2-3inches) above the open wound. In circumstances where the First-Aider has no time to expose and search for wounds, the tourniquet may be applied directly over clothing in the ‘*high and tight*’ position, as high on the limb and close to the torso as possible, provided there are no solid objects inside the clothing. When applied *high and tight* over clothing, the tourniquet should be transitioned to a more appropriate position by a medical professional as soon as possible.



	
<p>Pull band tightly and fasten it back on itself all the way around the limb, but not over the rod clips. Band should be tight enough that tips of three (3) fingers cannot be slid between the band and the limb. If the tips of three (3) fingers slide under band, retighten and re-secure.</p>	<p>Twist the rod until bleeding has stopped</p>
	
<p>Secure the rod inside a clip to lock it in place. Check for bleeding and distal pulse. If bleeding is not controlled, or distal pulse is present, consider additional tightening or applying a second above and side-by-side to the first. Reassess.</p>	<p>Route the band between the clips and over the rod. Secure rod and band with TIME strap. Record time of application.</p>

Upon application of a tourniquet, the wound should be monitored for signs of continued bleeding. If the application of a tourniquet does not control bleeding, a second tourniquet should be applied directly next too, and preferably above, the first tourniquet. Additional bleeding control measures may also be considered including wound packing, direct pressure and/or indirect firm pressure applied to the appropriate inguinal crease or clavicular notch. Finally, the time of Tourniquet application should be recorded either on the Tourniquet or on the forehead of the casualty prefixed (eg. “T=1420hrs”).

The correct application of a tourniquet is not without risk. While it may save the life of the casualty by preventing blood from reaching the limb and injury, it also prevents the removal of waste products from within the body. Over time, the accumulation of these waste products can have a critical impact on the health of the casualty if the tourniquet is removed. For this reason, it is highly recommended that tourniquets are only removed by medical professionals.

Training Tip

Note: Tourniquet training should only take place under the supervision of a qualified Instructor. Instructors should inspect the tourniquet prior to removal and never leave a tourniquet in place during training for more than 1-minute. Presence of a distal pulse indicates a failed tourniquet application.

Applying an Improvised windlass device

At the time of an event when a casualty is injured, and you do not have access to a CAT or your CAT is being used on another extremity it is possible to create an improvised tourniquet from common items. To make an improvised tourniquet you will need:

- a. A material/band of some sort to wrap around the extremity (eg. cravat/triangle bandage or piece of clothing/cloth)
- b. A windlass – a rigid object to twist the band (eg. stick, jack handle, broom handle, carabineer)



To apply your improvised windlass tourniquet, use your selected material/ band to wrap the extremity tightly then secure the material with a knot. Once the material/band is secured, place the chosen windlass object underneath the knot and twist the windlass object with the material. Twist the material until the improvised tourniquet is tightly secured around the extremity. In order to properly secure the tourniquet use the material to tie a final knot on top on the twisted windlass.

Conclusion

Rapid tourniquet application is fastest way to stop extremity bleeding and is safe for the casualty when completed within the timeframes specified. All personnel should carry a tourniquet on their person, in a rapidly accessible location at all times while inside the Mission area and should practice both single-handed and two-handed application regularly. The ability to apply a tourniquet to yourself or another person will have the single biggest impact on reducing preventable death in service.

Notes

Notes

MODULE 4

WOUND PACKING FOR LIMB INJURIES NOT AMENABLE TO TOURNIQUET APPLICATION

Introduction

External bleeding is the Number-1 cause of preventable death on the battlefield, accounting for more than half of preventable combat deaths. While the rapid application of arterial tourniquets is the fastest way to control external bleeding on the extremities, not all wounds are amenable to tourniquet application, such as high limb. In these cases, severe bleeding should be rapidly controlled by wound packing.

By the end of this module you will be able to:

- a) **Expose** injury by safely cutting away casualty's clothing
- b) **Apply** direct pressure to control bleeding while preparing gauze
- c) **Remove** excess blood from wound using gauze or wound sweep (if necessary)
- d) **Pack** wound cavity to the bone
- e) **Apply** direct pressure for 5-30 minutes

Theory of Wound Packing

When a blood vessel is damaged causing bleeding, one must consider that the source of the bleeding is often deep inside the wound cavity. In the case of arterial bleeding, blood is being forced out of the damaged blood vessel at relatively high pressure. Placing a dressing or bandage over the outside of the wound is often not effective as the pressure inside the blood vessel continues to push blood out of the circulation and into the surrounding muscle tissue or cavity.

The process of packing material into the wound increases the First-Aiders ability to apply adequate pressure to the source of the bleeding, deep inside the wound cavity. This increased pressure slows bleeding, providing an opportunity for a clot to form. For this reason, wound packing must always be delivered in connection with direct pressure over the wound for 5-30 minutes.



Wound Packing Material

Placing material inside a wound can increase the risk of infection therefore the First-Aider should take all practical precautions to ensure that packing material is clean and preferably, sterile if possible. There are several commercially available *conforming dressings* with *hemostatic materials* inside them, designed to support blood clotting.

These *Hemostatic Gauze's* should have direct contact with the source of bleeding and should be used in conjunction with 3-5-minutes of direct pressure. Hemostatic Gauze should be the first choice for uncontrolled hemorrhage occurring high on the limb that is not amenable to tourniquet placement however, if not available, regular *conforming gauze*, is still by far, the most prevalent material for wound packing⁶.



Preparation for Wound Packing

When severe bleeding is first identified the wound should be exposed for further inspection. Clothing should be removed safely by tearing with your hands or cutting with safety scissors or a hooked safety knife. Pointed knives and other sharp objects should not be used as they **often result in further accidental injury to the casualty**.



Immediately upon identify the wound location attempts should be made to control the bleeding by direct pressure while medical equipment is being retrieved and prepared. If possible, this may include inserting a gloved finger into the wound to feel for and apply direct pressure to the source of bleeding. Wounds that are full or overflowing with blood may be cleared using a wound sweeping technique by using a gloved finger to “scoop” blood out of wound or by irrigating the wound with clean water to assist in identifying the source of the bleeding.

Wound Packing

As soon as packing material is available and ready to use, the First-Aider should pack the wound cavity. Start by forming a small ball of dressing material to begin the packing process. This ball should be inserted directly into the wound as close as possible to the source of the bleeding. One finger should be kept on the gauze ball maintaining constant pressure, while the remainder of the gauze is fed into the wound. The wound should be packed firm, to the bone, maintaining

⁶ Some examples of Hemostatic Gauze include manufacturers such as Celox, Quikclot, Hemcon, TraumaDex and Excel-Arrest. While these Hemostatic Gauze Dressings are used in a very similar way to regular Conforming Gauze, each has additional hazards or considerations that are outside the scope of the current UNBFAC curriculum. Therefore, additional training should be sought prior to the application of Hemostatic Gauze

constant pressure in the direction of the source of bleeding, while being conscious not to cause the wound to tear or open further.

Once the wound cavity is packed completely, the remaining gauze should be placed over the top of the wound and direct pressure applied with both hands and body weight for as much time as possible, as it may take up to 30-minutes for a reliable clot to form. Releasing pressure to inspect the wound should be avoided as this may cause the wound to re-bleed and disrupt the formation of a clot.

When appropriate, after direct pressure, an elastic bandage or cravat should be used to hold the dressing material in place and the wound should be monitored for signs of re-bleeding.



Notes

MODULE 5

AIRWAY MANAGEMENT

Introduction

Second to external bleeding, airway and breathing difficulties are the second most common cause of preventable combat death. In many cases, the casualty is able to breath, having functional and intact chest anatomy however, is unable to maintain their own upper airway due to the nature of their injuries.

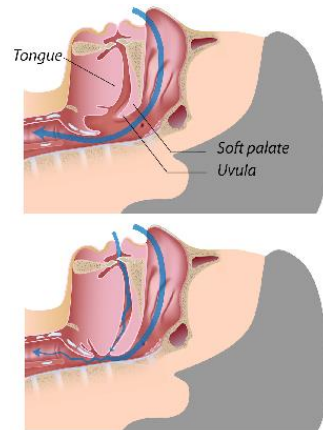
By the end of this module you will be able to:

- Explain** the primary cause of upper airway compromise
- Demonstrate** the Head Tilt/Chin Lift technique on an unconscious casualty
- Demonstrate** the Recovery Position on an unconscious, breathing casualty
- Demonstrate** the Sit Up and Forward' position on a conscious casualty

Upper Airway Anatomy

The upper airway comprises of the oral and nasal cavities along with the air canal as far down to the vocal chords. The tongue is the most common cause of airway obstruction in casualties with altered levels of consciousness. As muscular control of the tongue is lost, it falls into the back of the neck due to gravity, blocking the passage of air to the lungs.

A casualty with an obstructed airway may begin to suffer irreversible brain damage in as little as 4-9 minutes. Airway techniques and positioning are the fastest and most effective ways to open the casualty's airway and restore breathing.



Head Tilt/Chin Lift

The Head Tilt/Chin Lift technique is used to most rapidly open the casualty's upper airway. The technique is carried out by using one hand to place downward pressure on the casualty's forehead, while using your other hand to raise the chin and jaw of the victim, extending the head and neck backward. The technique does apply pressure to the cervical spine of the casualty and should be avoided in circumstances where there is a high suspicion of neck injury (e.g. vehicle accidents, falls, strikes/impacts to the head or explosions that cause the casualty to be propelled through the air).



The *Head Tilt/Chin Lift* provides the added benefit of maintaining the airway in an open position without the need for the *First-Aider* to maintain constant contact with the head, allowing the *First-Aider* to use their hands to provide other treatments. For this reason, the *Head Tilt/Chin*

Lift is the preferred technique in Mass Casualty events where responders are often not able to remain with the victim constantly due the number of casualty's.

Recovery Position

The recovery position allows for an unconscious casualty to maintain their own airway by allowing the tongue to stay forward of the airway and to drain any aspirated fluid. The Recovery Position is best used for unconscious medical casualties and trauma casualties without spinal injury.

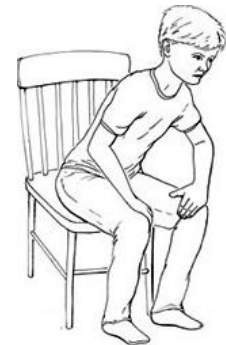
Additionally, casualties that display signs of fluid in their airway should be moved into the recovery position to drain the airway, preventing damage to the lungs.



The Recovery Position is described as the casualty laying on their side, with their head resting on their hand or arm, and their knee forward to increase stability. The left side down position reduces the likelihood of fluid from the stomach travelling into the airway. Casualties should be repositioned side to side every 30-minutes to reduce the likelihood of pressure sores developing, while casualties with chest injuries should be positioned with the injured side down.

Sit Up & Forward Position

Casualties that are conscious and experiencing breathing difficulty should be permitted to adopt the '*Sit Up & Forward Position*'. Particularly those with severe facial trauma may be able to best maintain their airway by leaning forward and allowing blood, tissue, and fluid to naturally drain free.



Casualties permitted to adopt this position should be closely monitored for changes in their mental status or consciousness. If the casualty loses consciousness, the casualty should be assisted into the *Recovery Position*.

Notes

MODULE 6

CHEST INJURIES

Introduction

The organs of the body can loosely be divided into those that are filled with blood (eg. liver, spleen and heart) and those that are filled with air (lungs, digestive system). Most of the space inside of the chest is consumed by the lungs which provide oxygen to the blood. When a casualty suffers a chest injury, the space inside the chest can fill with blood, air or other fluids, preventing the lungs from expanding normally. When a casualty has air or liquid inside their chest cavity they will struggle to take normal breaths, reducing the supply of oxygen to the brain and bodily organs.

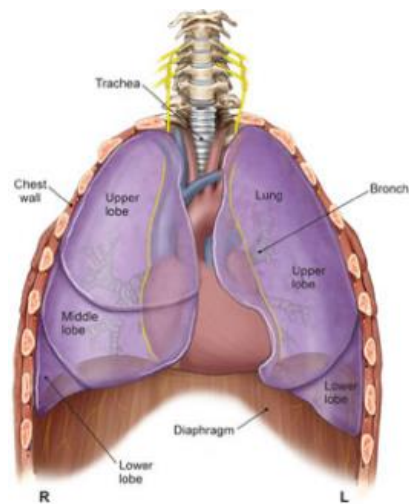
By the end of this module you will be able to:

- Explain** the signs and symptoms of an open chest wound
- Take** immediate steps to seal chest wounds with a gloved hand or other occlusive material
- Prepare** an occlusive dressing and apply after forceful exhalation of the casualty (if possible)
- Monitor** the casualty for signs of tension, burping the seal as necessary

Signs of an Open Chest Wound

Any injury on the front or back of the casualty's torso above the navel should be treated as a Chest Injury. As mentioned in previous modules, any wound with severe bleeding must be addressed first using tourniquets or wound packing. However, many chest injuries bleed only a little and may be seen or heard to "bubble or hiss."

These injuries should be sealed with an air tight occlusive dressing. There are several excellent commercially available 'Chest Seal' dressings and these should be the primary treatment if available. Some of these commercial *Chest Seals* have small valves on them to allow air to escape from the chest while preventing air from entering. If commercial chest seals are not available, any air tight material like plastic can be used to seal the chest including plastic wrapping from other dressings, duct tape or plastic kitchen roll. The important objective is to seal the wounds in a way that prevents air from entering the chest.

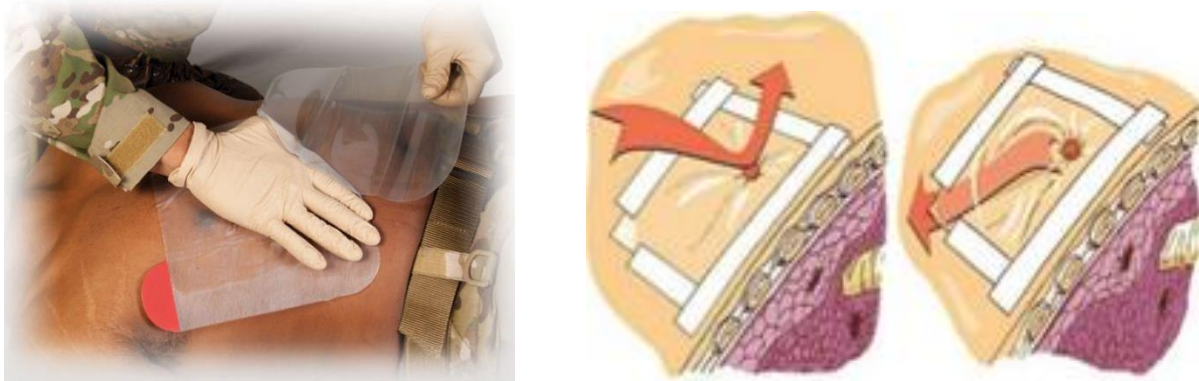


As soon as a chest injury is identified, the *First-Aider* should take immediate steps to seal the injury and prevent air from entering. This can be achieved by:

- Placing your gloved hand over the wound, or
- Instructing the casualty to apply sideways pressure to the wound to shift the muscle tissue, closing the wound.

After these immediate interventions, an occlusive dressing should be retrieved from the casualty's Individual First Aid Kit. Prior to applying the occlusive dressing, the area should be wiped clean of debris, blood and/or sweat to aid the occlusive dressing in sticking to the skin surrounding the wound.

If using a commercial *Chest Seal*, ensure that the valve (if present) is positioned directly over the open wound. If a commercial Chest Seal is not available, duct tape or medical tape can be used on all four sides of a plastic cover, leaving a corner open to allow for drainage.



Next, while the *First-Aider* has now taken steps to prevent air from entering through the wounds they must consider the high possibility that there are additional wounds to the lungs, inside the chest. Since we cannot treat these wounds, a *First-Aider* must be conscious that pressure may continue to build slowly in the chest making it progressively more difficult for the casualty to breath. Casualty's with chest injuries should be monitored closely for breathing difficulty and evacuated at the earliest possibility to the next level of medical care. In the event that the occlusive dressing becomes clogged with blood or appears to be 'filling with air', it should be removed and immediately replaced to allow captured air to escape.

Notes

MODULE 7

EMERGENCY PRESSURE BANDAGES

Introduction

Emergency Pressure Bandages (EPB) should be carried in the Individual First Aid Kit to assist with bleeding control, to protect wounds from infection and to assist where necessary, with immobilization and the securing of other dressing materials. When used to control bleeding, bandages should always be used secondary to direct pressure and where appropriate, wound packing.

By the end of this module you will be able to:

- Open* sterile packaging without contaminating the dressing pad
- Apply* Emergency Pressure Bandage using ‘V wrap technique’
- Apply* Emergency Pressure Bandage using single-handed technique
- Apply* Emergency Pressure Bandage to the head
- Evaluate* distal circulation, sensation, motor function (CSM)
- Reassess* wound and CSM every 5-minutes



The Emergency Pressure Dressing

The Emergency Pressure Dressing (EPD) was designed specifically with military application in mind and comes contained within double vacuum sealed, water proof packaging. The bandage is available in various sizes (10cm, 15cm and 25cm) and consists of the following parts:

- A high-quality green colored elastic bandage
- A large white colored sterile wound dressing pad
- A plastic tension bar, attached over the center of the dressing pad
- A plastic securing clips included in running end of the bandage.



Application of the Emergency Pressure Bandage

Before using an EPD, attempts must be made to control all severe bleeding using either tourniquet application or wound packing techniques as explained in previous chapters. The EPD should be used in the following manner:

- Upon opening the packaging of the EPD, stow the plastic wrapper for later use.
- Unfold the EPD taking care to not touch or contaminate the white dressing pad.
- Apply the EPD with two hands placing the dressing pad over the wound. The plastic *Tension Bar* should be placed directly over the center of the wound
- Apply equal pressure with both sides of the EPD bandage and wrap the bandage around the limb or torso maintaining constant pressure.

- e) Wrap the bandage around both edges of the dressing pad in a ‘V’ shape with the *Tension Bar* still visible.

Note: If the EPD is being used to wrap the torso, every effort should be made to apply the bandage while the casualty takes and holds a deep breath. Failing to do so may restrict the casualty’s breathing. Breathing should be monitored closely.



- f) Place the bandage through the *Tension Bar* and reverse the direction of the bandage, folding down the Tension Bar to place additional pressure directly over the wound site.
- g) Continue wrapping the bandage and secure the running end by tucking the plastic clips into bandage wraps.
- h) After applying any elastic bandage, circulation, sensation and motor function (CSM) should be monitored. Changes in CSM may indicate that the EPD is reducing or preventing adequate blood circulation to the limb in which case, the bandage may need to be loosened. The wound should be reassessed and checked for CSM function every 5 minutes, until appropriate medical care arrives.



Single-handed Application of the Emergency Pressure Bandage

The EPD is equipped with a sewn loop next to the dressing pad to facilitate single-handed application and self-aid to an injured arm. Placing the injured arm through the loop, the EPD can be slid into place and wrapped round tight around the casualty’s injured arm. The wound should be reassessed and checked for CSM function every 5 minutes, until appropriate medical care arrives.



Application of the Emergency Pressure Bandage to the Head

If the casualty suffers a head injury that is bleeding, the EPD should be used as the first option, in-place of wound packing which may cause an increase of pressure inside the skull which has a negative impact on the brain.

Place the dressing pad of the EPD over the wound and apply gentle direct pressure for at least 5-minutes to control the flow of blood. The head is a very vascular area of the body so even small cuts appear to produce a lot of blood.



Blood or fluid that is observed leaking from the ears or nose should be lightly covered but should not be obstructed as may be an indication of increased pressure inside the skull. Cover openings to protection from infection. The wound should be reassessed and checked for CSM function every 5 minutes, until appropriate medical care arrives.

Conclusion

Emergency Pressure Bandages (EPDs) are useful pieces of first aid equipment, to control slow, low pressure bleeding and to protect wounds from infection. However, in circumstances with severe arterial bleeding, the EPD will not be effective to stop the bleeding. Tourniquets and wound packing with conforming gauze and direct pressure remain the treatments of choice for severe external bleeding. The EPD may then be used as an adjunct to hold dressing material in place.

Notes

MODULE 8

HEAT DISORDERS

Introduction

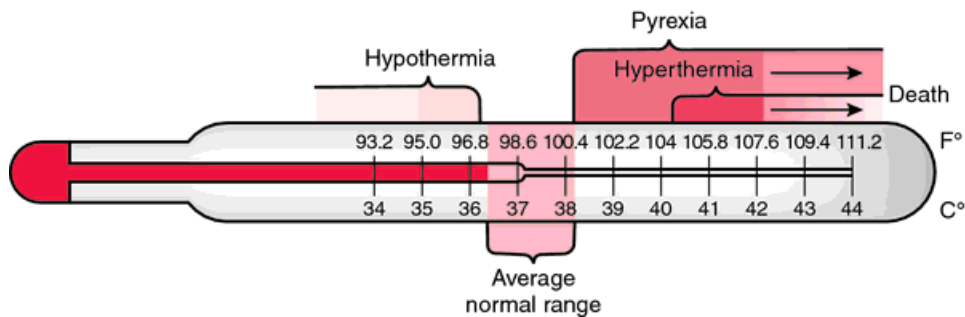
The core or center of the human body works most efficiently within a very small temperature range. When the brain and organs of the body are exposed to temperatures outside this normal range, they can suffer either temporary or permanent dysfunction or damage. UN personnel often work in a variety of climates and are exposed to both hot and cold outside temperatures that can have a negative impact on bodily functions. It is important that UN personnel are able to recognize the signs and symptoms of heat disorders and take early correct actions to prevent the condition from getting worse.

By the end of this module you should be able to:

- a) *Discuss* the normal heat range of the body
- b) *State* the signs and symptoms of heat exhaustion and heat stroke
- c) *Discuss* the importance of hydration and electrolyte replacement
- d) *Treat* a casualty with *Exertional Heat Stroke* using rapid cooling techniques
- e) *Identify* and *treat* a casualty with severe hypothermia

Heat Exhaustion and Heat Stroke

The human brain and bodily organs are designed to work efficiently within a relatively small temperature range. The body relies on the skin and other bodily organs to work together to insulate the body's core from external temperature changes to maintain optimal performance. This is achieved most predominately through the processes of perspiration and shivering.



< 35.7
35.8 - 36.9
37.0 - 37.5
37.6 - 38.0
38.1 - 38.5
38.6 - 39.4
39.5 - 42.0

In many UN Missions where the daily temperature can easily exceed 40-50°C, the body can sometimes struggle to cool itself. This situation is made worse by physical exertion and PPE such as body armor and long clothing. As the body produces sweat as a means of evaporative cooling, the body loses moisture and various electrolytes including sodium and potassium. In extreme circumstances, it is possible for an adult to lose as much as 2-4 liters of fluid every hour when, for example, performing sustained exercise in hot, humid climates. If this fluid and electrolytes are not replaced, the person can develop *Heat Exhaustion* and eventually, a life-threatening condition known as *Heat Stroke*.

As the body's organs and muscle tissue lose fluid, they draw this fluid from the fat cells and circulating blood causing the heart rate to increase in an effort to maintain blood pressure. Signs of *Heat Exhaustion* include:

- Excessive Sweating
- Mild Headaches
- Dizziness and/or confusion
- Loss of Appetite

If fluid and electrolyte levels are not rapidly replaced, the casualty's level of consciousness will continue to decline, leading to *Heat Stroke*. Signs of *Heat Stroke* include:

- Throbbing Headache
- Little or no sweating
- Vomiting
- Red skin which is dry and hot to the touch
- Loss of Consciousness (fainting)

Heat Stroke is a medical emergency. Without rapid intervention, the casualty may suffer irreversible brain and organ damage. The treatment for *Heat Stroke* in a hot field environment is referred to as '*rapid cooling*'. This is achieved by:

- Requesting assistance of a medical professional as soon as possible
- Moving the casualty to shade if possible
- Removing the casualty's clothing (except underwear)

- Pouring water over the casualty below the neck. Use as much water as possible (approx 40-80L)
- Medical professional to administer IV fluid

Prevention of Heat Disorders

Heat Exhaustion and *Heat Stroke* can be prevented by proper nutrition, hydration and periodic rest. As a guide, peacekeepers should rest for at least 10 minutes in every hour of prolonged physical activity. Drinking water is critical but alone, it is not enough, as water does not replace the electrolytes that are lost in perspiration.

UN personnel in high temperature environments are encouraged to consume constant water and oral rehydration solutions to ensure their body maintains a stable core temperature.

	Sodium (mg/L)	Potassium (mg/L)
Daily Intake*	2300	4700
Sweat	900	200
Water	0	0
ORS	3500	1500
Banana	1	290-540
Orange Juice	28	1784
salt chips	130	400
Pedialite	1000	750
Gatorade	440	120
Powerade	220	120
Coca Cola	136	0

Note: all units are approximate

Hypothermia

In some Mission areas, it may be possible for personnel to become severely hypothermic due to environmental conditions or prolonged sedentary outdoor duties when wet or exposed to high winds. In such cases, where the body temperature drops below 32°C, hypothermia can lead to collapse and death. Signs of mild *hypothermia* (36°C-32°C) are identified by:

- Shivering
- Grumbling (complaining)
- Mumbling
- Stumbling (tripping or having difficulty standing/walking)
- Fumbling (not able to hold or operate objects properly with your hands)
- Tumbling (falling or collapsing)

Treatment for *Hypothermia* includes:

- Removal from cold environment
- Removal and replacement of wet clothing
- Light physical activity (if safe to do so)
- Consuming warm liquid (e.g. tea or soup)

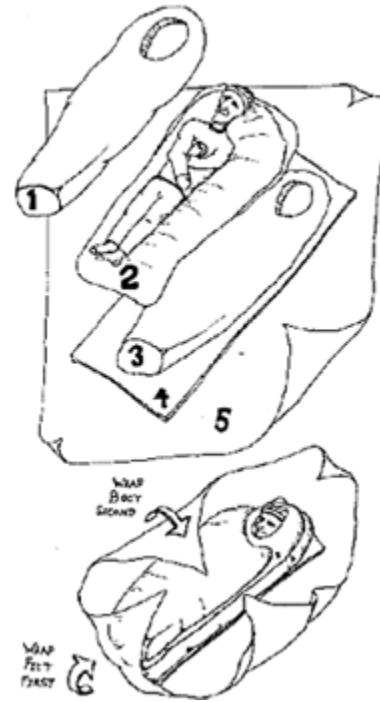
Severe Hypothermia

If action is not taken to correct mild hypothermia, the casualty's condition may continue to worsen, to the point that the casualty develops *Severe Hypothermia* (<32°C) which is characterized by a loss of consciousness. This severe condition should be treated by a *Hypothermia Wrap*.

A Hypothermia Wrap is intended to retain as much body warmth as possible to allow the casualty's natural heating mechanisms to restore core body temperature.

Casualty's should have any wet clothing replaced with warm natural fibers such as wool and should be wrapped in multiple layers of clothing and other insulation material including sleeping bags rain protective gear and tents or tarpaulins.

The Hypothermia Wrap should not be opened to check on the casualty therefore, the sharing of body warmth (a healthy person sharing the hypothermia wrap with the casualty), is not recommended as the constant opening and closing of the hypothermia wrap significantly reduces its effectiveness.



Notes

MODULE 9

CASUALTY MOVEMENT TECHNIQUES

Introduction

Under ordinary circumstances, moving a casualty is dangerous and should only be attempted by trained medical professionals. Unsafe casualty movement can cause injury to a casualty's unstable spine, increase uncontrolled bleeding and further injure the casualty. However, in some circumstances, movement of the casualty is necessary to prevent further critical injury to the casualty or to gain access to other critically injured casualty's.

By the end of this module you will be able to:

- a) **Demonstrate** safe technique for lifting heavy objects
- b) **Explain** the difference between routine, urgent and emergent movement
- c) **Demonstrate** one and two-person drag of a casualty
- d) **Demonstrate** 'Kings Throne' carry technique
- e) **Demonstrate** 'Hasty Harness' technique
- f) **Explain** the 'Firearm's Carry' technique

Safe Lifting Technique

Every year, thousands of paramedics and medical technicians suffer back injuries due to lifting and moving casualties. Many of these can be avoided by using proper technique and knowing your individual limits. When attempting to lift or drag a casualty, the *First-Aider* must ensure that they keep their own spine straight and lift using the large muscle groups of upper legs. Routine exercise and stretching will ensure that the First-Aider is most well prepared to lift heavy objects when needed. Rounding the shoulder's, failing to bend the knees, or over extending reach are some of the most common causes of injury when attempting to lift or move a heavy object such as an unconscious casualty.



Routine, Urgent and Emergent Movements

As mentioned, moving a casualty is not without risk to both the *First-Aider* and the casualty. For this reason, the *First -Aider* should always ask themselves, ‘Do I really need to move this casualty and if so, how important is it to move this casualty now?’ In most cases, the movement of the casualty should be supervised by the combat medic; however, a First-Aider may need to move a casualty in an emergency.

Movement of a casualty can be divided into three categories:

- I. *Emergency Movements* – these are movements that are immediately necessary to preserve the life of the casualty, or another person. This may include removing a casualty from a burning car or moving an unconscious casualty to gain access to another casualty who is not breathing. During Emergent Movements, the safety of the casualty’s spine, is considered secondary to the immediate threat to life, and is often undertaken by a single *First-Aider*.
- II. *Urgent Movements* – this includes circumstances where immediate movement is not necessary however, waiting for the full range of specialist personnel and/or equipment may be detrimental to the health of the casualty. Movements that fall into the ‘urgent’ category include movement of trauma casualties on flexible stretchers or other movement techniques where additional efforts are taken to immobilize the spine, often with multiple *First-Aiders* and limited equipment.
- III. *Routine Movements* – These movement techniques include moving casualties that are often stable, able to move themselves, or wait until full spinal immobilization procedures can be implemented by professional medical responders.

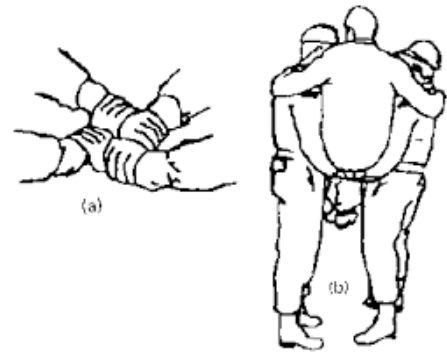
The Drag Technique

The drag technique is an emergency movement used by one or two First-Aiders to move a victim a short distance to safety. It provides minimal protection to the spine but allows for casualty movement with no equipment and limited rescuers. The drag technique is achieved by squatting behind the casualty, reaching under the casualty’s arms and grasping the casualty’s wrists. The First-Aider should lift with their legs while focusing on maintaining a straight back.



The Kings Throne Technique

The Kings Throne technique requires two First-Aiders to carry a conscious or semi-conscious casualty. It is achieved by linking wrists together to form a chair or 'throne' for the casualty to sit on. Again, attention should be taken to ensure that bending and lifting is carried out in a safe manner.



Hasty Harness

The Hasty Harness is an emergency technique that uses a 6.5m (22ft) loop of 1-inch tubular nylon webbing to form a rapid harness carry system for an unconscious casualty. It is achieved by placing the loop around the casualty's body and then looping up inside the legs and through the chest pieces as shown in the picture. The Hasty Harness can be used by one or two rescuers' and can be used to support winching or extrication by aircraft.



Fireman's Carry Technique

The *Fireman's Carry* enables a single rescuer to carry a casualty over a longer period than many of the dragging techniques. The Firearm's Carry takes practice to achieve safety and may require assistance of a second rescue to lift the casualty up onto the rescuer's shoulders.



UNITED NATIONS BUDDY FIRST AID COURSE COMPETENCY BASED ASSESSMENT MATRIX

COMPETENCY 1 Define the participant's role in providing first aid and the medical evacuation chain	Outcome (Pass/Fail)
Explain the term 'First-Aid' and define the role of a First-Aider	
State the various levels of qualification within pre-hospital emergency medicine	
Explain the "10-1-2 Doctrine" of emergency evacuation in the United Nations	
Explain the three phases of care as they relate to tactical medicine	
Define the levels of Medical Treatment Facilities within the UN Evacuation system	
COMPETENCY 2 Use the "SCENE-MARCH" acronym to prioritize treatments	
Explain the SCENE MARCH acronym (in appropriate language)	
Provide an Emergency Alert Message	
Explain the AVPU scale for assessing responsiveness	
State various techniques for controlling external hemorrhage	
COMPETENCY 3 Correctly apply an arterial tourniquet to control life threatening limb hemorrhage	Outcome (Pass/Fail)
Identify the parts of an arterial tourniquet	
Prepare and store the tourniquet effectively for one handed application	
Self-apply the tourniquet to the upper arm using one handed technique	
Apply a tourniquet to a casualty using two handed technique	
Apply an effective improvised windlass device.	
COMPETENCY 4 Correctly use conforming gauze dressing to control hemorrhage from high limb injuries not amenable to tourniquet placement.	Outcome (Pass/Fail)
Expose the injury by safely cutting away the casualty's clothing	
Apply direct pressure to control bleeding while preparing gauze	
Remove excess blood from wound using gauze or wound sweep (if necessary)	
Pack the wound cavity to the bone	
Apply direct pressure for 5-30 minutes	

COMPETENCY 5 Maintain a casualty's airway using positional techniques and manual stabilization	Outcome (Pass/Fail)
Explain the primary cause of upper airway compromise	
Demonstrate the 'Head Tilt/Chin Lift' technique on an unconscious casualty	
Demonstrate the 'Recovery Position' on an unconscious, breathing casualty	
Demonstrate the 'Sit Up and Forward' position on a conscious casualty	

COMPETENCY 6 Identify and seal open chest injuries with an occlusive dressing	Outcome (Pass/Fail)
Explain the signs and symptoms of an open chest wound	
Take immediate steps to seal the wound with a gloved hand or other occlusive material	
Prepare occlusive dressing and apply (preferably) after forceful exhalation of the casualty	
Monitor the casualty for signs of tension burping the seal as necessary	

COMPETENCY 7 Apply an emergency pressure bandage to support hemorrhage control	Outcome (Pass/Fail)
Open sterile packaging without contaminating the dressing pad	
Apply Emergency Pressure Bandage using 'V-wrap Technique'	
Apply Emergency Pressure Bandage using single-handed technique	
Apply Emergency Pressure Bandage to the head	
Evaluate distal circulation, sensation, motor function (CSM)	
Reassess wound and CSM every 5- minutes	

COMPETENCY 8 Identify and treat a casualty with heat disorders	Outcome (Pass/Fail)
Discuss the normal heat range of the body	
State the signs and symptoms of heat exhaustion and heat stroke.	
Discuss the importance of a hydration and electrolyte replacement	
Treat a casualty with Exertional Heat Stroke using rapid cooling techniques	
Identify and treat a casualty with severe hypothermia	

COMPETENCY 9 Demonstrate urgent and emergency casualty movement techniques	Outcome (Pass/Fail)
Demonstrate safe technique for lifting heavy objects	
Explain the difference between routine, urgent and emergency movements	
Demonstrate one and 2- person drag of a casualty	
Demonstrate 'Kings Throne' carry technique	
Demonstrate 'Hasty Harness' technique	
Explain the 'Fireman's Carry' technique	

UNITED NATIONS BUDDY FIRST AID COURSE TRAINEE ASSESSMENT TOOL

Trainee's Family Name		Date	
Trainee's Given Names		ID Number	
Group/Unit/Organization			
Venue/Location			
Initial Assessment		Re-test	
(circle correct)			

Instructions for Instructor/Evaluator:

- This form is to be completed by the assessing Instructor
- Choose one scenario from the options listed on the reverse page
- Insert a "P" in the box for criteria that are successfully demonstrated
- Insert an "F" in the box for criteria that are not successfully demonstrated
- Trainer to sign and date bottom of form

Scenario Number:		
Ref	Assessment Criteria	Outcome
a.	Evaluates SCENE, uses cover and applies body substance isolation including gloves	
b.	All life-threatening bleeding is controlled within 2-minutes	
c.	Identifies and treats immediate threats to life within 5-minutes	
d.	Conducts a thorough head-to-toe examination of the casualty including the back	
e.	Monitors the casualty and repeats and rechecks interventions every 5-minutes	
f.	Initiates a call for assistance within 10-minutes	

Instructors Comments:

Instructors Details:

Instructors Family Name		ID Number	
-------------------------	--	-----------	--

UNITED NATIONS BUDDY FIRST AID COURSE

Scenario Descriptions

1. During a daily stand-down inside your base camp a 32yo female soldier is inside a building that is struck just now, by a large mortar round. The casualty staggers out of the building with a far gaze and is not responding to *voice* commands. The casualty has a large pool of blood forming on her uniform at stomach height and is holding her partially amputated left forearm. The casualty has a RR of 24/min.
2. During a roadside ambush, a 28yo male soldier sustains fragmentation wounds to his chest, abdomen and upper leg after RPG detonates near his position. His leg is *bleeding* steadily. The casualty is laying supine in full PPE and displays no signs of *breathing* until the airway is opened; at which point he has shallow respirations of 28. Casualty is *Unresponsive*.
3. During an assault operation on an enemy position, a 23yo soldier sustains a GSW in the next room. You are the second to enter the room after the shooting and see that the first soldier has engaged and is covering one attacker. Your colleague is in a seated position with a GSW to the face and a second GSW to the shoulder that is *bleeding severely*. He is screaming in pain but is *responsive* to your commands, has full muscle tone and stable spine).
4. There has just been a rocket attack on your compound. There appears to be no more incoming for now. Three casualties are brought into a shelter where you are (each casualty is wearing their own IFAK):

Casualty #1 – a 27yo male soldier who is unresponsive with *severe bleeding* from the abdomen and a gaping wound above the knee when airway is opened, casualty breaths.

Casualty #2 – a 14yo local national boy who worked for the camp’s life support contractor is *responsive* to pain with a large *severe* wound on his lower arm and a medium sized fragment wound through his lower chest on the front and rear.

Casualty #3 – a 36yo female staff member who is alert and in severe pain. She has what appears to be a fractured femur with severe bleeding.
5. A 42yo male senior non-commissioned officer grasps his chest in the middle of a briefing and falls to the floor. He says he cannot breathe before falling *unresponsive* with no signs of *breathing and no pulse*.
6. A 25yo female soldier has sustained a severe ankle injury during a parachute landing. Upon your arrival, the casualty is pale and responsive to voice. There are no signs of external bleeding though pain and instability are identifiable in the pelvis during head-to-toe survey. Casualty has RR 22.

Assessment Guidelines

- Trainee should not see role players or scene until scenario begins
- Trainee should be briefed on incident and general scene but not casualty’s condition
- Interaction between the assessor and trainee should be limited to stimulus required to aide in decision making (e.g. “Bleeding has stopped”, “No chest rise”)
- Scenario should be stopped immediately in case of a critical failure, and feedback provided.

UNITED NATIONS BUDDY FIRST AID COURSE COURSE TRAINING RECORD

Date		Instructor	
Venue/Location		Safety Officer	
Group/Unit/Organization			

Line Ref	FAMILY NAME	Given Name	ID Number	Unit/Org	Gender M/F	Learning Outcome													
						1	2	3	4	5	6	7	8	9	10				
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

SUMMARY OF LOGISTICS

(for 10 Trainees)

Ref.	Item Description	Quantity	Comments
i	Nitrile protective surgical gloves, box of 50	2	
ii	Combat Application Tourniquet (CAT)	10	
iii	Rubber tube tourniquet	10	
iv	4m roll of conforming gauze dressing	10	
v	Emergency Pressure Bandage	10	
vi	Chest Seal Occlusive Dressing	10	
vii	Oral Rehydration Solution (ORS)	10	
viii	500ml of moulage training blood	10	
ix	Extremity Wound Manikin (optional)	2	
x	Torso Abdominal Wound Manikin (optional)	2	
xi	Torso Chest Wound Manikin (optional)	2	
xii	Torso CPR Manikin (optional)	2	
xiii	80kg Human Form Trauma Manikin	2	
xiv	20L Water Can full of water	2	
xv	Sleeping Bag	2	
xvi	Poncho/Rain Cover	2	
xvii	Tarpaulin or ground sheet	2	
xviii	Woollen Pullover/Jumper	2	
xix	Whiteboard	2	
xx	Easel	2	
xxi	Dry Erase markers (black, red, blue, green)	2	

List of Acronyms

ALS	Advanced Lifesaving Support
AVPU	Alert, Voice, Pain, Unresponsive
BFAC	Buddy First Aid Course
BSI	Body substance isolation
CAT	Combat Application Tourniquet
CSM	Circulation, Sensation, Motor function
DCS	Damage Control Surgery
EAM	Emergency Alert Message
EMT	Emergency Medical Technician
EPB	Emergency Pressure Bandages
EPD	Emergency Pressure Dressing
IFAK	Individual First Aid Kit
LoR	Level of Responsiveness
MARCH	Massive Bleeding, Airway, Respirations, Circulations, Hypothermia
MERT	Medical Emergency Response Team
MTF	Medical Treatment Facility
POI	Point of Injury
PPE	Personal Protective Equipment
SCENE	Safety, Cause, Environment, Number of Casualties, Extra resources
UN	United Nations
UNBFAC	United Nations Buddy First Aid Course

Bibliography

- a) United Nations (2015). *Uniting Our Strengths For Peace - Politics, Partnerships and People: Report of the High-level Independent Panel on United Nations Peace Operations*. New York, United Nations.
- b) A/70/357-S/2015/682 – *Official Records of the General Assembly, Seventieth Session: The future of United Nations peace operations: Implementation of the recommendations of the High-level Independent Panel on Peace Operations*, New York, United Nations.
- c) United Nations (2015). *Medical Support Manual for United Nations Field Missions (3rd Edition)*. New York, United Nations
- d) A/C.5/69/18 – *Official Records of the General Assembly, Fifth Committee, Sixty-ninth Session: Manual on Policies and Procedures Concerning the Reimbursement and Control of Contingent-Owned Equipment of Troop/Police Contributors Participating in Peacekeeping Missions (COE Manual)*. New York, United Nations.
- e) Kennedy, K. (2012) *Standard Operating Procedure - Planning for Training of Trainers Courses*, New York, United Nations (UNDPKO)
- f) Israel Defence Force. *Critical Minutes: Military Life Saver Instructor Handbook*, Tel Aviv
- g) Bloom, B. *Blooms Taxonomy of Learning*, www.bloomstaxonomy.org/ [Accessed 2017]
- h) Joint Trauma System (JTS) – Committee on Tactical Combat Casualty Care (CoTCCC). *Tactical Combat Casualty Care Guidelines for All Combatants 31 January 2017* [online]. Available at: www.cotccc.com/all-combatants/ [Accessed 2017]
- i) Mosby Jems/Elsevier (eds) (2011). *PHTLS: Pre-Hospital Trauma Life Support – Military Edition*. St. Louis, MO.
- j) O’Kelly, A. De Mello, W. et.al (2017). *Remote & Austere Medicine – Field Guide for Practitioners*, Malta, College of Remote and Offshore Medicine.
- k) Ruyffelaere, Farria, D & Wyper, R (2012). *UN Security Officers’ Emergency Trauma Bag (ETB) First Responder Manual (Rev. 2)*. New York, United Nations (UNDSS).