



Tactical Emergency Medical Support (TEMS) Protocols

Prehospital Emergency Medical Care Protocols

April 2009



Homeland
Security

TABLE OF CONTENTS

Foreword	4
Using This Guide.....	7
TEMS Acronyms.....	11
General Considerations.....	15
Medical Threat Assessment (MTA).....	17
Body Substance Isolation (BSI)	24
Mass Casualty Incident (MCI) Management	26
Evacuation Considerations.....	29
Tactical Protocols	31
Abdominal Injuries	33
Altered Mental Status	37
Amputation	42
Blast Injury.....	46
Burns	51
Chest Trauma	58
Crush Injury.....	62
General Hemorrhage/Shock	67
Head, Neck, and Face Injuries	73
Orthopedic Injuries.....	79
Force Health Protection Protocols.....	85
Altitude-Related Disorders.....	87
Cellulitis and Lymphangitis.....	91
Dehydration	94
Dental Emergencies.....	98

Dermatitis	106
Ear Infections.....	111
Environment.....	114
Eye Care	117
Field Sanitation	121
Gastrointestinal	133
Headache.....	138
Hydration and Work/Rest Cycles	140
Hyperthermia.....	142
Hypothermia and Cold Injuries.....	146
Kidney Stone	152
Rhinitis/Sinusitis	154
Sore Throat (Adult Pharyngitis).....	158
Respiratory Infections	162
Urinary Tract Infection (UTI)	166
Waterborne Injuries.....	168
Appendices.....	171
Appendix 1: Pain Management Drugs	173
Appendix 2: Antibiotics.....	176
Appendix 3: IV Drip Chart.....	178
Appendix 4: Glasgow Coma Scale.....	179
Appendix 5: Hypothermia Prevention After Traumatic Injury...	180
Appendix 6: IntraOsseous Needle Procedure.....	182
Appendix 7: Cricothyrotomy Procedure	184
Appendix 8: Needle Thorocostomy Procedure	187
Appendix 9: Escharotomy Procedure	189

Appendix 10: Dislocated Finger and Shoulder Reduction Procedures.....	193
Appendix 11: Subungal Hematoma	197
Appendix 12: String Trick (ring removal).....	199

FOREWORD

These protocols are issued by the Office of Health Affairs of the Department of Homeland Security (DHS). These protocols are for the use of licensed Emergency Medical Service (EMS) providers authorized to provide medical care in the Department. The protocols contained within this text are the “Standard of Care” within those areas regulated under DHS.

These protocols outline and define the expected level of care that should be administered to patients treated by approved DHS EMS providers. These combined protocols create a dynamic document that must be applied relevant to individual patient presentations and situations. An individual patient may require the application of a single protocol, a portion of a protocol, or a combination of several protocols, in order to adequately treat the patient’s condition. It is the expectation of DHS OHA that providers utilize the protocols, patient assessment, and clinical findings cooperatively to establish a treatment plan for each patient.

These protocols provide for patient care capabilities identified as acceptable protocols by the Office of Health Affairs and approved for adoption by DHS agency EMS programs. Program Medical Director approval and approved training and skills testing are required for these protocols to be adopted and available for use. Specific components of the protocols, therefore, may not be available to all DHS personnel. The scope of the medication and equipment is defined by operational capabilities and are approved by the Program Medical Director.

Tactical medical care providers are expected to provide pre-hospital care in dangerous environments with little or no support when operational security is a consideration. They may also encounter situations where communication is not assured and evacuation may be delayed significantly. The Tactical Emergency Medical Support (TEMS) Field Guide is intended to supplement the Emergency Medical Technician (EMT) and/or paramedic's protocols in the areas of tactical emergency medical care and force health protection.

The driving factors in TEMS are three-fold:

1. Mission
2. Overall Team Health
 - a. Self-care
 - b. Buddy care
 - c. Team care
3. Protection of:
 - a. Team members
 - b. Victims/Hostages
 - c. Bystanders
 - d. Perpetrators

The care provider in the tactical situation may be forced to improvise and adapt his or her medical procedures based on situational factors in order to provide care for and prepare the patient for evacuation to a safer environment. This guide, in conjunction with the best practices learned in standard EMT/

paramedic protocols, is intended to support the care provider's efforts to provide pre-hospital life support until the patient can be transferred and given definitive care.

DISCLAIMER

The TEMS field guide is intended to serve only as suggested best practices. Medical providers are strongly encouraged to follow the protocols contained in the TEMS field guide and should consider doing so in whole or in part if his/her training or experience is sufficient to implement the suggested best practices effectively.

USING THIS GUIDE

Format of TEMS Guide

The TEMS guide is divided into two distinct areas of emergency medical care:

1. Tactical Protocols (amputation, blast injury, etc.)
2. Force Health Protection Protocols (dental care, water treatment, etc.)

Three Stages of Tactical Care

The TEMS guide uses the recommendations from the Tactical Combat Casualty Care (TCCC) guide to establish three stages of combat patient care in a tactical environment. Therefore the TEMS guide uses the same three stages of care as TCCC, which describes them as:

1. **Care Under Fire** – The care rendered at the scene of the injury while both the medic and the patient are under hostile fire. The risk of additional injuries being sustained at any moment is extremely high for both patient and rescuer. Available medical equipment is limited to that carried by each operator and the medic.
 - The type of care carried out in this stage includes life-threatening hemorrhage control through direct pressure and tourniquet use.
2. **Tactical Field Care** – The care rendered once the patient and his or her unit are no longer under hostile fire. It also applies to situations in which an injury has occurred on

a mission, but hostile fire has not yet been encountered. Medical equipment is still limited to that which is carried into the field by mission personnel. Time to extraction varies from minutes to hours.

- Type of care carried out in this stage includes basic airway management, establishing IV access, fluid resuscitation, hypothermia prevention, and administering pain management drugs and antibiotics.
- All Tactical Protocols in this stage will use the mnemonic XABC to address the four most basic components of care in order of importance:
 - X – eXsanguinating hemorrhage care
 - A – Airway management
 - B – Breathing
 - C – Circulation

3. **Tactical Evacuation Care** – The care rendered while the patient is being evacuated by an aircraft, ground vehicle, or boat to a high echelon of care. Any additional personnel and medical equipment prestaged in these assets will be available during this stage.

- Type of care carried out in this stage includes advanced airway management and advanced injury specific treatments like using a pneumatic antishock garment for pelvic fractures.

Designation of Three Stages of Care

Tactical Protocols have specific medical actions that are carried out in all three of the TCCC stages of care. Each action is designated into one of the three stages as to when it should be carried out. It is assumed that all care is cumulative, whereas measures of care rendered in the Care Under Fire stage and Tactical Field Care stage will also be done in the Tactical Evacuation Care stage. Force Health Protection Protocols should only be used in the Tactical Field Care stage and the Tactical Evacuation Stage.

Skill Level of Care Provider

The medical procedures described in this field guide are divided into two levels of provider abilities: Basic Life Support (BLS) and Advanced Life Support (ALS). The medical procedures in the protocols are broken into these two levels of care. **It is assumed that all care is cumulative in that actions that occur under “Care Under Fire” or BLS may also be carried out by an ALS provider.**

General Considerations

Information contained in the three sub-sections - Body Substance Isolation (BSI), Mass Casualty Incident (MCI) Management and Evacuation Considerations - apply to the suggested courses of actions or relevant considerations of the EMT/Paramedic in most medical response situations. The information and practical guidance provided in these sections align with the protocols and are complimentary to the individual judgment of the EMT/paramedic.

Appendices

Appendices at the end of the TEMS guide are intended to provide directional information for specific procedures required by the protocols, such as directions and a diagram to assist in performing a needle thorocostomy for respiratory trauma. Appendices also provide dosing information for pain management drugs and antibiotics.

TEMS ACRONYMS

ABC	Airway, Breathing, Circulation
ACD	Allergic Contact Dermatitis
AED	Automatic External Defibrillator
AHA	American Heart Association
ALS	Advanced Life Support
AMS	Altered Mental Status
BID	Twice Daily
BLS	Basic Life Support
BM	Bowel Movement
BP	Blood Pressure
BSA	Body Surface Area
BSI	Body Substance Isolation
BVM	Bag Valve Mask
CNS	Central Nervous System
CO	Carbon Monoxide
CPR	Cardio Pulmonary Resuscitation
CSF	Cerebrospinal Fluid
CVAT	CostoVertebral Angle Tenderness
DAE	Dysbaric Air Embolism
DOE	Dyspnea on Exertion
EAC	External Ear Canal
ET	Endotracheal
ETT	Endotracheal Tube
GI	Gastrointestinal
GIC	Glass Ionomer Cement
GU	Genito Urinary
HACE	High-Altitude Cerebral Edema
HAPE	High-Altitude Pulmonary Edema
HNF	Head, Neck, and Face
HR	Heart Rate
ICD	Irritant Contact Dermatitis

IO	Intra Osseous
IM	Intramuscularly
IV	Intravenous
Kg	Kilogram
LR	Lactated Ringer's (intravenous solution)
LSI	Life Saving Intervention
MCI	Mass Casualty Incident
MDH	Metered Dose Inhaler
Mg	Milligram
mL	Milliliter
MS	Mental Status
NC	Nasal Cannula
NG	Naso Gastric
NP	Nasopharyngeal Airway
NS	Normal Saline (intravenous solution)
NSAID	Non-Steroidal Anti-Inflammatory Drug
N/V	Nausea/Vomiting
OP	Oropharyngeal airway
OTC	Over the Counter
PASG	Pneumatic Antishock Garment
PHF	Potentially Hazardous Food
PIP	Proximal Interphalangeal
PPE	Personal Protective Equipment
PPM	Parts per Million
PRN	As needed
PVT	Pulseless Ventricular Tachycardia
PO	By Mouth
QD	Every Day (Daily)
QID	Four Times Daily
q6H	Every Six Hours
R/O	Rule Out
RR	Respiratory Rate
SALT	Sort, Assess, Life Saving Intervention, Treatment and/or Transport

SBP	Systolic Blood Pressure
SC	Subcutaneously
SL	Sublingually
SQ	Subcutaneous
STD	Sexually Transmitted Disease
TCCC	Tactical Combat Casualty Care
TEMS	Tactical Emergency Medical Support
TBI	Traumatic Brain Injury
TID	Three Times Daily
URI	Upper Respiratory Infection
UTI	Urinary Tract Infection
UV	Ultraviolet
VF	Ventricular Fibrillation

GENERAL CONSIDERATIONS

- Medical Threat Assessment
- Body Substance Isolation
- Mass Casualty Incident Management
- Evacuation Considerations

MEDICAL THREAT ASSESSMENT (MTA)

The MTA is intended to document resources and does not imply recommendations for operational capabilities

Review

- The MTA is a detailed pre-mission report that provides an analysis of the medical aspects and impacts of a tactical operation
- Preparation of the MTA is a key responsibility for tactical EMS providers
- Preparation of the MTA is vital to mission planning and operational risk management
 - The MTA should be performed well in advance of the proposed operation, if possible
 - Data gathering for the MTA must be conducted in a manner that ensures Operational Security (OPSEC)
- Tactical EMS personnel are responsible for providing the mission commander and/or team with a briefing based on the MTA
- The MTA should be mission-specific in design
- Many agencies use a standard form for MTA

Elements of the Medical Threat Assessment

- Type of operation and operational objectives

- Name of MTA preparer, assigned tactical EMS provider(s) and backup tactical EMS provider(s)
- Location
 - Descriptive
 - Map
 - Aerial photographs
 - Longitude/latitude, Universal Transverse Mercator (UTM) grid coordinates
 - Local day/night visibility
 - Time of sunrise and sunset
 - Time of moonrise and moonset
 - Local roads and traffic patterns
 - Type of terrain (urban, industrial, forested, scrub, density, etc.)
- Weather Conditions
 - Based on climatic data, long and short range forecasts and direct observation
 - Climatic data and long-range forecasts are used for advanced planning and extended operations
 - Short-range forecasts and direct observation are used immediately before and during the operation
 - Data should include:
 - Ambient temperature
 - Humidity

- Wind speed, direction, and gusts
 - Wet bulb globe temperature or heat index
 - Data for advanced planning, long term operations
 - Typical climatic patterns and conditions for a given locale
 - Average temperatures, humidity, precipitation
 - Wind patterns (typical speed, direction)
 - Hazards (probability of severe weather, avalanche risk, etc.)
 - Temperature extremes
 - Current weather data and observations are vital when operations involve significant fire hazards and possibility of HAZMAT exposure
 - Measures to be taken to reduce weather threat risk to personnel
- Asset Staging
 - Fixed Facility Medical Assets
 - Location of nearest hospital emergency department
 - Location of nearest trauma center
 - Location of nearest burn unit
 - Data must include:
 - Level of emergency care available
 - Quickest ground route to facility
 - Alternate ground routes to facility

- Contact telephone numbers of facility
- Aeromedical Assets (MEDEVAC)
 - Type of aeromedical assets available
 - Name of provider agency
 - Contact telephone numbers
 - Radio frequency of aircraft/dispatch
 - Patient-carrying capacity
 - Appropriate to decrease response time by pre-staging aeromedical assets nearby?
 - Identification of landing zones (LZ) and alternate LZ
 - Obtain GPS coordinates for primary LZ and alternate LZ
 - Identify ground surface and slope at LZ
 - Identify any hazards present near the LZ
 - Providing agency policy inquiries; does agency policy permit:
 - Flight over tactical hot zone?
 - Landing in the tactical hot zone?
 - Tactical team weapons on board?
 - Transport of HAZMAT-exposed patients/personnel?
 - Transport of prisoners?
- Ground Medical Assets
 - Local EMS providers

- Type available and provider level of training
 - Proposed location staging of local EMS assets
 - Contact telephone numbers
 - Radio operating frequencies
 - Location and staging of local EMS assets
 - Fire/Rescue Assets as indicated by nature of operation
 - Type of specialized teams available
 - Fire suppression, HAZMAT
 - Heavy technical rescue teams
 - Urban search and rescue (USAR) or building collapse response teams
 - Location of staging area for fire/rescue assets
 - Contact telephone numbers
 - Radio operating frequencies
 - Public works and infrastructure
 - Utility (electric and gas) companies
 - Contact telephone numbers
- Specific Threat Assessment
 - Suspected weapons threats
 - Firearms and sharp-edged weapons
 - Booby traps
 - Explosive devices

- Potential animal and plant threats
 - Infectious disease risk, indigenous or operation specific
 - Indigenous wild animal threats (poisonous snakes, etc.)
 - Domestic animal threats (pet or guard dogs, exotic animals, etc.)
 - Poisonous or obnoxious plants (poison ivy, stinging nettles)
 - Location of nearest anti-venom banks
 - Contact telephone numbers
 - Identification of animal control agency
 - Contact telephone numbers
- Additional Medical Considerations
 - Are language interpreters needed and available?
 - Contact information for interpreter(s) on-scene or remote
 - Potential for pediatric patients
 - If hostages involved, do the hostages have any medical conditions and/or special needs?
 - Provisions for mass casualty management
 - Medical support for agency service animals (dogs, horses) if utilized
 - Location of nearest capable veterinary hospital

- Name and contact information of local veterinarian
- Fire suppression and HAZMAT provisions
 - Fire/rescue staging and preparation.
 - Identification of potential HAZMAT risks
 - HAZMAT decontamination plan (protection from pepper spray, tear gas, etc.)
 - Separate plan for team, suspects and incidental bystanders
 - Utilization of local HAZMAT assets
- Communications Plan
 - Contact information for key personnel
 - Contact information for hospitals, aeromedical assets, EMS providers, fire/rescue services, utilities
 - Radio frequencies of responding agencies
 - Backup communication plan for communications failures

BODY SUBSTANCE ISOLATION (BSI)

Use “Standard Barriers” for every response if feasible. If two or more of the “Symptoms Requiring Extra Measures” listed below exist, use “Extra Measures” along with “Standard Barriers” if feasible. Extra measures are intended to prevent the spread of highly transmissible infections/pathogens.

Symptoms Requiring Extra Measures – Two or more may indicate need for “Extra Measures” listed below.

- Fever greater than 102 °F (38.9 °C)
- Bleeding from gums or nose
- Yellow eyes, skin, or tongue
- Small red or purple spots on palate, throat, mouth, or anywhere on body
- “Bloodshot” eyes
- Painful, goose-egg shaped, or bruised appearing lymph nodes
- Insect bites (fleas, ticks, mosquitoes)
- Any report of “pox” or “poxlike” skin rash or lesion
- History of exposure to sewage, body fluids, animals (dead or alive), prior illness
- Illness progresses rapidly over a period of less than three days
- Bloody stools, black “tarry” stools, or vomiting of blood
- Report of a “positive tourniquet test” or petechiae
- If one or more patients present with same symptoms

Standard Barriers (if feasible)

- Non-Latex Gloves (always)
 - If patient is not allergic, may substitute latex gloves
- N95 Masks (as required)
 - If airborne or highly contagious droplet pathogen such as tuberculosis is suspected, wear high-efficiency particulate air (HEPA) respirator if available
- Gowns (as required)
- Eye protection and face shield
- Hand washing with soap and water or use of alcohol based hand cleaners

Extra Measures (if feasible)

- Use all standard barriers listed above and put a surgical mask or oxygen mask on the patient
- Contact Medical Officer to report symptoms
- Put patient downwind of all personnel
- Minimize the number of people that treat patient
- Decontaminate with sterilizing solutions/wipes all items that came into contact with the patient
- Talk with appropriate medical resource about post-exposure prophylaxis for oneself and anyone who might have been exposed to patient

MASS CASUALTY INCIDENT (MCI) MANAGEMENT

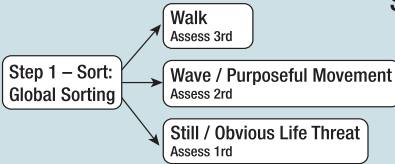
The mass casualty incident (MCI) triage system described below is intended to be used when many patients require pre-hospital medical treatment. It allows for an organized approach to treatment resulting in the employment of a triage prioritization system. MCI guidelines are not to be confused with Evacuation Considerations shown on page 29 and throughout the protocols. Evacuation considerations are used to prioritize certain patient conditions in order to make a decision on whether or not to evacuate a patient and at what level of urgency.

Triage is a process in which a group of patients is categorized according to their priority of need for care. In an MCI, triage is done by evaluating both the urgency of a patient's required care and the potential for a patient's survival.

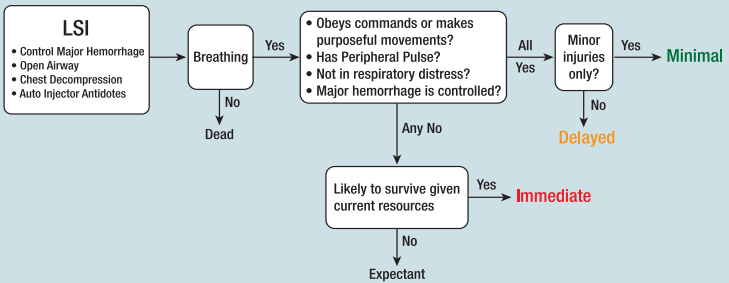
Principles of Triage

- Accomplish the greatest good for the greatest number of patients.
- Employ the most efficient use of available resources.
- Locate **IMMEDIATE** patients (**Red Tag**) as soon as feasible.
- Limit treatment to performing airway management and hemorrhage control during triage process.

SALT Mass Casualty Triage



Step 2 – Assess: Individual Assessment



Triage Categories

MINIMAL (Green Tag)

- Also referred to as “walking wounded”.
- Example: Small burns, lacerations, abrasions.
- Typically able to care for themselves with self-aid or buddy aid and can still be employed for mission requirements (e.g., scene security).

DELAYED (Yellow Tag)

- May need surgery (general condition permits a delay in surgical treatment without unduly endangering life or limb).
- Example: Patients with no evidence of shock, potential large soft tissue wounds, fractures of major bones, intra-abdominal or thoracic wounds, or burns to less than 20% of total body surface area.

IMMEDIATE (Red Tag)

- Patients who require immediate life-saving intervention (LSI) and/or surgery. If medical attention is not provided, the patient will die.
- Example: Hemodynamically unstable patients with airway obstruction, chest or abdominal injuries, massive external bleeding, or shock.

EXPECTANT (Grey Tag)

- Patients in this category have wounds that are so extensive that even if they were the sole patient and had the benefit of optimal medical resources, their survival would be highly unlikely.
- Example: Patients with penetrating or blunt head wounds and those with absent radial pulses.
- Should not be neglected. Provide comfort measures, pain medications, if feasible. Re-triage as appropriate.

DEAD (Black Tag)

- Patients in this category are considered deceased. Only local guidelines can be used to declare a patient dead.
- Example: Decapitation or decomposition

*In civilian EMS tags, grey and black tags are interchangeable

EVACUATION CONSIDERATIONS

All protocols highlight certain conditions that require different levels of expediency in evacuation. Evacuation considerations are used to prioritize certain patient conditions in order to make a decision on whether or not to evacuate a patient and at what level of urgency (i.e., is air evacuation needed?). The TEMS guide uses the following established levels of evacuation urgency:

Code*	Category	Description
A	Urgent	Patients whose condition will probably deteriorate without significant intervention that can be offered quickly. These patients need evacuation within two hours if survival is to be expected.
B	Urgent Surgical	
C	Priority	Patients who have serious injuries but who are not likely to deteriorate within the next four hours.
D	Routine	Patients with injuries/illnesses that are not likely to deteriorate in the next 24 hours.
E	Convenience	Those patients that have minor injuries or illnesses.

* Military evacuation precedence code, with A being the highest priority.

Documentation. Patients should be evacuated with the locally used Information Transfer Form when feasible. If the form is unavailable, record information directly on patient by any available means. Form will include, but not be limited to the following:

- Name, Age, Sex

- Vital signs
- Patient History:
- Physical examination findings
 - **S**igns and symptoms
 - **A**llergies
 - **M**edications
 - **P**ast medical/surgical history
 - **L**ast meal consumed (time and contents)
 - **E**vents preceding onset
- Treatment performed
- Patient's response to treatment

TACTICAL PROTOCOLS

- Abdominal Injuries
- Altered Mental Status
 - Diabetic
 - Seizures
 - Combative Patient
- Amputation
- Blast Injury
 - CNS
 - Ear
 - GI
 - Lung
- Burns
 - Smoke Inhalation
 - Eye Burns
 - Electrical Burns
 - Electro-Muscular Disruption (Taser™) Treatment
 - Circumferential Burns
- Chest Trauma
- Crush Injuries
- General Hemorrhage/Shock
 - Tourniquets
 - Wound Packing
 - Bandages and Dressing
 - Hemostatic Agents
- Head, Neck, and Face Injuries
- Orthopedic Injuries

ABDOMINAL INJURIES

Review of Injury

- Abdominal injuries are caused when a penetrating or blunt force is applied to the abdominal area. Patient often goes into shock.

Symptoms

- Witnessed blunt force trauma or penetrating force trauma to abdomen
- Abdominal pain
- Abdominal bruising
- Back pain
- Shoulder pain

Call for evacuation needs as soon as the need is determined

Care Under Fire

- Follow #1-#5 TCCC Care Under Fire guidelines shown on back cover
- Stop *exsanguinating* external hemorrhage if tactically feasible
 - Direct patient to control hemorrhage by self-aid if able

Tactical Field Care

BLS

- Patients with altered mental status should be disarmed immediately
- Control **eX**sanguinating hemorrhage
 - Quick wound packing
 - Pressure with any method available
- Perform **A**irway management for unconscious patient
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Place patient in recovery position
- Manage **B**reathing
- **C**irculation: control all sources of hemorrhaging from penetrating wound
 - Do not move or remove impaled object
 - Apply direct pressure to entrance and exit wounds
 - Consider using hemostatic agents (refer to pg. 72)
 - Apply four-sided occlusive to entrance/exit wounds if object is not in the way
 - Perform infection control measures
 - For eviscerations, do not push bowels back in body cavity
 - Cover area with saline moistened sterile dressing
- Perform hypothermia prevention measures (refer to Appendix 5 on pg. 146)

- If prolonged evacuation, administer oral fluids if patient is conscious and can swallow
- Resuscitation for victims of penetrating trauma who have no pulse, no ventilations, and no other signs of life will not be successful and should not be attempted
- Administer pain management drugs (refer to Appendix #1 on pg. 173)

ALS

- Initiate IV fluid therapy with Hextend or NS
 - Large Bore IV
 - Aim for SBP of 90, or normal mentation
 - Limit 1000 mL of Hextend or 2000 mL of NS if treating an uncontrolled hemorrhage
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
- Administer antibiotics for any open wound (refer to Appendix #2 on pg. 176)

Tactical Evacuation Care

BLS

- Provide oxygen
- If no other indications for spinal immobilization, it is not necessary for patients with penetrating trauma

Evacuation Considerations

- Urgent evacuation for symptoms of hemorrhagic shock (refer to pg. 29)

Other Considerations

- None

ALTERED MENTAL STATUS

Review of Injury

- Acute behavioral changes can result from traumatic head injury, metabolic and endocrine disease processes, seizures, combat stress disorders, and poisoning. For acute combativeness, agitation, or violent behavior where the patient needs to be controlled for mission effectiveness, ALS-trained personnel are to consider sedation (see Combative Patient treatment listed below).

Symptoms for AMS caused by:

Diabetic episode	Seizures	Combative Patient
History of diabetes Blood glucose <70 hypoglycemia Blood glucose >300 hyperglycemia	Witnessed seizure History of seizures Recent head trauma Evidence of CNS infection	Confusion/ disorientation Aggressive behavior

Call for evacuation needs as soon as the need is determined

Care Under Fire

- Follow #1-#5 TCCC Care Under Fire guidelines shown on back cover
- Stop *exsanguinating* external hemorrhage if tactically feasible
 - Direct patient to control hemorrhage by self-aid if able

Tactical Field Care

BLS

- Patients with altered mental status should be disarmed immediately
- Control **eX**sanguinating hemorrhage
 - Quick wound packing
 - Pressure with any method available
- Perform **A**irway management for unconscious patient
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Place patient in recovery position
- Manage **B**reathing
- **C**irculation: control all sources of hemorrhaging that could have been sustained during AMS episode
 - Bandages
 - Wound packing (refer to pg. 71 for procedure)
 - Hemostatic agents (refer to pg. 72 for procedure)
- Perform hypothermia prevention measures (refer to Appendix #5 on pg. 146)
- Treat any traumatic injuries that could have been sustained during AMS episode
- For Hypoglycemia
 - If patient can protect airway, apply oral glucose on inside of cheek until AMS is resolved

- For Hyperglycemia
 - Give oral fluids if patient is conscious and can swallow
- For Seizures
 - Avoid trauma to patient during seizures
 - If seizures are accompanied by fever, consider meningitis and urgent evacuation
 - Place oral glucose gel sublingually to treat for possible hypoglycemia

ALS

- For Hypoglycemia
 - If situation allows IV access, administer Dextrose 50% (D50), 25 grams IV
 - If refractory 5+ minutes, repeat once
 - If IV access cannot be obtained, administer Glucagon, 1 mg IM
 - If refractory 5+ minutes, repeat once
- For Hyperglycemia
 - Initiate IV fluid therapy with NS – 1 liter of NS over 30-60 minutes followed by NS @ 150 mL/hr
 - Large Bore IV
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)

- For Seizures
 - If situation allows IV access, administer Diazepam (Valium), 5 mg IV slow
 - If refractory, repeat every 5 minutes to a maximum total dose of 20 mg
 - If IV access cannot be obtained, administer Midazolam (Versed), 5 mg IM
 - If refractory after 5 minutes, repeat once
- For a combative patient that is a danger to oneself or others
 - Option 1: administer Lorazepam (Ativan), 1-2 mg, IVP (or Valium 5 mg IVP). May repeat once.
 - Option 2: administer Haloperidol (Haldol), 5 mg, IVP (patient must be monitored). May repeat once.

Tactical Evacuation Care

BLS

- Provide oxygen

ALS

- If airway obstruction or impending airway obstruction and other measures are unsuccessful, consider advanced airway management device, such as:
 - Approved supraglottic device
 - Endotracheal intubation
 - Surgical cricothyrotomy (refer to Appendix #7 on pg. 184)

Evacuation Considerations

- Urgent evacuation for all acute behavioral changes

Other Considerations

- Consider AMS as a result from chemical or nerve agents

AMPUTATION

Review of Injury

- A traumatic injury is one where an extremity is partially or completely severed from the body. Severe blood loss can quickly result in death. Tourniquet use has proven to be the best treatment for an amputation in a tactical environment.

Symptoms

- Obvious complete or partial removal by trauma of a body extremity

Call for evacuation needs as soon as the need is determined

Care Under Fire

- Follow #1-#5 TCCC Care Under Fire guidelines shown on back cover
- Stop *exsanguinating* external hemorrhage if tactically feasible
 - Direct patient to control hemorrhage by self-aid if able
 - If injury is amenable to tourniquet application, apply tourniquet as proximal as possible over the uniform

Tactical Field Care

BLS

- Patients with altered mental status should be disarmed immediately
- Control **eX**sanguinating hemorrhage
 - Apply/readjust tourniquet (refer to pg. 70 for proper tourniquet use procedures)
 - Quick wound packing
 - Pressure with any method available
- Perform **A**irway management for unconscious patient
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Place patient in recovery position
- Manage **B**reathing
- **C**irculation: control all sources of hemorrhaging
 - Bandages
 - Place moist sterile dressing over stump and apply pressure wrap
 - Wound packing (refer to pg. 71 for procedure)
 - Hemostatic agents (refer to pg. 72 for procedure)
- Perform hypothermia prevention measures (refer to Appendix #5 on pg. 146)
- Treat for shock
- If prolonged evacuation, administer oral fluids if patient is conscious and can swallow

- Splint extremity if it is an incomplete amputation
- Place amputated part in coolest (not below freezing) environment feasible
- Resuscitation for victims of blast trauma who have no pulse, no ventilations, and no other signs of life will not be successful and should not be attempted.
- Administer pain management drugs (refer to Appendix #1 on pg. 173)

ALS

- Initiate IV fluid therapy with Hextend or NS
 - Large Bore IV
 - Aim for SBP of 90, or normal mentation
 - Limit 1000 mL of Hextend or 2000 mL of NS if treating an uncontrolled hemorrhage
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
- Administer antibiotics (refer to Appendix #2 on pg. 176)

Tactical Evacuation Care

BLS

- Provide oxygen
- Reassess tourniquet, consider transitioning to other hemorrhage control measures (refer to pg. 70 for proper tourniquet use procedures)

Evacuation Considerations

- Urgent evacuation if amputation is proximal to wrist or ankle or the patient goes into shock

Other Considerations

- None

BLAST INJURY

Review of Injury

- Various injuries can occur from an explosive force in a blast injury
 - Primary injuries from the blast wave can cause direct tissue damage
 - Secondary injuries can cause ballistic wounds from objects like shrapnel and debris
 - Tertiary injuries can cause traumatic injuries from the physical movement of a patient as a result of the blast force
 - Quaternary injuries can include burns, radiation burns, chemical injuries, and environmental contamination

Symptoms

- Traumatic injuries as a result of an explosion

CNS	Ear	GI	Lung
Memory loss Irritability AMS	Loss of hearing Bleeding from the ear	Abdominal pain Rectal pain Testes pain	Internal hemorrhaging in pulmonary area Frothy or bloody secretions from the mouth Shortness of breath

Call for evacuation needs as soon as the need is determined.

Care Under Fire

- Follow #1-#5 TCCC Care Under Fire guidelines shown on back cover
- Stop *exsanguinating* external hemorrhage if tactically feasible
 - Direct patient to control hemorrhage by self-aid if able
 - If injury is amenable to tourniquet application, apply tourniquet as proximal as possible over the uniform

Tactical Field Care

BLS

- Patients with altered mental status should be disarmed immediately
- Control **eX**sanguinating hemorrhage
 - Apply/readjust tourniquet (refer to pg. 70 for proper tourniquet use procedures)
 - Quick wound packing in areas not amenable to tourniquet use
 - Pressure with any method available
- Perform **A**irway management for unconscious patient
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Place patient in recovery position
- Manage **B**reathing

- **Circulation:** control all sources of hemorrhaging
 - Bandages
 - Wound packing (refer to pg. 71 for procedure)
 - Hemostatic agents (refer to pg. 72 for procedure)
- Perform hypothermia prevention measures (refer to Appendix #5 on pg. 146)
- Consider need for spinal immobilization if tactically feasible and if indicated
- Treat for shock
- If prolonged evacuation, administer oral fluids if patient is conscious and can swallow
- Do not irrigate or probe an ear injury
- If a patient with a TBI is unconscious and has no peripheral pulse, resuscitate to restore radial pulse
- Administer pain management drugs (refer to Appendix #1 on pg. 173)
 - If CNS injury, perform full neurological assessment before administering (refer to Glasgow Coma Scale in Appendix #4 on pg. 179)

ALS

- Initiate IV fluid therapy with Hextend or NS
 - Large Bore IV
 - Aim for SBP of 90, or normal mentation
 - Avoid overhydration when TBI or blast lung injury is suspected

- Limit 1000 mL of Hextend or 2000 mL of NS if treating an uncontrolled hemorrhage
- IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
- Administer antibiotics (refer to Appendix #2 on pg. 176)

Tactical Evacuation Care

BLS

- Provide oxygen
- If no other indications for spinal immobilization, it is not necessary for patients with penetrating trauma

ALS

- If airway obstruction or impending airway obstruction and other measures are unsuccessful, consider advanced airway management device such as:
 - Approved supraglottic device
 - Endotracheal intubation
 - Surgical cricothyrotomy (refer to Appendix #7 on pg. 184)

Evacuation Considerations

- Urgent evacuation for central nervous system (CNS), gastrointestinal (GI), and lung injuries. Other blast trauma may also require high priority evacuation

Other Considerations

- Small penetrating injuries may indicate serious internal damage
 - If mismatch between obvious injury and rapidly deteriorating clinical condition, consider small penetrating injury
- Other possible injuries to consider following blast exposure
 - Abdominal injuries
 - Amputation
 - Burns
 - General hemorrhage/shock
 - Head, neck, and face injuries
 - Orthopedic injuries

BURNS

Review of Injury

- Burns are the result of exposure to heat, cold, chemicals, electricity, light, radiation, or friction
- Smoke inhalation injuries are often seen when there is closed space exposure to fire
- Consider airway burns, carbon monoxide (CO) poisoning, other toxic inhalation, and need for hyperbaric chamber

Symptoms

- Pain
- Tissue damage
- Singed nares
- Coughing
- Respiratory distress

Call for evacuation needs as soon as the need is determined

Care Under Fire

- Follow #1-#5 TCCC Care Under Fire guidelines shown on back cover

Tactical Field Care

BLS

- Highest priority is to stop the burn process by irrigating with large amounts of room temperature water. If unavailable, smothering with jacket or blanket will suffice
- Patients with an AMS should be disarmed immediately
- Perform **A**irway management for unconscious patient
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Place patient in recovery position
- Perform **A**irway management for patient with airway obstruction or impending airway obstruction
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Allow patient to assume any position that best protects the airway, including sitting up
 - If previous measures unsuccessful, get ALS provider/evacuate immediately in order for advanced airway to be obtained
- Remove all jewelry and clothing; do not remove clothing stuck to wound
- Burns patients are extremely susceptible to hypothermia, perform hypothermia prevention measures (refer to Appendix #5 on pg. 146)
- Cover all wounds with dry sterile dressings

- Elevate burned extremities
- If prolonged evacuation, administer oral fluids if patient is conscious and can swallow
- Administer pain management drugs (refer to Appendix #1 on pg. 173)

ALS

- Airway management for patient with airway obstruction or impending airway obstruction
 - If BLS procedures above unsuccessful, attempt intubation; if intubation fails, proceed to surgical cricothyrotomy (refer to Appendix #7 on pg. 184)
- Initiate IV fluid therapy with LR (preferable) or NS
 - Large Bore IV
 - For more serious burns consider two IVs
 - Avoid placement of catheter adjacent to burn if feasible; if necessary, suture in place
 - Aim for SBP of 90, or normal mentation
 - For isolated burns without other injuries, use the Modified Parkland Formula to calculate fluid therapy rates
 - NS or LR solution in first 24 hours after injury = $4 \text{ mL} \times \% \text{BSA (second, third, and fourth degree burns only)} \times \text{Body Weight (kg)}$
 - Give half of the total fluid within the first 8 hours and the second half over the next 16 hours

- IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
- For smoke inhalation:
 - Administer Albuterol by metered dose inhaler, 2-4 puffs up to three times
 - Repeat 2-4 puffs every two hours as indicated
 - Administer Dexamethasone (Decadron) 8 mg IV or IM, once a day for two days
 - If cyanide poisoning from burnt plastics is suspected, use Cyanide Antidote Kit
- Administer antibiotics (refer to Appendix #2 on pg. 176)

Tactical Evacuation Care

BLS

- Provide oxygen
- Apply Bacitracin (Bacitin™) ointment and cover with dry, loose, sterile dressing
- Gently clean and reapply Bacitracin (Bacitin™) ointment and a fresh dressing every 24 hours

ALS

- If airway obstruction or impending airway obstruction and other measures unsuccessful, consider advanced airway management device:
 - Approved supraglottic device
 - Endotracheal intubation

- Surgical cricothyrotomy (refer to Appendix #7 on pg. 184)
- Gently rinse burned area with saline

Evacuation Considerations

- Urgent evacuation for burns that could compromise the airway or are circumferential burns
- Urgent evacuation if respiratory distress
- Priority evacuation if significant smoke inhalation

Other Considerations

Eye Burns

- For a chemical burn to the eye, irrigate as long as feasible with the following guidelines
 - Acid burn (crusty appearance): 30 minutes minimum
 - Alkali burn (soapy appearance): 60 minutes minimum

Electrical Burns

- Treat the entrance and exit wound
- Internal injuries are often severe and must be treated appropriately
- Use cardiac monitoring if available
- Fractures of bones and spine can occur, treat accordingly

Electro-muscular Disruption (Taser™)

- Confirm device has been turned off and that barb cartridge has been disconnected
- Obtain vital signs as soon as possible and use cardiac monitoring if available
- Evacuate to a medical facility if barb(s) is lodged in the following:
 - Eyes, ears, nose, mouth, face, or neck
 - Genitals
 - Spine
 - Hands, feet, or joints
- Barb(s) can be removed (if not in areas above) by stabilizing the skin surrounding the barb and extracting with one smooth jerk
 - Once extracted visually inspect barb to make sure it is intact and that nothing remains in patient
- Cleanse wound area with antiseptic and cover with bandage
- Inform patient that they will need tetanus shots if they have not received one in the last five years

Circumferential Burns

- Carefully monitor distal pulses
- Burns can constrict the chest and restrict respiratory efforts
- Burns can constrict the limbs and impair peripheral circulation

- If chest constriction or impaired peripheral circulation occur, consider escharotomy after medical officer consultation (refer to Appendix #9 on pg. 189 for procedure).

CHEST TRAUMA

Review of Injury

- Respiratory trauma is caused by a penetrating or blunt force applied to the torso; respiratory distress often results in tension pneumothorax which can cause rapid death but is treatable with a needle thorocostomy (refer to Appendix #8 on pg. 187)

Symptoms

- Pneumothorax or Tension Pneumothorax
 - Mechanism of injury (i.e., impaled object or bullet wound) along with worsening respiratory function

Call for evacuation needs as soon as the need is determined

Care Under Fire

- Follow #1-#5 TCCC Care Under Fire guidelines shown on back cover
- Stop *exsanguinating* external hemorrhage if tactically feasible
 - Direct patient to control hemorrhage by self-aid if able

Tactical Field Care

BLS

- Patients with altered mental status should be disarmed immediately

- Control **eX**sanguinating hemorrhage
 - Quick wound packing in areas not amenable to tourniquet use
 - Pressure with any method available
- Perform **A**irway management for unconscious patient
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Place patient in recovery position
- Manage **B**reathing
 - All open and/or sucking chest wounds should be treated by immediately applying an occlusive dressing to cover the defect.
 - Monitor for development of tension pneumothorax
 - In a patient with progressive respiratory distress after chest trauma:
 - Release dressing in an open or sucking chest wound
 - Decompress with needle thorocostomy (refer to Appendix #8 on pg. 187)
 - Be suspect of needle clotting
 - Be prepared to perform multiple needle decompression to resolve tension pneumothorax
- **C**irculation: control all sources of hemorrhaging
 - Bandages

- Wound packing (refer to pg. 71 for procedure)
- Hemostatic agents (refer to pg. 72 for procedure)
- Perform hypothermia prevention measures (refer to Appendix #5 on pg. 146)
- If prolonged evacuation, administer oral fluids if patient is conscious and can swallow
- Resuscitation for victims of blast or penetrating trauma who have no pulse, no ventilations, and no other signs of life will not be successful and should not be attempted
- Administer pain management drugs (refer to Appendix #1 on pg. 173)
 - If CNS injury, perform full neurological assessment before administering (refer to Glasgow Coma Scale in Appendix #4 on pg. 179)

ALS

- Initiate IV fluid therapy with Hextend or NS
 - Large Bore IV
 - Aim for SBP of 90, or normal mentation
 - Avoid overhydration when TBI or lung injury is suspected
 - Limit 1000 mL of Hextend or 2000 mL of NS if treating an uncontrolled hemorrhage
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)

- Administer antibiotics for any open wound (refer to Appendix #2 on pg. 176)

Evacuation Considerations

- Urgent evacuation for all chest traumas except a rib fracture

Tactical Evacuation Care

BLS

- Provide oxygen
- If no other indications for spinal immobilization, it is not necessary for patients with penetrating trauma

Other Considerations

- None

CRUSH INJURY

Review of Injury

- Crush syndrome is the death of skeletal muscle and the release of cellular contents from the dead muscle cells into the plasma, resulting from prolonged and continuous pressure on a large muscle; it can cause acute renal failure, lethal cardiac dysrhythmias, and sudden death
- Extra ALS treatment should be performed after 60 minutes of entrapment

Symptoms

- Pain near crush site
- Muscle tenderness
- Decreased urine output

Call for evacuation needs as soon as the need is determined

Care Under Fire

- Follow #1-#5 TCCC Care Under Fire guidelines shown on back cover
- Stop exsanguinating external hemorrhage if tactically feasible
 - Direct patient to control hemorrhage by self-aid if able

- If injury is amenable to tourniquet application, apply tourniquet as proximal as possible over the uniform

Tactical Field Care

BLS

- Patients with altered mental status should be disarmed immediately
- Control **eX**sanguinating hemorrhage
 - Apply/readjust tourniquet (refer to pg. 70 for proper tourniquet use procedures)
 - Quick wound packing in areas not amenable to tourniquet use
 - Pressure with any method available
- Perform **A**irway management for unconscious patient
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Place patient in recovery position
- Manage **B**reathing
- **C**irculation: control all sources of hemorrhaging
 - Bandages
 - Wound packing (refer to pg. 71 for procedure)
 - Hemostatic agents (refer to pg. 72 for procedure)
- Perform hypothermia prevention measures (refer to Appendix #5 on pg. 146)

- Consider need for spinal immobilization if tactically feasible and clinically indicated
- Check distal pulses often
- Treat for shock
- If prolonged evacuation, administer oral fluids if patient is conscious and can swallow
- Administer pain management drugs (refer to Appendix #1 on pg. 173)
 - If CNS injury, perform full neurological assessment before administering (refer to Glasgow Coma Scale in Appendix #4 on pg. 179)

ALS

- Initiate IV fluid therapy with NS – use Hextend only if no NS available
 - Large Bore IV
 - Aim for SBP of 90, or normal mentation
 - Limit 1000 mL of Hextend or 2000 mL of NS if treating an uncontrolled hemorrhage
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
- After 60 minutes of entrapment, additional measures must be taken:
 - Infuse hourly 500 mL of NS along with 1 amp of Bicarbonate
 - Administer D50 50mg/50cc IV push

- If Insulin available, include 10 units of regular Insulin, IV push with D50
- If available, administer albuterol sulfate (AccuNeb) 5mg (1.25mg/3cc vial) via nebulizer or MDI per manufacturer's instructions
- If hypotensive or QRS wide: Calcium Gluconate, 1 amp, slow IV push
- Post-extrication administer 5mL/kg/hr of NS
- Administer antibiotics for any open wound (refer to Appendix #2 on pg. 176)

Tactical Evacuation Care

BLS

- Provide oxygen

ALS

- The Pneumatic Antishock Garment (PASG) may be useful for stabilizing pelvic fractures
 - Contraindicated for patients with thoracic or brain injuries
 - Do not use in areas that may be at risk for compartment syndrome
 - Application and extended use must be carefully monitored

Evacuation Considerations

- Urgent evacuation for all crush injuries

Other Considerations

- Stabilize crushed bones well for transport, as bone fragments could cause more damage to blood vessels
- Monitor for hyperkalemia, hypoglycemia, hyponatremia, and hypothermia
- Monitor distal pulses in crushed extremity

GENERAL HEMORRHAGE/SHOCK

Review of Injury

- Hemorrhaging is the loss of blood internally or externally; severe hemorrhaging can quickly lead to shock and death

Symptoms

- External bleeding
- Internal bleeding

Call for evacuation needs as soon as the need is determined.

Care Under Fire

- Follow #1-#5 TCCC Care Under Fire guidelines shown on back cover
- Stop exsanguinating external hemorrhage if tactically feasible
 - Direct patient to control hemorrhage by self-aid if able
 - If injury is amenable to tourniquet application, apply tourniquet as proximal as possible over the uniform

Tactical Field Care

BLS

- Patients with altered mental status should be disarmed immediately

- Control **eX**sanguinating hemorrhage
 - Apply/readjust tourniquet (refer to pg. 70 for proper tourniquet use procedures)
 - Quick wound packing in areas not amenable to tourniquet use
 - Pressure with any method available
- Perform **A**irway management for unconscious patient
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Place patient in recovery position
- Manage **B**reathing
- **C**irculation: control all sources of hemorrhaging
 - Bandages
 - Wound packing (refer to pg. 71 for procedure)
 - Hemostatic agents (refer to pg. 72 for procedure)
- Perform hypothermia prevention measures (refer to Appendix #5 on pg. 146)
- If prolonged evacuation, administer oral fluids if patient is conscious and can swallow
- Resuscitation for victims of blast or penetrating trauma who have no pulse, no ventilations, and no other signs of life will not be successful and should not be attempted
- Administer pain management drugs (refer to Appendix #1 on pg. 173)

- If CNS injury, perform full neurological assessment before administering (refer to Glasgow Coma Scale in Appendix #4 on pg. 179)

ALS

- Initiate IV fluid therapy with Hextend or NS
 - Large Bore IV
 - Aim for SBP of 90, or normal mentation
 - Limit 1000 mL of Hextend or 2000 mL of NS if treating an uncontrolled hemorrhage
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
- Administer antibiotics for any open wound (refer to Appendix #2 on pg. 176)

Tactical Evacuation Care

BLS

- Provide oxygen
- Distal pulse check on any limb with a tourniquet applied. If distal pulse present, tighten existing tourniquet or apply second tourniquet proximal to first
- Expose and clearly mark all tourniquet sites with time of application
- If no other indications for spinal immobilization, it is not necessary for patients with penetrating trauma

ALS

- If airway obstruction or impending airway obstruction and other measures unsuccessful, consider advanced airway management device:
 - Approved supraglottic device
 - Endotracheal intubation
 - Surgical cricothyrotomy (refer to Appendix #7 on pg. 184)

Evacuation Considerations

- High-priority evacuation for massive blood loss, shock, amputation proximal to wrists or ankles, arterial bleeding, and internal hemorrhaging

Other Considerations

Tourniquet

- Do not use thin materials that could cut into flesh (such as bootlaces).
- If applied in Care Under Fire, apply tourniquet as proximally as possible over uniform
- If applied in Tactical Field Care stage, expose area and apply just above hemorrhaging wound, but do not place tourniquet below knee or elbow, or on top of joint
- Apply tight enough to block arterial flow (large limbs such as legs will need to be tighter); if distal pulse present, tighten or apply second tourniquet proximal to first

- Document time of application and write a “T” on forehead of patient
- If a tourniquet was applied while under direct fire, consider transitioning to pressure dressing or hemostatic dressing once patient is in the Tactical Field Care zone. The transition from a tourniquet to another hemorrhage control method should be accomplished by the following procedure:
 - Apply pressure dressing or hemostatic agent
 - Loosen tourniquet slowly
 - Monitor for bleeding: if bleeding is not controllable, retighten tourniquet; if bleeding is controlled, fully remove the tourniquet
- Do not transition from tourniquet if one of the following occurs:
 - Patient is in severe shock
 - If a complete amputation has occurred
 - If no one is available to monitor for rebleeding
 - If tourniquet has been in place for more than six hours

Wound Packing

- Pack wound with rolled gauze until unable to force any additional gauze into the wound
- After full packing, direct firm pressure over wound
- Apply outer elastic bandage wrap to secure dressing on wound site

Bandages and Dressings

- Ensure that dressing is tight enough and provides pressure over entire wound
- Leave fingers and toes exposed
- Assess distal circulation using PMS and neurological status using GCS (refer to Appendix #4 on pg. 179)
- If hemorrhaging continues, do not remove first dressing, apply a second over the first

Hemostatic Agents

Considerations for use:

- Can be applied by BLS level and above
- Use when direct pressure and elevation will not stop heavy bleeding after 90 seconds
- Used in abdominal cavity, if wound is non-compressible, for deep penetrating injuries and for arterial bleeding
- As adjunct to tourniquet removal
- Allergies to shellfish ARE NOT a contraindication for using chitosan based agents

Procedure:

- Use approved hemostatic agent
- Follow product specific instructions for application

HEAD, NECK, AND FACE INJURIES

Review of Injury

- Head, neck, and face injuries often can cause a Traumatic Brain Injury (TBI) which can rapidly lead to death. TBIs often can cause the patient to have an AMS and become combative.

Symptoms

Head	Neck	Face
Visible Wounds	Hemorrhage	Lacerated gums
AMS	AMS	Misaligned/broken teeth
Unequal Pupils	Hoarseness	Nose bleed
“Raccoon Eyes”	Dyspnea	Limited eye movements
CSF drainage from ear, nose, throat	Head fixed in an abnormal position	Massive hemorrhage even with minor wounds
Convulsions/seizures	Vomiting/spitting blood	Facial asymmetry
Paralysis	Paralysis	Difficulty swallowing
Bruising behind ear	Incomplete paralysis	CSF drainage from nose
	Stridor	

Call for evacuation needs as soon as the need is determined.

Care Under Fire

- Follow #1-#5 TCCC Care Under Fire guidelines shown on back cover
- Stop exsanguinating external hemorrhage if tactically feasible

- Direct patient to control hemorrhage by self-aid if able

Tactical Field Care

- Patients with altered mental status should be disarmed immediately
- Control eXsanguinating hemorrhage
 - Apply/readjust tourniquet (refer to pg. 70 for proper tourniquet use procedures)
 - Quick wound packing in areas not amenable to tourniquet use
 - Pressure with any method available
- Perform **A**irway management for unconscious patient
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Place patient in recovery position
- Perform **A**irway management for patient with airway obstruction or impending airway obstruction
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Allow patient to assume any position that best protects the airway, including sitting up
 - Place unconscious patient in recovery position
 - If previous measures unsuccessful, get ALS provider/evacuate immediately in order for advanced airway to be obtained

- Manage **B**reathing
- **C**irculation: control all sources of hemorrhaging
 - Bandages
 - Wound packing (refer to pg. 71 for procedure)
 - Hemostatic agents (refer to pg. 72 for procedure)
- Perform hypothermia prevention measures (refer to Appendix #5 on pg. 146)
- If a penetrating eye injury is noted or suspected:
 - Leave object in eye
 - Perform a rapid field test of visual acuity
 - If object is protruding from the eye socket, stabilize object with tape then surround object with cup or to prevent jarring
 - If object is not protruding, cover eye with soft patch that does not touch eye
- If CSF is found:
 - Do not pack or suction nose or ear
 - Evacuate in upright position
- If prolonged evacuation, administer oral fluids if patient is conscious and can swallow
 - Use extreme caution with head injury and esophageal injury
- Resuscitation for victims of blast or penetrating trauma who have no pulse, no ventilations, and no other signs of life will not be successful and should not be attempted

- Administer pain management drugs (refer to Appendix #1 on pg. 173)
 - If CNS injury, perform full neurological assessment before administering (refer to Glasgow Coma Scale in Appendix #4 on pg. 179)

ALS

- Airway management for patient with airway obstruction or impending airway obstruction
 - If BLS procedures above are unsuccessful, perform surgical cricothyrotomy (refer to Appendix #7 on pg. 184)
- Initiate IV fluid therapy with Hextend or NS
 - Large Bore IV
 - Aim for SBP of 90, or normal mentation
 - Avoid overhydration when TBI is suspected
 - Limit 1000 mL of Hextend or 2000 mL of NS if treating an uncontrolled hemorrhage
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
- If a penetrating eye injury is noted or suspected
 - Do not administer Alcaine
- Administer antibiotics for any open wound, including eye wound (refer to Appendix #2 on pg. 176)

Tactical Evacuation Care

BLS

- Provide oxygen

ALS

- If airway obstruction or impending airway obstruction and other measures unsuccessful, consider advanced airway management device, such as:
 - Approved supraglottic device
 - Endotracheal intubation
 - Surgical cricothyrotomy (refer to Appendix #7 on pg. 184)

Evacuation Considerations

- Urgent evacuation for any head, neck, and face injury that causes an AMS

Other Considerations

Abrasion

- Apply soft patch
- Administer Alcaine for eye pain (refer to Appendix #1 on pg. 173)

Impaled Object

- If object is in eye, refer to BLS and ALS procedures in this protocol
- Do not remove unless it is obstructing airway

- If protruding, dress around object to limit its movement

Nose Injury

- Do not tilt head back to control bleeding
- Pinch patient's nostrils and apply ice to bridge of nose

Protruding Globe

- Do not put eye back in socket
- Apply bulky dressing around eye, moist gauze over globe, and cover with a cup

ORTHOPEDIC INJURIES

Review of Injury

- Result of a traumatic direct force or twisting. Often orthopedic injuries are not life threatening, and focus of the care provider should be to identify any life-threatening injuries. Pelvic and femur fractures can cause severe internal and external hemorrhaging that can quickly lead to death.

Symptoms

- Pain near injury
- Swelling near injury
- Deformity

Call for evacuation needs as soon as the need is determined.

Care Under Fire

- Follow #1-#5 TCCC Care Under Fire guidelines shown on back cover
- Stop exsanguinating external hemorrhage if tactically feasible
 - Direct patient to control hemorrhage by self-aid if able
 - If injury is amenable to tourniquet application, apply tourniquet as proximal as possible over the uniform

Tactical Field Care

- Patients with altered mental status should be disarmed immediately
- Control **eX**sanguinating hemorrhage
 - Apply/readjust tourniquet (refer to pg. 70 for proper tourniquet use procedures)
 - Quick wound packing in areas not amenable to tourniquet use
 - Pressure with any method available
- Perform **A**irway management for unconscious patient
 - Chin lift or jaw thrust maneuver
 - NP airway
 - Place patient in recovery position
- Manage **B**reathing
- **C**irculation: control all sources of hemorrhaging
 - Bandages
 - Wound packing (refer to pg. 71 for procedure)
 - Hemostatic agents (refer to pg. 72 for procedure)
- Perform hypothermia prevention measures (refer to Appendix #5 on pg. 146)
- Splint fractures and dislocations: refer to injury specific splints listed below
 - Splint the joints above and below the fracture site
 - If fracture/dislocation is open (compound), cover the open area with sterile dressing

- Do not push bone back in if it is protruding
- If fracture is angulated and pulseless, attempt to realign to natural position using mild traction. If significant resistance is met, stop immediately and splint
- If fracture/dislocation is angulated with pulse, splint as found
- Reassess distal circulation before and after splinting
- Cervical injury
 - Apply cervical collar and backboard
- Pelvic injury
 - Pelvic stabilization device
- Femur fracture
 - Apply traction splint if available
 - Traction splint is contraindicated if suspected pelvic fracture, femoral neck (hip) fracture, avulsion or amputation of the ankle and foot, or fractures distal to knee
- Clavicle
 - Immobilize using figure-eight bandage
- If prolonged evacuation, administer oral fluids if patient is conscious and can swallow
- Administer pain management drugs (refer to Appendix #1 on pg. 173)

- If CNS injury, perform full neurological assessment before administering (refer to Glasgow Coma Scale in Appendix #4 on pg. 179)

ALS

- If open fracture or sign of shock, initiate IV fluid therapy with Hextend or NS
 - Large Bore IV
 - Aim for SBP of 90, or normal mentation
 - Limit 1000 mL of Hextend or 2000 mL of NS if treating an uncontrolled hemorrhage
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
- If finger or shoulder is dislocated, reduce dislocation (refer to Appendix #10 on pg. 193 for reduction procedures)
- Administer antibiotics for any open wound (refer to Appendix #2 on pg. 176)

Tactical Evacuation Care

BLS

- Provide oxygen

ALS

- The Pneumatic Antishock Garment (PASG) may be useful for stabilizing pelvic fractures
 - Contraindicated for patients with thoracic or brain injuries

- Application and extended use must be carefully monitored

Evacuation Considerations

- Urgent evacuation for pelvic and femur fractures that cause shock

Other Considerations

- None

Disclaimer

The practice of these protocols requires special oversight and training above the usual level of EMT or Paramedic.

FORCE HEALTH PROTECTION PROTOCOLS

- Altitude-related Disorders
- Cellulitis and Lymphangitis
- Dehydration
- Dental Emergencies
- Dermatitis
- Ear Infections
- Environment
- Eye Care
- Field Sanitation
- Gastrointestinal
- Headache
- Hyperthermia
- Hypothermia and Cold Injuries
- Kidney Stone
- Rhinitis/Sinusitis
- Sore Throat (Adult Pharyngitis)
- Respiratory Infections
- Urinary Tract Infection
- Waterborne Injuries

ALTITUDE-RELATED DISORDERS

Review of Injury

- High altitude illnesses include a continuum of diseases with symptoms ranging from headache to pulmonary edema
- Onset of symptoms is most frequent 2-48 hours after ascent to elevations greater than 3000 meters (9850 feet)
- Early detection is the key to effective treatment. Without appropriate treatment patients can progress rapidly to death

Symptoms

- Acute Mountain Sickness
 - Headache
 - Anorexia
 - Nausea/vomiting
 - Insomnia
- High Altitude Cerebral Edema (HACE)
 - Severe Acute Mountain Sickness, plus one or more of the following:
 - Ataxia, confusion, disorientation, impaired judgment, severe lassitude
- High Altitude Pulmonary Edema (HAPE)
 - Symptoms are on a continuum:

- Early: Fatigue, Weakness, Dyspnea on Exertion (DOE)
- Severe: Dyspnea at rest, audible chest congestion
- Late: Pink or blood-tinged sputum

Call for evacuation needs as soon as the need is determined

Tactical Field Care

BLS

- Acute Mountain Sickness
 - Halt Ascent
 - Administer pain management drugs (refer to Appendix #1 on pg. 173)
 - Refer to dehydration protocol (pg. 94)
 - Refer to hypothermia protocol (pg. 146)
 - Descend 460 meters (1500 feet) or more for severe or refractory cases if tactically feasible
 - Hypothermia prevention
- HACE, HAPE
 - Immediately descend 920 meters (3000 feet)
 - Administer pain management drugs (refer to Appendix #1 on pg. 173)
 - Refer to dehydration protocol (pg. 94)
 - Refer to hypothermia protocol (pg. 146)
 - Oxygen if available

- Pulse oximetry monitoring
- Patients with HACE/HAPE should be monitored at all times

ALS

- Acute Mountain Sickness
 - Acetazolamide (Diamox) 250mg PO BID
 - Refer to gastrointestinal protocol (pg. 133) for nausea/vomiting treatment options
 - For severe case of AMS:
 - Dexamethasone (Decadron) 8mg IM/IV initially, followed by 4mg IM, IV, or PO q6h for three days
 - Initial treatment of AMS with Acetazolamide and Dexamthasone may initially worsen symptoms
- HACE
 - Acute Mountain Sickness treatments
 - Dexamethasone (Decadron) 8mg IM/IV initially, followed by 4mg IM, IV, or PO q6h for three days
- HAPE
 - Acute Mountain Sickness treatments
 - Dexamethasone (Decadron) 8mg IM/IV initially, followed by 4mg IM, IV, or PO q6h for three days
 - Nifedipine 10mg PO once; repeat q6h if BP is stable and descent is not possible

Evacuation Considerations

- Evacuation priority depends on severity of symptoms
 - For mild to moderate symptoms of Acute Mountain Sickness, on-site treatment is usually effective and evacuation is unnecessary
 - For High Altitude Pulmonary Edema (HAPE) or High Altitude Cerebral Edema (HACE) immediate descent is indicated
 - Standard evacuation for resolution of symptoms
 - Urgent evacuation for continuing or worsening symptoms

Other Considerations

- Altitude-related illnesses occur most frequently when ascending rapidly to sleeping (encampment) altitudes greater than 3000 meters (9850 feet). Ideally, one should spend 2-3 nights at 2500-3000 meters (8200-9850 feet) before ascending higher. Spend an extra night of acclimatization for each 600-900m of ascent. Day trips to higher altitude with descent for sleeping aids acclimatization.
- Prophylaxis for rapid ascent: Acetazolamide 250mg PO BID speeds acclimatization however it may take 24-48 hours for full effect. Even though it is a sulfa-drug, only 10% of patients with sulfa- allergy have an allergic reaction to acetazolamide.

CELLULITIS AND LYMPHANGITIS

Review

- Cellulitis is a skin infection caused by several different organisms, most commonly *Staphylococcus aureus*
- Lymphangitis is inflammation of the lymph vessels, caused by the spread of skin infection
- Lymphangitis is often preceded by cellulitis

Signs and Symptoms

- Rapidly progressing symptoms often occur with cat bites and in wounds incurred in river and swamp environments
- Cellulitis
 - Erythema (spreading without treatment), warmth, tenderness
 - May have fever and/or associated adenopathy



- Lymphangitis (also known as “blood poisoning”)
 - Red streaks, often leading away from wound site
 - May have fever and/or associated adenopathy



Call for evacuation needs as soon as the need is determined

Tactical Field Care

BLS

- Check for fever, adenopathy
- Mark and date on the skin the area of cellulitis to track spread or improvement
- Monitor patient’s status daily; make additional skin marks to note significant change in area
- Warm water soaks for 20 minutes QID
- Elevation of involved extremity

- If wound present, clean and irrigate
- Administer pain management drugs (refer to Appendix #1 on pg. 173)

ALS

- Administer antibiotics (refer to Appendix #2 on pg. 176)

Evacuation Considerations

- Urgent evacuation for patients with fever/chills, quickly advancing cellulitis, or lymphangitis
- Convenience evacuation for patients that do not quickly respond to antibiotics or if wound was “dirty,” including contamination with infectious agents, animal products, feces, etc.

Other Considerations

- If related to hand or wrist, splint for 24–48 hours

DEHYDRATION

Review

- Dehydration is common in prolonged operations
- It is exacerbated by acute diarrhea and viral/bacterial infections
- May occur in both hot and cold climates
- Also likely to occur at high altitudes due to increased respirations
- Sweat may evaporate so quickly in arid environments that it can go unnoticed

Signs and Symptoms

- Decreased urine output and frequency, dark colored urine
- Dry mucosa
- Mild headache, especially upon waking
- Degradation of performance, loss of coordination
- Thirst is not always a reliable indicator
- Hunger may also indicate dehydration

Call for evacuation needs as soon as the need is determined.

Tactical Field Care

- **Prevention**
 - Proper acclimatization to new environment (usually takes 8–11 days)

- Utilize work/sleep cycles as situation allows
- Ensure and observe that team drinks during breaks (forced water break)
- Push team members to consume proper amounts of water
- Target at least 1-2 liters q20 minutes
- Frequent sips are more efficient than trying to catch up with larger volumes later
- Take breaks in shady, cooler areas
- Electrolyte drinks are too concentrated for rehydration, dilute with water to a 50/50 concentration
- Remember to eat as well as to drink to help maintain electrolyte balance
- Abstain from alcohol and products with caffeine
- Use buddy system to monitor for dehydration

- **Treatment for Moderate to Severe Dehydration**

BLS

- Increase oral intake of fluids, push PO hydration
- Continue with 50/50 electrolyte drink
- Move patient to a cooler, shaded environment
- Remove personal gear as practical, loosen patient's clothing

ALS

- If unable to tolerate PO fluids:

- Initiate IV fluid therapy with 1 liter NS bolus
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
- Repeat attempt at oral hydration
- If still unable to tolerate PO fluids, repeat 1 liter NS bolus

Evacuation Considerations

- Urgent evacuation for patients with dehydration and AMS
- Priority evacuation if dehydration persists after treatment

Other Considerations

- Monitor patient for change in mental status and progressing signs of heat injury (heat exhaustion/heat stroke), refer to hyperthermia protocol (pg. 142)
- Monitor for possible development of **Exertional Hyponatremia**, which results from rehydration without appropriate electrolyte replacement.
- Consider Exertional Hyponatremia in any person consuming large quantities of water without food or other salt replacement (many electrolyte drinks do not contain sufficient sodium)
 - Signs/symptoms include: altered mental status, tremors, nausea, headache, weakness, ataxia, near-normal urine output

- Treatments include: salty foods and electrolyte drinks
- Contact medical control

Sodium Content of Selected Foods

Foods	Sodium Content mg per 100g or 3.5 ounces
Table salt	39,300 mg
Chicken bouillon cubes	16,300 mg
Soy sauce	7,120 mg
Minestrone soup, dry (pkt)	6,400 mg
Tomato soup, dry (pkt)	3,100 mg
Bacon, back, grilled	2,700 mg
Table salt	2,300 mg per teaspoon
Black bean sauce	2,150 mg
Smoked salmon	1,880 mg
Salami	1,800 mg
Pretzels	1,720 mg
Cornflakes	1,100 mg
Hard cheese	1,000 mg
Tortilla chips	850 mg
Potato chips	850 mg
Margarine (average)	800 mg
Butter regular, (average)	750 mg

DENTAL EMERGENCIES

Review of Illness/Injury

- Common dental injuries include fractured, dislocated, and avulsed teeth
- Dental injuries suggest significant blunt force trauma to the head
- Toothache is also a commonly encountered disorder and may be caused by pulpitis (dental caries), lost dental fillings, periodontal and apical abscesses, etc.

Signs and Symptoms

- Dental Injury
 - Avulsed Tooth
 - Tooth obviously detached from socket
 - Empty tooth socket present
 - Dislocated Tooth
 - Tooth obviously dislocated from normal position
 - Tooth loose and mobile
 - Fractured Tooth
 - Visibly fractured crown and/or root
 - Tooth may be hot/cold sensitive
 - Dental pulp may be exposed (complex tooth fracture)

- Toothache
 - Pulpitis
 - Tooth is sensitive to percussion and is hot/cold sensitive
 - Tooth may be sweet/sour sensitive
 - In advanced decay, enamel may be missing or dentin gray
 - Lost Filling
 - Usually obvious by history
 - Patient may present for medical care with filling in hand
 - Periodontal Abscess
 - Located in gingival tissue surrounding the tooth
 - Tooth is hot/cold sensitive (unlike apical abscesses)
 - Patient may feel that tooth is elevated outward from socket
 - Apical Abscess
 - Located at base of tooth root (apical portion of root)
 - Swelling and fluctuance at base of tooth
 - Tooth is not hot/cold sensitive

Call for evacuation needs as soon as the need is determined.

Tactical Field Care

BLS

- All Dental Injuries
 - Dental injuries are usually the result of trauma with significant force; check for other injuries including C-spine
 - Have patient sit with head forward and slightly down to avoid aspirating or swallowing blood (swallowed blood causes nausea, vomiting)
 - Apply moistened tea bag to control bleeding
 - Be prepared to manage airway if bleeding is severe
 - Account for any missing teeth or pieces of teeth; if any pieces are missing consider aspiration and if suspected report to medical control
 - Administer pain management drugs (refer to Appendix #1 on pg. 173)
- Avulsed Tooth
 - Best survival if tooth is repositioned within 60 minutes of injury
 - Place tooth in normal saline, milk, or saliva and transport if arrival time to definitive care is <30 minutes from time of injury
 - If arrival time is >30 minutes, tooth needs immediate repositioning
 - Place tooth in normal saline, milk or saliva
 - Handle tooth only by crown, **DO NOT SCRUB OR REMOVE ANY TISSUE FROM TOOTH AT ANY TIME**

- Irrigate any blood clots away from socket
- Apply moistened tea bag to stop bleeding
- Gently rinse tooth with normal saline
- Using slow and steady pressure, reposition tooth in socket
- Have patient gently bite on a gauze pad while being evacuated for dental evaluation
- Ensure that tooth is stable enough to avoid risk of aspiration during evacuation
- Ice pack, keep head elevated
- Dislocated Tooth
 - No additional BLS actions
- Fractured Tooth
 - Apply bone wax to fracture site after controlling bleeding with moistened tea bag and gentle irrigation with normal saline
- Toothache (Pulpitis – Dental Caries)
 - Warm salt water gargles q2-4h while awake
 - Patient should avoid overly hot/cold and sweet/sour substances
 - Encourage proper dental hygiene
- Lost Filling
 - Replace filling with bone wax
 - Replace bone wax as needed (may be done by patient)

- Periodontal Abscess
 - No additional BLS actions
- Apical Abscess
 - No additional BLS actions

ALS

- All Dental Injuries
 - Administer antibiotics. Clindamycin (Cleocin) preferred for all dental cases:
 - Clindamycin (Cleocin) 450mg PO q6h
 - For severe periodontal or apical abscess:
 - Clindamycin (Cleocin) 900mg IV q8h
 - If evacuation is delayed, provide apical infiltration anesthesia with 0.5% bupivacaine (Marcaine™) with epinephrine (best pain relief and does not cause drowsiness)
 1. Injection site is at the buccal (facial) vestibule surrounding the tooth



2. Apply 30% topical dental benzocaine at site with a cotton tip applicator for three minutes (patient may hold applicator stick)
 3. Use a 27 gauge needle and 3 mL syringe, fill with 2.5mL of anesthetic
 4. Insert needle into buccal vestibule - aspirate to confirm that it is not in blood vessel
 5. Carefully move needle in multiple directions while depositing anesthetic to avoid inadvertent bolus injection into blood vessel
 6. Wait at least 5 minutes and confirm presence of anesthesia prior to starting any procedure
 7. May not be as effective for posterior molars
- Avulsed Tooth
 - Provide apical infiltration anesthesia prior to repositioning tooth
 - If evacuation is delayed, secure tooth with dental splint made from glass ionomer cement (GIC) after non-invasive fixation with large suture material
 - Dislocated Tooth
 - Provide and confirm local anesthesia by apical infiltration
 - Reposition tooth with gentle digital manipulation
 - If laterally luxated, use a finger to gently guide tooth down and back, while simultaneously repositioning crown with another finger

- Have patient stabilize tooth by gently biting on gauze pad while evacuating patient
- Ensure that tooth is stable enough to avoid risk of aspiration during evacuation
- If evacuation is delayed, secure tooth with GIC dental splint after non-invasive fixation with large suture
- Fractured Tooth
 - Apply GIC to fracture site to stabilize/protect fracture site
- Toothache - Pulpitis (Dental Caries)
 - If evacuation delayed, provide pain relief with apical infiltration anesthesia
- Lost Filling
 - No additional ALS actions
- Periodontal Abscess
 - Provide apical infiltration anesthesia
 - Gently follow gingival sulcus surrounding base of tooth with one arm of a pair of open iris scissors or dental probe until you find the offending site
 - Elevate gingiva from sulcus and drain any pus
 - Look for any foreign body (potato chip or popcorn fragment, etc.)
 - Irrigate with normal saline
- Apical Abscess
 - Evacuate for dental evaluation

Evacuation Considerations

- Routine
 - Patients with a fractured, dislocated, or avulsed tooth
 - Patients with apical abscesses
 - Patient that does not respond to pain management

Other Considerations

- Significant force is required to avulse, dislocate, or avulse a tooth (or teeth)
- Evaluate for other head, face, and neck injuries

DERMATITIS

Review of Illness

- Contact dermatitis is caused either by exposure to an irritant or by an allergic reaction
- Fungal lesions are caused by an acute fungal infection
- Fungal infections are often initially diagnosed as contact dermatitis but get worse with steroid treatments
- Cold and/or dry conditions may exacerbate risk due to dryness and cracking of skin, resulting in breaks to the skin barrier
- Hot/moist conditions may increase spread of irritants and fungal infections

- **Symptoms**

- Contact Dermatitis

- Acute onset
- Itching (pruritis)
- Small vesicles or larger bullae present on skin
 - Vesicles may weep a straw-colored fluid, which will dry and crust on skin surface



- Erythema
- Exposure pattern on skin
- Fungal Skin Infection
 - Rash
 - Scaling plaques, erythema, slow spreading, irregular or circumferential borders
 - Itching (pruritis)

Call for evacuation needs as soon as the need is determined

Tactical Field Care

BLS

- Contact Dermatitis
 - Identification and avoidance of irritant/allergen is key, but identification may be impractical in the field
 - Hydrocortizone ointment applied topically to affected area BID
 - Clean dry dressing BID
- Fungal Skin Infection
 - Antifungal cream/ointment topically to affected area TID until one week after lesion resolves

ALS

- Contact Dermatitis
 - Hydroxyzine (Atarax) 25-50 mg PO TID to relieve itching if sedation is tactically acceptable (see Special Considerations)
OR
 - Fexofenadine (Allegra) 180 mg PO QD
OR
 - Loratadine (Claritin) 10 mg PO QD, take on an empty stomach
OR

- Ranitidine (Zantac) 300mg PO QD
- For severe cases:
 - Triamcinalone ointment applied topically to affected area BID

AND

- Dexamethasone 10mg IM once

OR

- Start prednisone 60mg PO QD (seek medical control for appropriate taper); see Special Considerations.

Evacuation Considerations

- Priority evacuation indicated for severe dermatitis (greater than 50% BSA) or with eye or intra-oral involvement
- Most cases do not require evacuation

Other Considerations

- Hydroxyzine, like all antihistamines, may cause drowsiness and sedation. Therefore the tactical situation may not permit use. However, the sedative effects of Hydroxyzine last for 8-10 hours, while the antipruritic action lasts 24 hours. This makes its use superior to other antihistamines (such as diphenhydramine).
- Discontinuing steroids abruptly may result in rebound worsening of symptoms and/or other medical problems;

therefore consult medical control for appropriate taper dosing before stopping prednisone treatment.

- If condition is unresponsive or worsening with steroid treatment over 24-48 hours, reconsider possibility of cellulitis and possible need for antibiotic treatment. Refer to cellulitis protocol (pg. 91).
- Monitor for development of secondary infection cellulitis; increasing redness, pain, swelling and purulent crusting. Refer to cellulitis protocol (pg. 91).

EAR INFECTIONS

Review of Illness

- Otitis externa is infection of the external ear canal (EAC)
 - Often from prolonged exposure to water, i.e., “swimmer’s ear”
 - Also by injury to EAC due to ear cleaning with dry swab
- Otitis media is infection of the middle ear
 - Infection of sinus cavity behind eardrum
 - Caused by blockage of eustachian tube
 - Middle ear sinus is a potential infectious pathway to the brain

Signs and Symptoms

- Otitis externa
 - Redness, warmth, and swelling to EAC, which may be obstructed
 - Purulent drainage may or may not be present
 - External ear and surrounding area may be tender
- Otitis media
 - Primary symptom is pain from middle ear
 - No redness, swelling, or tenderness to external ear and EAC

- Tympanic membrane appears dull and may be bulging with fluid or pus

Call for evacuation needs as soon as the need is determined

Tactical Field Care

BLS

- Administer pain management drugs (refer to Appendix #1 on pg. 173)
- Have patient keep area dry; no swimming
- Keep patient well hydrated
- Inhaled steam from boiled water may help open eustachian tube and allow middle ear drainage
- Patient with otitis media should avoid diving and flying
- Otitis Media
 - Pseudoephedrine (Sudafed) 60 mg PO q4-6h

ALS

- Otitis externa
 - Cortisporin topical ear drops, 5 drops TID until 48h after symptoms resolve, may place cotton ball in ear after application
 - If Cortisporin is not available, use vinegar mixed with warm water or mineral oil
 - If condition worsens or persists:
 - Azithromycin (Zithromax) 500mg PO x 1 day, then 250mg PO QD x 4 days

- Otitis media
 - If fever, general malaise, or severe pain are present:
 - Azithromycin (Zithromax) 500mg PO x 1 day, then 250mg PO QD x 4 days

Evacuation Considerations

- Urgent evacuation for change in mental status, ataxia, vomiting
- Routine evacuation for persistent fever, severe pain, obvious swelling to face and/or neck

Other Considerations

- Prevention of Otitis externa
 - Avoid prolonged water contact
 - Do not use dry cotton swabs to clean ears
 - Apply a few drops of mineral oil before swimming
 - Apply a few drops of vinegar mixed with isopropyl alcohol or an OTC preparation like SwimEar™ to ear canals before swimming
- Perforated eardrum is possible if otitis media persists and swelling worsens
 - Perforation from otitis media is usually benign and patient often notes dramatic decrease in pain and ear pressure

ENVIRONMENT

General Guidelines for Routine Physical Activity in Hot Weather

T = ambient dry bulb temperature degrees Fahrenheit

R = relative humidity

Temperature (Degrees Fahrenheit)

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution
 Extreme Caution
 Danger
 Extreme Danger

Heat Index (deg F)	Acclimated Personnel	Non-Acclimated Personnel
82 – 84.9 F	Normal Duties	Use discretion in planning physical activity. Limit intensity of work and exposure to sun. Provide constant supervision.
85 – 87.9 F	Use discretion in planning intense physical activity. Limit intensity of work and exposure to sun. Provide constant supervision.	Strenuous exercises such as physical training will be cancelled.
88 – 89.9 F	Minimize strenuous outdoor activities for all personnel with less than 12 weeks training in local or comparable weather environment.	All physical training, strenuous activities cancelled.
90 F and Above	Essential duties only.	Strenuous activities and non-essential duty cancelled.

Average Expected Survival Times in Water

Centigrade	Fahrenheit	Expected Time Before Exhaustion or Unconsciousness	Average Expected Survival Time
Less than 2°	Less than 34°	Less than 15 minutes	Less than 45 minutes
2° to 4°	34° to 40°	15-30 minutes	Less than 90 minutes
4° to 10°	40° to 50°	30-60 minutes	Less than 3 hours
10° to 15°	50° to 59°	1-2 hours	Less than 6 hours
15° to 20°	59° to 69°	2-7 hours	Less than 12 hours
Greater than 20°	Greater than 70°	3-12 hours (70-80°F) Indefinite (>80°F)	Indefinite (depends on physical condition)

EYE CARE

Review of Injury

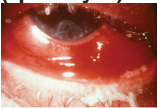
Only a few treatments for eye disorders are practical in an austere environment. These include protection, rest, eye lubrication, anesthetic drops, and antibiotics.


Call for evacuation needs as soon as the need is determined

Symptoms/Tactical Field Care

- For all conditions:
 - Immediately remove contact lenses

Condition	Symptoms	Treatment
Dry Eyes	Red, painful, feels gritty Both eyes usually affected Long period of wearing contact lenses	Use artificial tears Reduce time wearing contact lenses Sunglasses to protect eyes Mineral oil lubricating eye drops
Foreign Bodies	Feels like something is in eye Irritation, redness, tearing Examine corners of eyes and under lids	Irrigate with clean water and/or remove object from eye with soft gauze
Corneal Abrasion	Same symptoms as foreign bodies Persistent pain and irritation	Remove foreign body if present Mineral oil lubricating eye drops

Condition	Symptoms	Treatment
<p>Penetrating Injury</p>	<p>Obvious penetration Assess for other injuries Determine object depth, angle</p>	<p>Leave object in eye Stabilize object with tape, then surround object with cup to prevent jarring If feasible in evacuation, patch other eye to prevent movement Administer pain management drugs (refer to Appendix #1 on pg. 173) Administer antibiotics (refer to Appendix #2 on pg. 176)</p>
<p>Corneal Inflammation/ulceration</p>	<p>Red and painful eye Sensitivity to light Watering, blurred vision Cloudy cornea with bacterial infection</p>	<p>Remove contacts if worn Mineral oil lubricating eye drops Administer pain management drugs (refer to Appendix #1 on pg 173)</p>
<p>Conjunctivitis (“pink eye”)</p> 	<p>Red painful eye – cornea is not red Discharge of pus – bacterial infection (most common) Watery discharge – viral infection Itchy eye – allergic Vision not affected</p>	<p>Erythromycin ointment q6h to affected eye only Viral conjunctivitis will clear without treatment Antihistamine eye drops if allergic cause If vision becomes affected it is likely more serious</p>

Condition	Symptoms	Treatment
Snow Blindness	Light sensitivity, tearing Delayed onset of severe pain after being in high light environment Face may be burnt Affects both eyes Headache is common	Prevention by wearing sunglasses Local anesthetic drops for pain Administer pain management drugs (refer to Appendix #1 on pg. 173) Mineral oil lubricating eye drops
Eyelid Infection ("stye") 	Stye: small boil arising from eyelash follicle Chalazion: Infected gland in eyelid, which may develop into an abscess or nodule affecting vision	Apply warm damp towel to affected area Mineral oil lubricating eye drops Chalazion may need surgery
Chemical injury	Red irritable eye following chemical splash Vision may be impaired	Immediate profuse irrigation with saline if available or clean water. Minimum 30 min for acid and 60 min for alkali Mineral oil lubricating eye drops Hourly application of artificial tears Administer pain management drugs (refer to Appendix #1 on pg. 173)

Evacuation Considerations

- Urgent evacuation for:
 - Perforated eye globe
 - Sudden loss of vision in a normal appearing eye
- Priority evacuation for a complex lid laceration or hyphema (blood collecting in anterior chamber of the eye)

Other Considerations

- If suspected conjunctivitis, use extra BSI precautions for whole team as conjunctivitis is quite infectious. Do extra hand washing, and eliminate sharing of towels or bedding.
- Reduce exposure to light by having patient wear sunglasses. Consider patching if not detrimental to evacuation.

FIELD SANITATION

Review

- Proper field sanitation is vital in preventing the spread of enteric and other communicable diseases and to maintain environmental protection
- Supervision of field sanitation is a preventative health function of tactical medical personnel
- Field sanitation should be addressed when team is stationary for longer than six hours
- Field sanitation includes food safety, water disinfection, and waste management

Tactical Field Care

BLS

- **The guidelines below are designed to help teams select safe food and limit food-borne illnesses. However, situations may arise in which there are no food sources that are 100% safe. In these situations, personnel should use the guidelines to make the best choices possible.**

FOOD SAFETY

- Potentially hazardous foods (PHF) include, but are not limited to: milk, milk products, meat, poultry, fish, and shellfish

- The danger zone for serving/storing PHF is between 60°F and 145°F
- Cold foods must be served/stored at internal temperatures below 40°F
- Hot foods must be served/stored at internal temperatures above 145°F
- Everything that touches food during preparation and serving must be clean
- Food workers must practice excellent personal hygiene and hand washing
- High food cooking temperatures (160°-212°F) will kill most enteric pathogens
- Avoid preparation of PHF 24 hours or more before serving
- Discard any PHF that has been left un-refrigerated for more than 2 hours (1 hour if ambient temperature >90°F)
- Cook or freeze poultry, fish, ground meats and variety meats within 2 days of purchase
- Cook or freeze other beef, veal, lamb or pork meats within 3–5 days of purchase
- Avoid cross contaminating other foods (fruits, vegetables) with PHF; use separate knives, cutting boards and utensils during preparation, and wash hands after handling PHF before handling other foods

- Sanitize cutting boards with diluted bleach solution (one tablespoon of household bleach per gallon of potable water)
- Use cooked leftovers in 3–4 days
- Marinate foods in the refrigerator in a covered container
- Thawing foods in refrigerator is best
- Microwave thawing is acceptable, but cook food immediately after thawing
- Thawing food in water is also acceptable; place food in watertight container (plastic bag), place container in cold water, change cold water every 30 minutes until thawed, and cook immediately after thawing

Food Storage:

- Promptly refrigerate PHF to 40°F or below, using containers <2 inches deep
- Freezing at 0°F or below stops bacterial growth, but will not kill pathogens that are already present
- Thorough reheating to an internal temperature of 165°F or above will kill pathogens that may have grown when using proper storage techniques
- Reheating is NOT a substitute for proper food storage
- Package food for refrigeration or freezing tightly to avoid spilling meat or fish juices onto other foods
- Do not store acidic food or beverages (such as tomatoes, citrus drinks) in galvanized metal containers in order to prevent zinc poisoning

- For more information on food safety, refer to USDA website: www.fsis.usda.gov

Guidelines for Food Procured From Unapproved Sources:

- Avoid local street vendors
- All ice (unless obtained from a filtered water source) is considered contaminated
- Anything in contact with unfiltered water or ice is considered contaminated
- Alcoholic beverages mixed with unfiltered water or ice are NOT safe
- Canned and dried products are relatively safe
- Do not eat from swollen or leaking cans of food
- Do not procure or eat moldy grains or bread, or items contaminated with insect larvae
- Wash raw fruits and vegetables in potable water and disinfect with one of the following methods:
 - Place small amounts of produce in a net bag and completely submerge in boiling water for 15 seconds (not recommended for leafy vegetables)
 - Immerse leafy vegetables for 15 minutes in a 100 ppm solution of chlorine and water
 - Break apart “head” vegetables such as lettuce, cabbage and celery before disinfection
 - Rinse produce thoroughly with potable water after disinfecting and prior to storing

- To make a 100 ppm chlorine solution for disinfecting food:
 - Add one tablespoon of bleach (Clorox™) to one gallon of water
- Maintain geographic awareness as to where toxins (such as Ciguatera) occur in seafood; avoid specific local species known to carry toxins, as species and toxins vary from one location to another

Guidelines for Evaluating Food Service Providers

- Look for current business or vendor's license (issued by county permits and licensing division)
- Look for current food service permit, required of all providers (issued by county health department)
- Look for current certified food manager or supervisor certificate (issued by county health department)
- Inquire if a certified food manager is present (one must be present and supervising food preparation and storage at all times during which food is handled/served)
- Check facility for general cleanliness:
 - Countertops should be clean and orderly
 - Floors should be clean, spillage cleaned promptly
 - Cleaning materials, insecticides, etc., stored separately from food products
 - Observe staff for proper hand washing or use of gloves

- Bathroom facilities should be clean, hand washing notices posted
- Street vendors should have facility for washing hands or use disinfectant hand wash solution
- Trash receptacles should be clean and have a cover
- Look for evidence of insects and rodents (legs, hairs, feces, flies, cockroaches, silverfish, etc.)
- Are cold foods kept cold ($<40^{\circ}\text{F}$)? Are hot foods kept hot ($>145^{\circ}\text{F}$)?
- Check refrigerator for a recording thermometer or a bulb thermometer accompanied by a daily chart with written entries documenting refrigerator temperatures of 40°F or less
- Discuss concerns with facility's food service manager

WATER DISINFECTION

- Best method for disinfecting water in the field is through the use of a portable filter (available in individual, small group and large group sizes). To be effective, filter must possess the following:
 - Activated charcoal unit (removes foul taste, chemicals such as pesticides, herbicides, industrial waste, radioactive particles)
 - Microporous filter element with maximum pore size <0.2 microns (removes bacteria and protozoans)
 - Iodine resin element (kills viruses)

- If filter does not have iodine resin element, water should be treated with iodine tablets (or Aqua Tabs™) prior to filtration; or boil water after filtering
- Unless clear and pristine, place water to be filtered in a container that will not be used for drinking; allow sediments to settle before filtering
- Use a pre-filter attachment for portable filter to remove larger particles, prevent filter from clogging and prolong life of filter elements
- Alternatively, pour water into another container using a cloth for a pre-filter
- Water filters are typically ineffective when used at sub-freezing temperatures due to freezing of filter elements, which may crack and ruin filter
- Standard portable water filters are not for saltwater use
- For saltwater use, a reverse osmosis filter is used; it is expensive, but readily available and should be standard issue on every lifeboat
- Follow manufacturer's instructions regarding use of individual filter

Alternative or Emergency Methods

- BOILING WATER
 - Destroys almost all pathogens, including viruses
 - Does not remove chemicals, radioactive particles
 - Does not improve appearance or taste

- Pre-filter water with a container (as with portable filter) prior to boiling; do not use this container to drink from
- Boil water for 5 minutes
- Higher altitude has no practical effect on boiling disinfection. Even at 19,000 feet, water boils at 178° F. This is sufficient for disinfection.
- If fuel conservation is required, shorten boiling time to 2 minutes
- HALOGENS
 - Iodine and chlorine tablets are widely available in outfitter stores
 - Halogens kill most pathogens, but not *Cryptosporidium* cysts
 - Use of halogens is dependent upon concentration and contact time
 - Required contact time increases with cold temperatures
 - Follow the iodine or chlorine based tablets manufacturers' instructions regarding dosing and contact times
 - Iodine:
 - Prolonged use of iodine (more than a few months) should be avoided
 - Pregnant women should not use iodine products for more than a few weeks per pregnancy

- Iodine disinfection should not be used by persons with known iodine allergies or unstable thyroid disease (stable thyroid disease is allowed); these persons should use chlorine-based products
- Iodine taste may be removed by adding a pinch of ascorbic acid (vitamin C) to water
- Providine-iodine solution (not scrub) may be used if tablets are not available; use 8 drops per liter [4 ppm] or 16 drops per liter [8 ppm]
- Tincture of iodine may also be used; use 5 drops per liter of water [4 ppm] or 10 drops per liter [8 ppm]
- Use 4 ppm concentration for clear, warm water; 8 ppm concentration for cloudy, cold water
- Minimum contact time is 20 minutes for 8 ppm concentrations, 45 minutes for 4 ppm concentrations
- Increase contact time to 90 minutes for cold water with 8 ppm concentrations, 180 minutes for 4 ppm concentrations
- Household bleach may also be used if tablets are unavailable, but it is more sensitive to water pH and the presence of nitrogenous wastes in water
 - Treat water with 2 drops [4 ppm] or 4 drops [8 ppm] per liter
 - Use 4 ppm concentration for clear, warm water; 8 ppm concentration for cloudy, cold water

- Minimum contact time is 20 minutes for 8 ppm concentrations, 45 minutes for 4 ppm concentrations
- Increase contact time to 90 minutes for cold water with 8 ppm, 180 minutes for 4 ppm concentrations

Dosage and Contact Times for Iodine and Chlorine

When Commercially Prepared Iodine or Chlorine Tablets are Unavailable*

Concentration:	4 ppm Concentration Use with Clear, Relatively Clean Water			8 ppm Concentration Use with More Heavily Contaminated or Cloudy Water*		
Agent	Dosage: drops per liter (qt.) of water	Contact Time (minutes)		Dosage: drops per liter (qt.) of water	Contact Time (minutes)	
		Warm	Cold		Warm	Cold
Providine-Iodine Solution 10%	8	45	180	16	20	90
Tincture of Iodine 2%	5	45	180	10	20	90
Household Chlorine Bleach	2	45	180	4	20	90

*or when faster disinfection is necessary

WASTE MANAGEMENT

- Includes the management of urinary and fecal wastes, as well as management of wastewater, trash and garbage
- IF TOILET FACILITIES ARE NOT AVAILABLE IN A FIELD SITUATION:
 - Bodily functions should be carried out away from trails and at least 75 feet from any water source or camp
- BODILY WASTES
 - Dig a cat hole (a small hole in the ground), eliminate in the cat hole
 - Cover cat hole with dirt
 - Pack out toilet paper in a plastic bag or burn
 - A cat hole is not necessary for urination
 - Encourage proper hand washing following bowel movements (minimum of 20 seconds of thorough washing with soap and water)
 - A disinfectant hand wash can be used if water is limited
- WASTEWATER
 - Water from bathing, brushing teeth, washing dishes, etc., should be disposed away from trails and at least 75 feet from any water source or camp
- TRASH AND GARBAGE
 - Best course is to pack out all trash and garbage

- Burning trash and garbage:
 - If necessary, paper trash and food garbage can be burned in a campfire
 - Burning should be avoided within 1,000 feet of a building or other structure
 - Burning should be avoided in dry or windy conditions to help prevent the development of a forest fire, grass fire, etc
 - Do not burn metal cans, glass, or plastics

Other Considerations

- When conducting operations on public lands, check with the local agency (National Forest Service, Bureau of Land Management, Local Departments of Natural Resources, etc.) regarding specific waste management procedures within their jurisdiction

GASTROINTESTINAL

Review of Injury

- Complaints of nausea, vomiting, and diarrhea are extremely common, and they represent a wide range of underlying conditions that often can be treated effectively in the field and do not require evacuation
- Acute onset of vomiting and/or diarrhea is most often a viral infection of the GI tract but bacteria and parasitic infections are common in deployed environments
- The acute (surgical) abdomen can indicate a number of different conditions that all require urgent evacuation for immediate surgical intervention

Symptoms

- Vomiting and/or Diarrhea
 - Constant or waves of nausea
 - Multiple episodes of emesis
 - Loose or watery BMs
 - +/- blood or mucous
 - Abdominal cramping
 - Dehydration
 - +/- fever
- Acute Abdomen
 - Severe, persistent, or worsening abdominal pain
 - Signs of peritoneal inflammation:

- Tenderness with guarding
 - Rebound tenderness/Percussive tenderness
 - “Rigid” abdomen
 - Patient lying perfectly still (movement causes severe pain)
- Fever
 - Anorexia
 - Nausea/vomiting
 - Mild diarrhea if present

Call for evacuation needs as soon as the need is determined

Tactical Field Care

BLS

- Nausea, Vomiting, and/or Diarrhea
 - Encourage PO hydration
 - Refer to dehydration protocol if indicated (pg. 94)
- Acute Abdomen
 - Keep patient NPO, except for sips of water and meds
 - Refer to General Hemorrhage/Shock protocol if indicated (pg. 67)
 - Administer pain management drugs (refer to Appendix #1 on pg. 173)

ALS

- For Nausea/Vomiting:
 - IV hydration if indicated, refer to dehydration protocol (pg. 94)
 - Ondansetron (Zofran) 4mg IV over 2-5 minutes or IM BID PRN
OR
 - Promethazine (Phenergan) 12.5-25mg PO/IM/IV/
PR q6h PRN
OR
 - Compazine 10mg PO/IM/IV q8h PRN
OR
 - Compazine 25mg PR q12h PRN
- For Diarrhea:
 - IV hydration if indicated, refer to dehydration protocol (pg. 94)
 - Loperamide (Imodium) 4mg PO initially, then 2mg PO after every loose BM, max of 16mg/day
 - If diarrhea persists >24 hours, give
 - Levofloxacin (Levaquin) 500mg PO QD for 3 days
OR
 - Azithromycin (Zithromax) 500mg PO x 1 day, then 250mg PO QD x 4 days

- If diarrhea persists >3 days, treat as Giardia or Amebiasis with
 - Metronidazole (Flagyl) 500mg PO BID for 5 days
- For Acute Abdomen:
 - Initiate IV fluid therapy with 150 cc/hr NS
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
 - Administer antibiotics:
 - Levofloxacin (Levaquin) 750mg IV QD
AND
 - Metronidazole (Flagyl) 500mg IV q6h
 - Place nasogastric (NG) tube if available:
 - Confirm location by aspiration of gastric contents or auscultation of gastric air on insufflations
 - Aspirate all initial contents
 - Attempt to aspirate the stomach every 30-60 minutes

Evacuation Considerations

- Urgent evacuation for:
 - Dehydration persists despite treatment
 - Grossly bloody emesis or diarrhea
 - Diagnosis of acute abdomen

- Evacuation usually not required for vomiting and/or diarrhea

Other Considerations

- None

HEADACHE

Review of Injury

- The differential diagnosis for the acute headache is large and includes conditions that encompass the spectrum of minor to severe underlying disorders

Symptoms

- Episodic or chronic pain
- Variable location and intensity possible
- +/- nausea/vomiting

Call for evacuation needs as soon as the need is determined

Tactical Field Care

BLS

- If atypical headache, check patient for:
 - Elevated BP
 - Fever
 - Neck rigidity
 - Visual symptoms
 - Mental status changes
 - Neurologic weakness/symptoms
 - Dehydration
 - Caffeine withdrawal
- Refer to dehydration protocol if indicated (pg. 94)

- Consider caffeine 100-200mg PO (1-2 cups coffee) if caffeine withdrawal likely
- Administer pain management drugs, begin with non-narcotic medication (refer to Appendix #1 on pg. 173)

ALS

- For headache and/or nausea/vomiting:
 - Ondansetron (Zofran) 4mg IV over 2-5 minutes or IM BID
OR
 - Compazine 10mg PO/IM/IV q8h PRN
OR
 - Compazine 25mg PR q12h PRN

Evacuation Considerations

- Evacuation is usually not required if the headache responds to treatment
- Urgent evacuation required for acute headache in the presence of fever, severe nausea and vomiting, mental status changes, focal neurological signs, or acute onset of seizures or loss of consciousness
- Urgent evacuation require for headache described as “it’s the worst headache of my life”

Other Considerations

- None

HYDRATION AND WORK/REST CYCLES

The following tables will provide information necessary to calculate recommended work/rest cycles, water requirements, maximum work times, and recovery times.

Hydration and Work/Rest Cycles for Warm and Hot Weather

Heat Index ¹² (degrees F)*	Easy Work		Moderate Work		Hard - Strenuous Work	
	Work/Rest** (minutes)	Water Intake*** Quart/Hr	Work/Rest** (minutes)	Water Intake*** Quart/Hr	Work/Rest** (minutes)	Water Intake*** Quart/Hr
78 - 81.9	No Limit	½	No Limit	¾	40/20	¾
82 - 84.9		½	50/10		30/30	
85 - 87.9		¾	40/20		30/30	
88 - 89.9		¾	30/30		20/40	
90 or more		50/10	1	20/40	1	

*Wearing body armor adds 5 degrees (F) to heat index, wearing full MOPP gear adds 10 degrees (F) to heat index.

**The work/rest times and fluid replacement volumes will sustain performance and hydration for at least 4 hours in the specified heat category. Individual water needs will vary by approximately ¼ quart per hour

***Hourly fluid intake should not exceed 1-¼ quarts; Daily fluid intake should not exceed 12 quarts. Remember to eat to maintain normal electrolyte (salt) levels

Examples of Work Activities for Average Acclimatized Individual

Light Work	Moderate Work	Heavy Work
Weapon Maintenance	Walking, loose sand 2.5 mph, no load	Walking hard surface at 3.5 mph, 40lb load
Walking hard surface at 3.5mph, less than 30 lb. load	Walking hard surface at 3.5 mph, less than 40 lb. load	Walking on loose sand at 2.5 mph with load
Firearms Training (Target Range)	Calisthenics; individual movement techniques, such as low and high crawls	Assault Situations

HYPERTHERMIA

Review of Injury

- Hyperthermia is an acute condition where the body produces or absorbs more heat than it can effectively dissipate
- Prevention is the best treatment:
 - Follow appropriate work/rest cycles based on environmental conditions; see tables on pg. 140
 - Hydrate; replenish lost fluids from excessive sweating
 - Eating is critical to maintaining normal activity; medics and team leaders should push team members to eat a normal diet even in high temperatures
 - Eat to replenish essential vitamins, minerals, and sodium
 - For more advanced dehydration prevention measures refer to dehydration protocol (pg. 94)

Symptoms

Heat Exhaustion	Heat Stroke
Normal mental status	Altered mental status (AMS)
Thready pulse	Hot, dry skin (25% or less is moist)
Nausea	Dilated pupils
Slightly elevated temperature	Arrhythmia
Clammy skin	Rapid heart rate
Muscle cramps/spasms	
Dizziness	

Call for evacuation needs as soon as the need is determined

Tactical Field Care

BLS

- Take off as much clothing and equipment as possible
- Get patient to cooler area and minimize exposure to sun
- Patient should exert as little energy as possible
- For dehydration and exertional hyponatremia – refer to dehydration protocol (pg. 94)
- Heat Exhaustion
 - Carefully begin oral rehydration with carbohydrate/ electrolyte drink mixes if patient is alert and can tolerate fluids
 - Use dilute solution (1:4) to avoid an osmotic shift
 - Cool patient using towels soaked in tepid water

- Cool neck, armpits, and groin
- Maximum cooling achieved by covering largest amount of body surface area
- If feasible, increase airflow to increase evaporation
- Remove cooling agent when patient's temperature returns to 100-102 °F to avoid “overshoot” and driving the patient into hypothermia
- Heat Stroke
 - Aggressively cool patients with evaporative measures (see above)
 - Apply cold packs to armpit and groin if vitals are stable
 - Avoid shivering, which will raise the patient's core temperature
- Provide oxygen if available

ALS

- Heat Exhaustion
 - Initiate IV fluid therapy with NS 10 mL/kg/hr up to 3 liters
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
- Heat Stroke
 - Cautious IV fluid therapy with NS initially at 250 mL/hr

- If evidence of hypovolemia or hemodynamic compromise exists, then initiate at 10 mL/kg/hour up to 3 liters

Evacuation Considerations

- Urgent evacuation for heat stroke
- Priority evacuation for severe hyperthermia
- Evacuation not required for mild to moderate cases that respond to treatment

Other Considerations

- None

HYPOTHERMIA AND COLD INJURIES

Review of Injury

- Cold injury is defined as tissue injury produced by exposure to cold. Cold injuries can occur at nonfreezing and freezing temperatures. Pathologically, all cold injuries are similar. Hypothermia, frostbite, and snow-blindness are the cold injuries of greatest significance.
- Prevention is the best treatment
 - Layer clothing to keep warm
 - Maintain dry clothing; replace any clothing that becomes wet
 - Hydrate as much as feasible; dehydration occurs rapidly in cold environments
 - Keep clothing clean and free from dirt
 - Avoid overheating which causes sweating and could cause hypothermia later as person cools

Symptoms

- Hypothermia
- Mild hypothermia; core temperature 98.6-92 °F
 - Shivering
 - Unable to perform complex tasks with hands
- Moderate hypothermia; core temperature 92-86 °F
 - Violent shivering

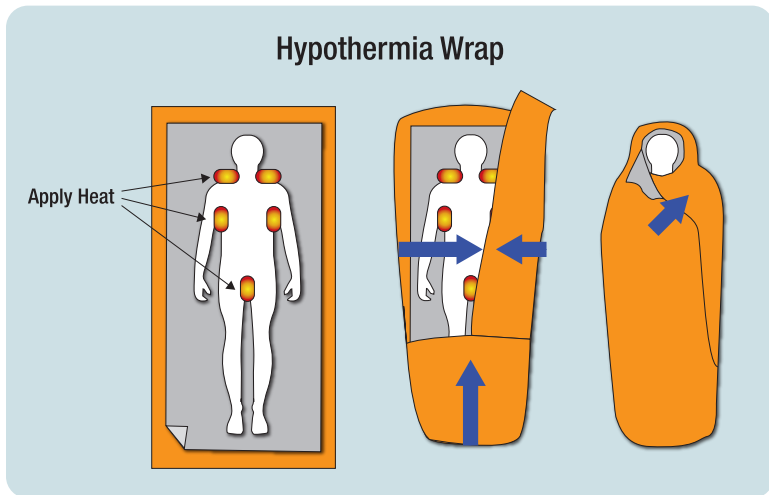
- Dazed consciousness, slurred speech, irrational behavior
- Loss of fine motor coordination
- Severe Hypothermia; core temperature 85 °F and below
 - Shivering occurs in waves until it ceases as body temperature drops
 - Severe AMS
 - Muscle rigidity, skin becomes pale
 - Pupils dilate, pulse rate decreases, breathing becomes erratic
 - Cardiac abnormalities
- Frostbite
 - Skin has white or waxy appearance
 - Skin is hard to the touch
 - Loss of mobility and poor perfusion
- Snow-Blindness
 - No symptoms until 6-12 hours post exposure to bright UltraViolet (UV) light.
 - Tearing, pain, redness, swollen eyelids, decreased vision

Call for evacuation needs as soon as the need is determined.

Tactical Field Care

BLS

- For Hypothermia:
 - Minimize patient's exposure to the elements
 - Keep protective gear on or with patient if feasible
 - Replace wet clothing with dry as feasible
 - Apply ready heat blanket to torso
 - Wrap in rescue blanket or use Hypothermia Wrap (see picture)
 - Put cap on the patient's head, under the helmet
 - If mentioned gear is not available, use dry blankets, poncho liners, sleeping bags, body bags, or anything that will retain heat and keep patient dry
 - Encourage PO hydration
 - Refer to dehydration protocol if indicated (pg. 94)
 - “Feed Hypothermia,” encourage patient to eat
- For Mild Frostbite
 - Put affected part against warm body parts (such as armpits and groin)



- For Severe Frostbite
 - Move patient to warm area and do not allow patient to walk on affected feet
 - Do not rub extremity
 - Immerse affected area into circulating warm water. Do not use a direct heat source greater than 102° F
 - Cover with loose, dry sterile dressing that is non-compressive and non-adherent
 - Fingers and toes should be separated with sterile gauze
 - Do not drain blisters in the field
 - Do not give alcohol/cigarettes (vasoconstrictive)

- Do not thaw frozen part unless certain of no potential for refreezing
- For Snow-Blindness
 - Prevent further exposure by having patient wear UV filtering sunglasses
 - If no sunglasses, patch affected eye(s)
- CPR
 - Perform CPR as indicated
 - Hypothermic patients should be warmed before ceasing resuscitative efforts
- Administer pain management drugs (refer to Appendix #1 on pg. 173)

ALS

- Initiate IV fluid therapy with warm NS
 - IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)
 - Give initial 250 mL bolus of warm saline
 - Use portable fluid warmer on all IV sites, if feasible
- For Severe Frostbite
 - Administer antibiotics for any open wound if extended evacuation time:
 - Levofloxacin (Levaquin) 500mg PO QD
 - OR

—Azithromycin (Zithromax) 500mg PO x 1 day,
then 250mg PO QD

- For Snow-Blindness
 - Refer to eye care protocol (pg. 117)
- Assess for hypoglycemia, treat as indicated with standard protocols

Evacuation Considerations

- Priority evacuation for severe hypothermia
- Evacuation not required for mild to moderate cases that respond to treatment

Other Considerations

- None

KIDNEY STONE

Review of Injury

- Kidney stones may cause severe pain and can strike at any time; they are most common in men over the age of 40

Symptoms

- Severe flank pain, may radiate to groin
- 'Writhing around' in pain
- +/- nausea/vomiting
- Urinary frequency, urgency, dysuria
- +/- hematuria
- Fever indicates progression to infection

Call for evacuation needs as soon as the need is determined

Tactical Field Care

BLS

- Encourage PO hydration, refer to dehydration protocol if indicated (pg. 94)
- Monitor for progression to sepsis
- Administer pain management drugs (refer to Appendix #1 on pg. 173)
 - Anti-inflammatory drugs are most effective but narcotics may be necessary to control pain

ALS

- Administer antibiotics:
 - Levofloxacin (Levaquin) 500mg PO QD; if presence of flank pain and fever, consider q8h dosing for pyelonephritis
OR
 - Azithromycin (Zithromax) 500mg PO x 1 day, then 250mg PO QD
- For nausea/vomiting:
 - Ondansetron (Zofran) 4mg IV over 2-5 minutes or IM BID PRN
OR
 - Promethazine (Phenergan) 12.5-25mg PO/IM/IV/PR q6h PRN
OR
 - Compazine 10mg PO/IM/IV q8h PRN or 25mg PR q12h PRN

Evacuation Considerations

- Priority evacuation for all cases because condition may progress to life-threatening systemic infection and septic shock

Other Considerations

- None

RHINITIS/SINUSITIS

Review of Illness

- Rhinitis
 - May be caused by viral infection or seasonal allergies
 - Often associated with upper respiratory illnesses (URI) and the common cold
- Sinusitis
 - Inflammation/infection of sinuses (primarily frontal, maxillary, and ethmoid)
 - Caused by obstruction of eustachian tube, 60% resolve without antibiotics

Signs and Symptoms

- Rhinitis
 - Clear nasal drainage
 - Pale, boggy, or inflamed oral mucosa
 - Complaint of nasal congestion may or may not be present
 - Watery or red eyes
 - Sneezing
 - Normal body temperature
- Sinusitis
 - Sinus pain and feeling of pressure at affected site

- Pain, feeling of sinus pressure often increase if patient bends over from waist
- May mimic dental pain of the upper teeth, but teeth will be non-tender to percussion and not hot/cold sensitive
- Green, yellow, or bloody nasal discharge
- Fever possible

Call for evacuation needs as soon as the need is determined.

Tactical Field Care

BLS

- Rhinitis or Sinusitis
 - Encourage PO hydration
 - Rest as possible
 - Pseudoephedrine (Sudafed™) 60 mg PO q4-6h to relieve congestion
 - Diphenhydramine (Benadryl™) 25-50 mg PO q6h as mission activities permit (diphenhydramine is likely to cause drowsiness)
- Sinusitis
 - Nasal irrigation with normal saline (have patient sit with head forward, chin down) may dislodge obstruction
 - Have patient inhale steam from boiled water to reduce swelling and obstruction

- Administer pain management drugs (refer to Appendix #1 on pg. 173)
- Appropriate and available nasal decongestion spray, use per manufacturer's instructions for a maximum of 72 hours

ALS

- Sinusitis
 - If fever and/or green, yellow, or bloody discharge present administer antibiotics:
 - Levofloxacin (Levaquin) 500mg PO QD
- OR
- Azithromycin (Zithromax) 500mg PO x 1 day, then 250mg PO QD

Evacuation Considerations

- Priority evacuation for sinusitis with altered mental status, ataxia, or vomiting
- Routine evacuation for sinusitis with persistent fever, severe pain, or obvious facial or neck swelling present
- Routine evacuation for rhinitis associated with fever, productive cough, and/or fails to improve with treatment
- Convenience evacuation for all other cases of sinusitis that do not quickly improve with treatment

Other Considerations

- Greenish, yellowish, or bloody nasal drainage with ear pain may indicate middle ear infection; refer to ear infection protocol (pg. 111)
- Sinuses are considered a potential infectious pathway to the brain
- Evaluate and monitor patient for progression to altered mental status, ataxia, or vomiting

SORE THROAT (ADULT PHARYNGITIS)

Review

- Viral pharyngitis is more common than bacterial pharyngitis
- Other causes include peritonsillar abscess, mononucleosis, and gonorrhea
- Yellowish or whitish exudates may coat throat surface

Signs and Symptoms

Signs and symptoms of pharyngitis are similar and not exclusive; differentiation is often a matter of degree in severity.

- Viral Pharyngitis
 - Normal to slightly elevated temperature
 - Cervical adenopathy (mostly anterior)
 - Exudates in throat are often absent
 - Malaise is mild to moderate
 - Runny nose (rhinitis); cough, with or without clear sputum are often present
 - Duration is self-limiting, improves with time
- Bacterial Pharyngitis
 - Fever and chills are often present
 - Cervical adenopathy (mostly anterior)
 - Exudates in throat are often present
 - Malaise is moderate to severe

- Not usually associated with rhinitis
- Longer duration without treatment
- Peritonsillar Abscess
 - Fever often present; cervical adenopathy at mandibular angle
 - Unilateral pain and pharyngeal swelling
 - Trismus (unable to open the mouth completely), fetid breath odor
 - Severe malaise
 - Possible airway obstruction
 - Drooling and/or “muffled” voice may be noted
 - Septicemia may be present
- Mononucleosis
 - Fever 100.4–104° F, typically peaks in afternoon
 - Chills, severe sore throat
 - Posterior cervical adenopathy
 - Throat exudates occasionally present
 - Severe malaise and/or anorexia
 - Petechiae (red spots) on palate
 - Measles-like skin rash
 - Spleen and liver enlargement may be noted
 - Most common amongst those aged 17–25

Call for evacuation needs as soon as the need is determined.

Tactical Field Care

BLS

- Encourage PO hydration
- Gargle warm salt water for 3 minute q4h while awake
- Monitor for worsening symptoms
- Administer pain management drugs (refer to Appendix #1 on pg. 173)

ALS

- Viral Pharyngitis
 - If severe swelling that limits oral intake is present:
 - Dexamethasone 10 mg IM x 1 dose
- Bacterial Pharyngitis
 - Azithromycin (Zithromax) 500mg PO QD x1 day, then 250mg PO QD x 9 days
- Peritonsillar abscess
 - Routine evacuation required for incision and drainage or needle aspiration
 - Mild to moderate:
 - Azithromycin (Zithromax) 500mg PO QD x 1 day, then 250mg PO QD x 9 days
 - Severe:
 - Clindamycin (Cleocin) 900mg IV q8h

- Mononucleosis
 - For severe throat swelling give prednisone 50 mg PO, then decrease dose by 10 mg daily for a total of 5 days

Evacuation Concerns

- Urgent evacuation for airway obstruction, high fever, septicemia, mononucleosis with liver or spleen enlargement
- Routine evacuation for peritonsillar abscess, mononucleosis, or any other condition that does not respond to treatment
- Viral/bacterial pharyngitis that responds to treatment does not require evacuation

Other Considerations

If mononucleosis is suspected:

- No heavy lifting, participation in tactical ops, contact sports, etc.
- Limit patient's exposure to others that have no history of mononucleosis

RESPIRATORY INFECTIONS

Review

- Upper respiratory infections (URIs) include the common cold, influenza, bronchitis, and pneumonia
- Symptoms of these diseases are often not exclusive, but a matter of degree
- Influenza is unusual in immunized individuals

Symptoms

- General Symptoms of URI
 - Nasal congestion, sneezing, cough (may produce clear sputum), sore throat, hoarseness, headache, and general malaise
 - Lungs are usually clear; in influenza, wheezing may be noted in 10% of cases, more if history of asthma is present
- Common Cold
 - Headache is common, usually worsens upon standing
 - Temperature normal or slightly elevated, fever rare
- Influenza
 - Myalgia (muscle pain) to back, arms and legs and/or arthralgia (joint pain) are frequently noted
 - Temperature typically elevated (101° F or more) initially, but subsides over 2-4 days

- Acute onset
- Pneumonia/Bronchitis
 - Cough, if productive may yield green, brown, or blood tinged sputum
 - Speech apnea, shortness of breath, cyanosis with hypoxia
 - Vigorous chills, splinted respirations, altered MS
 - Fever of more than 101 °F or less than 96 °F, Resting HR >90, RR >18, Pulse ox <96%
 - Lung sounds may be diminished; rales, rhonchi may be present
 - Atypical pneumonia may present with N/V and no fever
 - R/O pneumothorax
 - Consider HAPE if at altitude; refer to altitude-related disorders protocol (pg. 87)

Call for evacuation needs as soon as the need is determined

Tactical Field Care

BLS

- Encourage increased PO hydration and rest
- Oxygen if available for dyspnea, shortness of breath
- For nasal congestion:
 - Pseudoephedrine (Sudafed™) 60 mg PO q4-6h

OR

- Diphenhydramine (Benadryl™) 25-50 mg PO q6h
- Administer pain management drugs (refer to Appendix #1 on pg. 173)

ALS

- For severe coughing:
 - Albuterol (Ventolin™) MDH 3-4 puffs q4h
- For influenza:
 - Administer appropriate available antiviral drug
- Pneumonia/Bronchitis:
 - Levofloxacin (Levaquin) 500mg PO QD
 - OR
 - Azithromycin (Zithromax) 500mg PO x 1 day, then 250mg PO QD
 - For suspected rare infectious disease (such as tularemia, plague, etc.) administer:
 - Doxycycline 100mg PO BID

Evacuation Considerations

- Urgent evacuation for severe dyspnea
- Priority evacuation for bronchitis and pneumonia
- Evacuation is usually not required for colds and influenza

Other Considerations

- Team members in close contact with the influenza patient should be administered the appropriate available antiviral drug
- In the presence of a widespread outbreak of influenza, appropriate available antiviral drug may be given as prophylaxis after consultation with medical director
- If symptoms of sinusitis are present, particularly green or yellow nasal discharge, refer to rhinitis/sinusitis protocol (pg. 154)
- If symptoms of pharyngitis are present, refer to sore throat protocol (pg. 158)

URINARY TRACT INFECTION (UTI)

Review of Injury

- Mild infections of the bladder and lower urinary tract are common in females and depend on the tactical setting, dehydration, and kidney stones. Symptoms can be confused with those of a sexually transmitted disease.

Symptoms

- Urinary frequency, urgency
- Dysuria
- Cloudy, malodorous, or dark urine
- Mild suprapubic pain or pressure
- No back, flank, or costovertebral angle tenderness (CVAT)
- No fever

Call for evacuation needs as soon as the need is determined

Tactical Field Care

BLS

- Force PO hydration, refer to dehydration protocol (pg. 94)
- Administer pain management drugs (refer to Appendix #1 on pg. 173)
 - Narcotics should not be necessary

- Monitor for development of fever or back/flank/CVAT pain which indicates progression, refer to kidney stone protocol (pg. 152)

ALS

- Administer antibiotics:
 - Levofloxacin (Levaquin) 500mg PO QD
OR
 - Azithromycin (Zithromax) 500mg PO x 1 day, then 250mg PO QD
OR
 - Metronidazole (Flagyl) 500mg PO BID

Evacuation Considerations

- Evacuation usually not required
- Routine evacuation if symptoms worsen or do not resolve with treatment

Other Considerations

- Symptoms of common STDs, including chlamydia and gonorrhea, are often confused with symptoms of UTI. Consider treating for chlamydia and gonorrhea if the patient complains of discharge. It is often prudent to treat young otherwise healthy males complaining of UTI for chlamydia and gonorrhea as well using:
 - Azithromycin (Zithromax) 2g PO once
AND
 - Metronidazole (Flagyl) 2g PO once

WATERBORNE INJURIES

Review of Injury

- Waterborne injuries include drowning injuries and scuba diving-related injuries. Drowning is asphyxiation resulting from submersion in liquid. Scuba diving injuries are often the result of the altered environmental pressure underwater or coming into contact with one of many underwater hazards.

Symptoms

Near Drowning (upon removal from water)	Scuba Diving Injury (post-scuba diving)
Hypoxia Respiratory distress Cough upon removal C-spine injury	Vertigo Seizures Deafness Blindness Sensory disturbances Focal paralysis Cardiac arrest

Call for evacuation needs as soon as the need is determined.

Tactical Field Care

BLS

- Remove patient from water
- Airway management for unconscious patient
 - Chin lift or jaw thrust maneuver

- NP airway
- Place patient in recovery position
- Provide 100% oxygen as soon as possible
- For respiratory arrest or cyanosis with decreased level of consciousness, assist with BVM ventilation
- Perform CPR as indicated
- Immobilize spine if trauma indicated (maintain high level of suspicion)
- Any patient suspected of having decompression illness and/or arterial gas embolism should be placed in the left lateral recumbent position with the head slightly lower and the knees bent; this is also known as the “recovery” position
- Include in assessment:
 - Approximate submersion time
 - Any loss of consciousness
 - Respiratory distress or hypoxia
 - Body temperature and vitals
 - Diving associated injuries
- Refer to hypothermia protocol (pg. 146) and hypothermia prevention measures (Appendix #5 on pg. 146)

ALS

- Initiate IV fluid therapy with NS

- IO access if IV access cannot be obtained (refer to Appendix #6 on pg. 182)

Evacuation Considerations

- Urgent evacuation for a patient that goes into cardiac and respiratory arrest with a chance of survival
- Urgent evacuation for any diving-related dysbaric air embolism because the patient must be treated in a hyperbaric chamber and cannot be treated in the field
 - Air evacuation may exacerbate scuba diving injuries; contact medical officer for specific instructions

Other Considerations

- Drowning victims in cold water, especially pediatric patients, should have prolonged resuscitation efforts while receiving active warming. Patients in cold water may survive without neurological sequela, even with prolonged cardiac arrest.

APPENDICES

1. Pain Management Drugs
2. Antibiotics
3. IV Infusion Drip Rate Table
4. Glasgow Coma Scale
5. Hypothermia Prevention After Traumatic Injury
6. IO Needle Procedure
7. Cricothyrotomy Procedure
8. Needle Thorocostomy Procedure
9. Escharotomy Procedure
10. Dislocated Finger and Shoulder Reduction Procedures
11. Subungual Hematoma
12. String Trick (for ring removal)

APPENDIX 1: PAIN MANAGEMENT DRUGS

All of the pain management drugs below can be administered in the Tactical Field Care stage and the Tactical Evacuation Care stage. Administer pain management drugs when specific protocols advise to do so. Always check for known allergies before administering.

Ibuprofen and Acetaminophen may be administered by a BLS provider. Fentanyl Citrate and Morphine may only be administered by an ALS provider

BLS

If patient is able to continue mission, the following medications may be administered:

- **Ibuprofen** (or comparable NSAID), as directed
- **Acetaminophen (Tylenol)**, 1000mg, PO
 - Every eight hours

ALS

If patient cannot continue mission, the following medications may be administered:

- Have **Naloxone** (Narcan) readily available for administering opiates below
 - If severe respiratory depression, administer 0.4-2.0 mg IV push every 2 minutes until recovery

- Dose **Fentanyl Citrate** and Morphine carefully when patient is in severe shock
- If IV/IO access is not otherwise required, administer oral transmucosal **Fentanyl Citrate**, 800ug transbuccally
 - Give patient lozenge
 - Tape lozenge to patient's finger for added safety
 - Reassess in 15 minutes
 - Add second lozenge, in other cheek, as necessary to control severe pain
 - Monitor for respiratory depression
- If IV/IO access is obtained, administer **Morphine Sulfate**, 4 mg IV/IO, slow push
 - Every 5 minutes give 2 mg additional until pain controlled; no upper limit
 - Half life is 2-4 hours, dose appropriately
 - Monitor for respiratory depression

Severe Vomiting:

- **Promethazine (Phenergan)**, 25mg, IV/IM/PR/IO
 - Repeat after four hours
 - Note: Promethazine (Phenergan) may be used to offset nausea caused by Morphine
- **Ondansetron (Zofran)**, 4 mg, IV push or PO
 - May repeat once

Head Injury:

- Perform baseline neurological assessment before administering pain meds (refer to Glasgow Coma Scale on Appendix #4 on pg. 179)

Eye Injury:

- For minor scratches and eye pain, use **Proparacaine Hydrochloride 1% (Alcaine)** for pain relief
- Use only one drop of Alcaine
- Do not use Alcaine if object is impaled in eye.

APPENDIX 2: ANTIBIOTICS

All of the antibiotics below can be administered in the Tactical Field Care stage and the Tactical Evacuation Care stage.

Administer antibiotics when instructed to in the appropriate protocol. Antibiotics are recommended for all open wounds.

Always check for known allergies before administering any drug.

Antibiotics used in this guide:

- PO:
 - Levofloxacin (Levaquin) 500mg PO QD
 - Azithromycin (Zithromax) 500mg PO x 1 day, then 250mg PO QD
 - Metronidazole (Flagyl) 500mg PO BID
 - Clindamycin (Cleocin) 450mg PO q6h
 - Doxycycline 100mg PO BID
- IV:
 - Levofloxacin (Levaquin) 750mg IV QD
 - Ciprofloxacin (Cipro) 400mg IV q12h*
 - Clindamycin (Cleocin) 900mg IV q8h
 - Metronidazole (Flagyl) 500mg IV q6h

*If levofloxacin (Levaquin) IV is not available, then administer ciprofloxacin (Cipro) IV in its place.

ALS

- For all soft tissue injuries where a generic recommendation is made to “administer antibiotics,” administer:
 - Levofloxacin (Levaquin) 500mg PO QD
 - If patient is allergic to levofloxacin (Levaquin), administer:
 - Azithromycin (Zithromax) 500mg PO x 1 day, then 250mg PO QD
- For open abdominal wounds, administer both:
 - Levofloxacin (Levaquin) 750mg IV QD
 - AND
 - Metronidazole (Flagyl) 500mg IV q6h

APPENDIX 3: IV DRIP CHART

DISCLAIMER: We have taken considerable care while collecting this information to ensure accuracy and appropriate content. The user is reminded that ultimate responsibility for accuracy of calculations and appropriateness of medication rests with the prescriber and professional actually administering the medication.

IV Infusion Drip Rates

Volume to be Infused (in mL per hour)	Select IV Drip Chamber Size (in drops per mL)			
	10	15	20	60
	Drops per Minute**			
10	1.7	2.5	3.0	10.0
30	5.0	7.5	10.0	30.0
50	8.0	12.5	17.0	50.0
70	12.0	17.5	23.0	70.0
90	15.0	22.5	30.0	90.0
125*	20.8	31.0	42.0	N/A
175	29.0	43.8	58.0	N/A
250	29.0	43.8	58.0	N/A

* Delivers one liter over 8 hours.

** Round to nearest value

1mL = 1cc

APPENDIX 4: GLASGOW COMA SCALE

The Glasgow Coma Scale is based on a 15-point scale for estimating and categorizing the outcomes of brain injury on the basis of overall social capability or dependence on others.

Used as a scale for measuring level of consciousness, especially after a head injury. Add total from three sections to get score out of 15.

Eye Opening Response

Spontaneously	4
To Voice	3
To Pain	2
None	1

Verbal Response

Oriented	5
Confused	4
Inappropriate Words	3
Incomprehensible	2
None	1

Motor response

Obeys Command	6
Localizes Pain	5
Withdraws to Pain	4
Flexion (abnormal) to Pain	3
Extension to Pain	2
None	1

Glasgow Coma Score Total =	
----------------------------	--

APPENDIX 5: HYPOTHERMIA PREVENTION AFTER TRAUMATIC INJURY

Hypothermia often complicates the management of a patient with a traumatic injury, leading to decreased survival rates. Aggressive hypothermia prevention measures need to be performed as soon as tactically feasible in a patient with a traumatic injury.

Aggressive hypothermia prevention should be performed in all ambient temperatures if the patient suffers a traumatic injury or is undergoing air evacuation.

Prevention Measures:

- Early control of bleeding
- Minimize exposure to the elements
- Keep protective gear on or with patient if feasible
 - Only strip clothes and protective gear from patient when necessary and for a minimal amount of time
- Replace wet clothing with dry as soon as possible
- Actively dry any fluids from patient often (blood, IV fluid, sweat, rain)
- Wrap patient in rescue blanket
- Put hypothermia prevention cap on patient's head under the helmet to prevent heat loss

- For fluid resuscitation, use fluid warming devices or pre-warmed fluids when tactically feasible

If body temperature drops below patient's normal body temperature, initiate active rewarming measures.

- Wrap patient in multiple blankets with heat sources placed at the neck, armpits, groin, and at the palms of the hands

APPENDIX 6: INTRAOSSEOUS NEEDLE PROCEDURE

IO access can be obtained by an ALS provider in the Tactical Field Care stage and the Tactical Evacuation Care stage. Use device-specific instructions when obtaining IO access. See pictures on next page of commonly used IO access sites (i.e., tibial tuberosity, sternum, humeral head, distal tibia) using various types of IO injection devices. An IO should only be performed on a manufacturer approved site for that device.

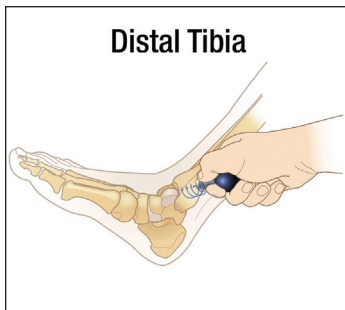
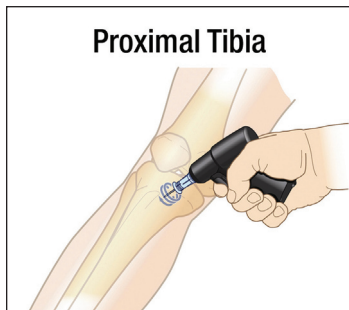
IO access should be considered if:

- IV access cannot be obtained after TWO attempts
- It is necessary for life-sustaining treatment

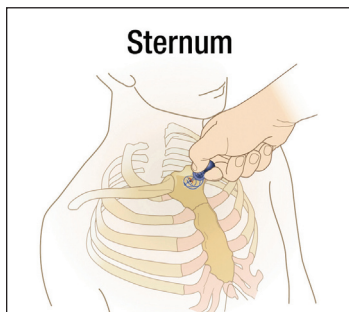
Other Considerations

- Fluid delivery is often painful
 - Consider giving 5cc of Lidocaine prior to administering IVF
- High pressure infusion is often needed
 - Use pressure bag or inflate BP cuff around bag

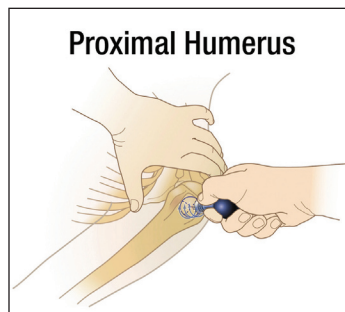
Tibial Tuberosity



Sternum



Humeral Head



APPENDIX 7: CRICOTHYROTOMY PROCEDURE

A cricothyrotomy can be performed in the Tactical Field Care stage or the Tactical Evacuation Care stage by an ALS provider.

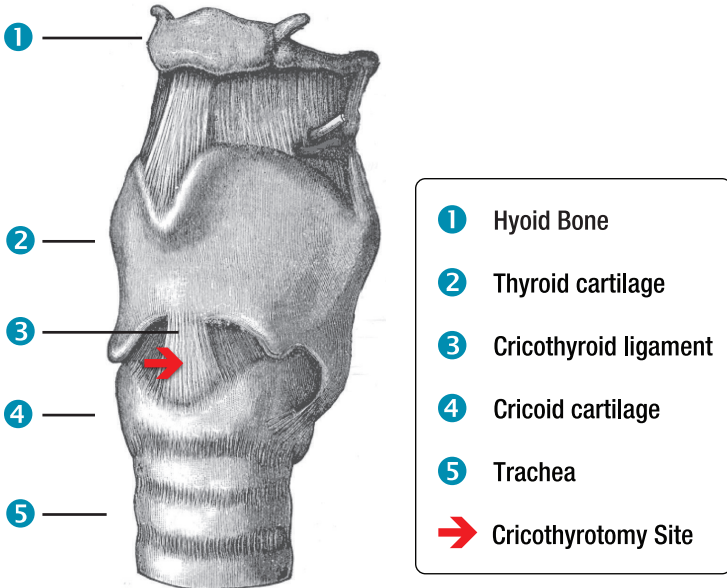
A cricothyrotomy procedure should be considered for use if:

- An advanced airway is needed in the Tactical Field Care stage
- Two attempts to secure the airway using other means have failed in the Tactical Evacuation stage
- The patient has a mechanical airway obstruction, for example:
 - facial fractures
 - direct airway injury
 - broken teeth
 - vomiting

Cricothyrotomy Procedure

- Consider administering 3 cc of 1% lidocaine with epinephrine 1:100,000 subcutaneously in the area surrounding the incision site to control bleeding
- Cleanse site with povidone-iodine (Povidine)
- Using thumb and middle finger of non-dominant hand to stabilize trachea, use index finger to locate cricothyroid membrane

- Be careful not to confuse with hyoid membrane by documenting tracheal rings immediately below cricothyroid membrane



- Using a #15 scalpel, make a 1.5 cm incision through the skin
 - The incision should cut through the skin and subcutaneous tissues, exposing the cricothyroid membrane
- Then use the scalpel to make a transverse stab incision through the membrane into the airway
- Use the handle of the scalpel (or a hemostat) to dilate the opening in the membrane
 - If a tracheal hook is available, insert the hook to control airway
 - Insert bougie (preferable), hook, or finger into airway to secure path and use as guide to insert ET tube
- Insert the previously prepared tube into the trachea, inflate the cuff, and secure the tube to the patient's neck
- If a tracheostomy tube is not available, a 6.0 ETT may be used as a substitute

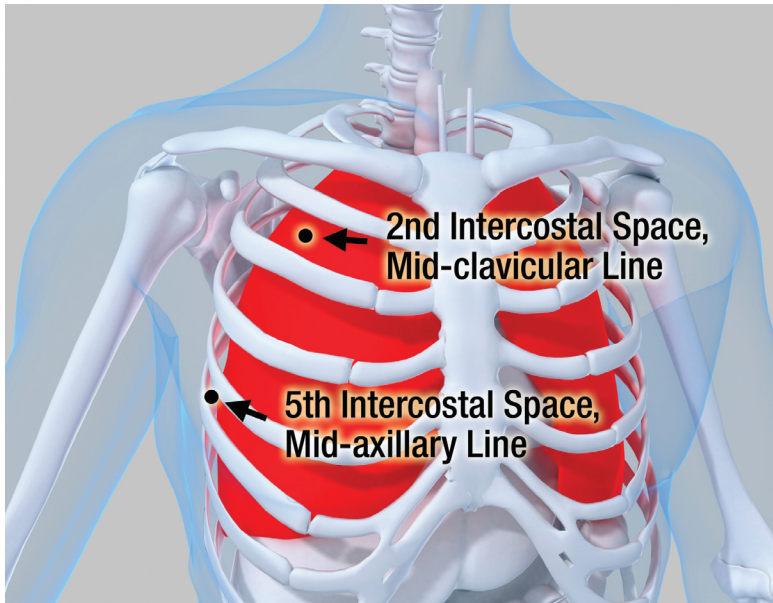
APPENDIX 8: NEEDLE THORACOSTOMY PROCEDURE

A needle thoracostomy can be performed in the Tactical Field Care stage and the Tactical Evacuation Care stage by a BLS provider.

The procedure is performed for a patient with progressive respiratory distress and known or suspected torso trauma to resolve a tension pneumothorax.

How to perform a Needle Thoracostomy:

- Decompress chest on side of injury.
- Consider having patient sit up to 20-45° incline if hemodynamically stable
- Cleanse site with povidone-iodine (Povidine) or alcohol
- Use a 14-gauge, 3.25-inch needle/catheter unit inserted in the second intercostals space at the mid-clavicular line (see diagram)
 - If patient is wearing body armor, needle can be inserted through 5th intercostal space at the mid-axillary line (see diagram)
- Ensure the needle entry into the chest is not medial to the nipple line and is not directed towards the heart



- After decompression, remove needle, but leave catheter in place
- Be suspect of needle clotting
- Be prepared to perform multiple needle decompressions to resolve tension pneumothorax
 - There is no limit on number of decompression attempts
 - Even over multiple attempts, remove needle but leave catheter in place

APPENDIX 9: ESCHAROTOMY PROCEDURE

An escharotomy is an advanced procedure performed on circumferential burn patients with severe edema from full-thickness or third degree burns. It is performed when the severity of the burn produces edema that limits circulation to tissue distal to the burnt area or restricts the patient's ability to breathe. A scalpel is used to make incisions through the burned skin, allowing the tissue to expand and subsequently reduce pressure on the underlying vasculature or the chest wall.

Escharotomies should only be performed by an ALS provider after consultation with medical officer.

An escharotomy should be performed when:

- The burns constricts the chest and restricts respiratory efforts
- The burns constricts a limb and impairs distal circulation
- The procedure is approved by a medical officer

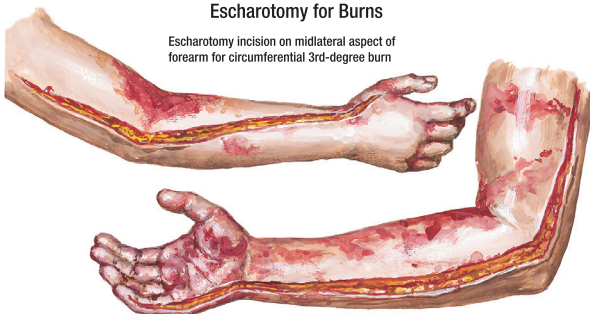
Procedure:

- Administer pain management drugs (refer to Appendix #1 on pg. 173)
 - Local anesthetic injection is unnecessary because only insensate burn is incised
- Carefully monitor distal pulses throughout procedure

- Burned extremity should be rinsed well and cleansed with soap and water
- Use scalpel to perform an incision through the eschar into the subcutaneous tissue (refer to illustration for incision locations). On extremities, first incision should be made on lateral side. Make incision on medial side if ischemia is not resolved after lateral incision.
 - Only eschar is incised, do not incise subcutaneous fat
 - Do not incise unburned skin

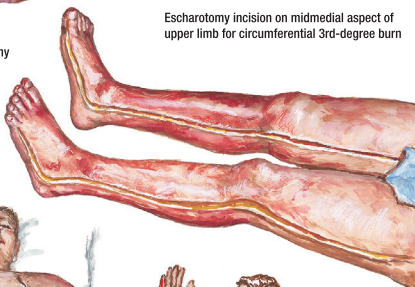
Escharotomy for Burns

Escharotomy incision on midlateral aspect of forearm for circumferential 3rd-degree burn

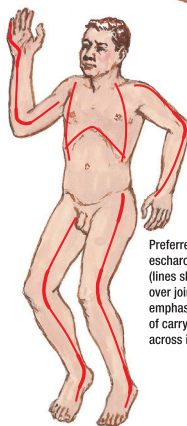


Escharotomy incision on midmedial aspect of upper limb for circumferential 3rd-degree burn

Medial and lateral escharotomy incisions for circumferential 3rd-degree burns of lower limbs



Escharotomy incisions for circumferential 3rd-degree burns of lower limbs and trunk in severely burned patient



Preferred sites for escharotomy incisions (lines shown thicker over joints to emphasize importance of carrying incisions across involved joints)

- Bleeding should be minimal (if subcutaneous fat was not incised) and can be controlled with pressure
- After procedure apply a moist dressing covered in antibiotic cream/ointment or gauze soaked in saline
- A compression wrap and elevation of the extremity after the procedure will assist in controlling bleeding
- Administer antibiotics (refer to Appendix #2 on pg. 176)

APPENDIX 10: DISLOCATED FINGER AND SHOULDER REDUCTION PROCEDURES

Digit Dislocation

Review of Injury

- Three different joints of each finger can become dislocated:
 - The most commonly dislocated is the Proximal Interphalangeal Joint (PIP), followed by the Distal Interphalangeal Joint (DIP), followed by the Metacarpophalangeal Joint (MCP)
 - The vast majorities of these injuries are dorsal dislocations and follow a similar procedure to reduce them

Applicable Physical Exam

- A dislocated digit joint is often obvious
- The finger appears crooked and often bends at an abnormal angle
- Specifically, the distal bone of the joint will be moved dorsal to its normal position

Symptoms

- Severe pain

- Unwillingness to move affected joint
- Significant swelling around the affected joint

Management

- Pain Management Drugs (refer to Appendix #1 on pg. 173)
- Reduction Procedure:
 - All joints proximal to the injured joint should be flexed including the wrist
 - Grip the distal bone of the affected joint firmly
 - First the distal bone should be hyperextended
 - Then the base of the distal bone is pushed into flexion, maintaining contact with the proximal bone head
 - The joint usually reduces easily with a palpable and audible click

Post-procedural Care

- For PIP and DIP dislocations:
 - Tape the injured finger to an adjacent finger to prevent hyperextension
 - Early motion is allowed
- For MCP dislocations:
 - Apply a dorsal-volar splint, holding the joint at 90° of flexion

Shoulder Dislocation

Review of Injury

- The shoulder is the most commonly dislocated joint among adults
- The head of the humerus is dislocated anteriorly and inferiorly in greater than 90% of injuries; this happens when there is a blow to the arm in the abducted and externally rotated position

Applicable Physical Exam

- Abnormally shaped shoulder:
 - Loss of deltoid contour
 - Humeral head palpable anteriorly
- Patient is unable to touch the uninjured shoulder
- Check distal pulses and sensation, neurovascular injury is possible

Symptoms

- Severe pain
- Deformed shoulder
- Unable to interiorly rotate arm

Management

- Document neurovascular status pre- and post-reduction
- If a neurovascular injury is suspected, do not reduce without medical control, splint and evacuate

- Pain management drugs (refer to Appendix #1 on pg. 173)
- The key to reduction is slow and steady application of the technique with adequate pain medication and muscle relaxation
- There are many techniques described to reduce an anterior shoulder dislocation, this is the preferred technique:
 - Patient should be laying on their back
 - Wrap a towel or blanket around the patient's chest, have an assistant use it to apply counter traction
 - Apply axial traction to the arm
 - Gently rotate the arm internally and externally while applying traction
- With successful reduction, the patient should experience an immediate decrease in pain
- Having the patient touch the uninjured shoulder will confirm reduction
- Apply a swath and sling
- If unable to reduce the dislocation, apply a swath and sling, maintain pain medication, and evacuate

Post-procedural Care

- Document neurovascular status, the axillary nerve is commonly injured

APPENDIX 11: SUBUNGAL HEMATOMA

Review of Injury

- Painful hematoma beneath nailplate, usually the result of a crush or blunt force impact to the digit. Check distal sensation, digital extension and flexion, obvious fracture.

Signs and Symptoms

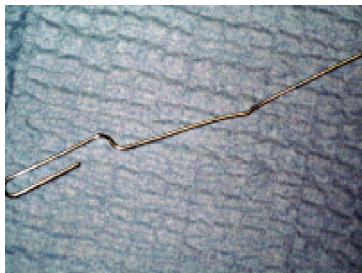
- Blood between nailplate and nailbed with no opening to allow draining
- Pain under nail

Procedure

ALS

- Administer pain management drugs (refer to Appendix #1 on pg. 173)
- Prep site with disinfectant solution
- If heating source is available, use paper clip to melt a hole in nailplate (reshape the paper clip as shown in photo on next page)
 - Heat paper clip over heat source until it is red hot
 - Melt a hole through the nailplate, distal to the lunula

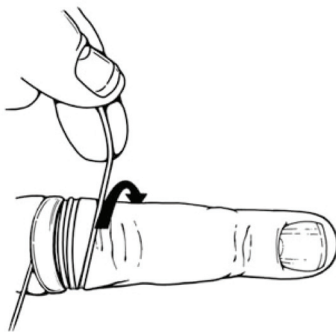
- If heat source is not available, use a 16-18 gauge needle to drill open a hole in the nailplate
 - Twist needle in a circular motion, applying pressure until hematoma is entered
- Allow blood to drain, gentle pressure may be applied.
- Soak digit in clean, disinfected water to assist the evacuation of blood, if possible. If clean water is not available skip this step.
- Apply gauze dressing.
- Splint hand digits or buddy-tape toes if fracture is suspected.
- Administer antibiotics (refer to Appendix #2 on pg. 176)



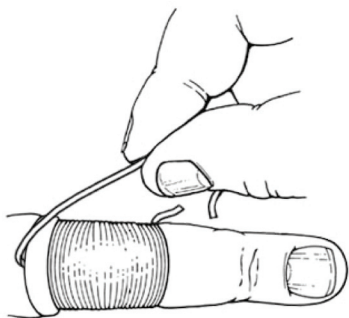
APPENDIX 12: STRING TRICK (RING REMOVAL)

This procedure is used to remove a ring from a swollen finger. It is an alternative BLS procedure to using ring cutter devices

- Begin by opening a pack of suture material, a 2-0 Silk on a Keith or straight needle works best, but others will do.
- Insert the dull end of the needle under and past the ring, going distal to proximal. This can be done by hand with a Keith needle or by using a needle driver or hemostat with a curved needle. **DO NOT PUNCTURE THE SKIN.**
- Only a small portion of the suture needs to pass to the proximal side of the ring. Leave the bulk of the suture distal to the ring.
- Take the distal portion of the suture and wrap the finger relatively tightly, without overlapping the suture.



- Continue wrapping the finger until well past the PIP joint. Then tape the end of the suture to the finger.
- Lubricate the finger and suture.
- Grasp the proximal end of the suture and pull the suture against the ring and continue to pull distally. At the same time, begin an unscrewing motion as you rotate the suture around the ring. Continue to pull distally at the same time.



- The ring should follow the suture like a screw and come off the finger.

Notes:

- If the suture runs out before the ring clears the PIP or any other point of swelling, simply start the procedure over by replacing the suture under the ring and trying again. Sometimes it may take more than one attempt to remove the ring.

- Anesthesia is normally not necessary for this procedure. However, if the finger is extremely painful, as from a crush injury, etc., a digital nerve block may be used.

What not to do:

- When a patient is expected to have transient swelling of the hand or finger without evidence of vascular compromise, and he requests that the ring not be removed, do not be insistent that you must cut the ring off. If the patient is at all responsible, he can be warned of vascular compromise (pallor, cyanosis, or pain) and instructed to keep his hand elevated and apply cool compresses. He should then be made to understand that he is to return for further care if the circulation does become compromised because of the possible risk of losing his finger. Be understanding and document the patient's request and your directions.

Discussion:

- The constricting effects of a circumferential foreign body can lead to obstruction of lymphatic drainage, which in turn leads to more swelling and further constriction, until venous and eventually arterial circulation is compromised. If you believe that these consequences are inevitable you should be quite direct with the patient about having the ring removed.

Basic Management Plan for Care Under Fire

1. Return fire and take cover.
2. Direct or expect patient to remain engaged as a combatant if appropriate.
3. Direct patient to move cover and apply self-aid if able.
4. Try to keep the patient from sustaining additional wounds.
5. Airway management is generally best deferred until the Tactical Field Care phase.
6. Stop life-threatening external hemorrhage if tactically feasible:
 - Direct patient to control hemorrhage by self-aid if able.
 - Use a CoTCCC-recommended tourniquet for hemorrhage that is anatomically amenable to tourniquet application.
 - Apply the tourniquet as proximal as possible over the uniform, tighten, and move the patient to cover.