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Advanced Ranger First Responder Handbook

Official 2021 Edition

Advanced Ranger First Responder Handbook
2021 Edition

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Disclaimer: The protocols in this handbook were created by the Ranger Regiment leaders for use ONLY by Advanced Ranger First Responders while providing emergency care under the license of their medical director. Advanced Ranger First Responders who are authorized to operate under the trauma management team guidelines may not use these standing orders outside of their military employment.

The 2021 Advanced Ranger First Responder Handbook is a resource for ARFRs with skills and knowledge to assist the Ranger Medics with trauma emergencies encountered while in garrison, training, and operating in tactical, remote, or austere environments.

MEDICAL DIRECTION

Hemorrhage remains the number one cause of preventable death on the battlefield. Evaluate and treat each patient in accordance with protocols. Advanced Ranger First Responders (ARFRs) must apply thought and cannot blindly follow algorithms. Since hemorrhage accounts for approximately 90% of preventable battlefield death, always consider and treat for hemorrhagic shock when in doubt. The MARCH algorithm is never wrong, but always ask yourself, "What is killing my patient now?" Act on that question and you will save a life. Patients may stop breathing because of hemorrhage. Treating hemorrhage remains a higher priority than airway control or breathing assistance.

ARFRs are trusted with an advanced skillset of procedures, medications, and training. You will save lives with this knowledge. While these skills are enhancing the basics of Tactical Combat Casualty Care (TCCC), training your fellow Rangers, conducting precombat checks (PCCs)/precombat inspections (PCIs), and rehearsals will save the most lives on the battlefield.

COMMONLY ASKED QUESTIONS

1. Tranexamic acid (TXA) may be predrawn into a STERILE 10mL syringe. This should be replaced every 7 days due to bacterial infection risk.
2. ARFRs are approved to predraw 2g TXA and to give this as an initial dose.
3. In hemorrhagic shock, the priority and focus of medical care should be administering blood products. Do not delay blood products. Ensure you are proficient with the execution of the ROLO protocol and know who your ROLO donors are. PCC/PCI their equipment regularly.
4. Your medical direction only comes from those within Ranger Regiment. While we appreciate the experts that give advice and learn from them, they will never dictate your scope of practice. Do not contradict your Ranger medical leadership by following outside advice.
5. The 75th Ranger Regiment does not promote commercial products or companies.
6. Product-specific protocols have been removed from this handbook. Follow specific product instructions and train with each product that will be used in combat prior to deployment. This handbook will not instruct on every product available for use.
7. Annual updates will be clarified in this section.
8. Data is showing that penetrating chest/torso trauma is a significant source of hemorrhagic shock. Treat aggressively with blood in casualties with this MOI and signs/symptoms of hemorrhagic shock.

2021 Advanced Ranger First Responder Handbook Acknowledgements

2021 Medical Direction

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Foreword

The 75th Ranger Regiment has been continuously engaged in combat operations since the beginning of the Global War on Terrorism. Since Oct 2001, the Regiment has remained the standard for pre-hospital care. Ranger medics continue to be at the cutting edge of battlefield medicine driving changes to TCCC. Given the Ranger mission, life threatening injuries will still be encountered as we continue prosecuting our nation's enemies.

Though we have lost too many Ranger brethren, executing the fundamentals of the unit's casualty response and medical programs has produced astounding results. Based on the principles that have evolved in the last two decades, the 75th Ranger Regiment standard of medical care is no deaths from preventable causes of combat death. This hallmark is a direct result of the intense medical training and enabling capability of individual Rangers, Ranger Leaders, and Ranger Medical personnel.

The success of Ranger medicine is the success of the 75th Ranger Regiment. The Ranger First Responder, Advanced Ranger First Responder, Ranger Medic, and Ranger leaders have made casualty scenarios into a battle drill. Survivability does not depend solely on the Ranger medic but on the effectiveness of the Ranger team to respond to a fallen comrade. The chain of survival starts in training and allows for both success of the mission and care for the casualty.

"Mastery of the Basics" is and always has been a standard to live by within the 75th Ranger Regiment. The mastery of casualty response and medical skills at all levels has saved numerous Ranger lives. Rangers are continuously self-critical and use every training or real casualty scenario to improve. The unit also looks for emerging technology and techniques and swiftly adapts them to the combat environment.

The foundation of the unit's medical programs remains based on the integrated tenets of Tactical Combat Casualty Care (TCCC), innovative medical planning, and casualty response training for Ranger leaders, which when employed to their fullest saves lives on the battlefield. Through the continuous evolution of our training and equipment programs, the Regiment will always strive to be the tip-of-the-spear for developing the battlefield medicine standard of care for the Infantry and Special Operations communities.

The 75th Ranger Regiment and Ranger Medical Team will continue to hold true the Ranger Creed and the unit charters, and complete any mission placed before it.

I will never leave a fallen comrade…

Advanced Ranger First Responder Charter

Close with and destroy our nation's enemies, while maintaining mastery of an advanced medical skillset in order to remain a combat multiplier with highly dispersed and highly mobile combat formations in an austere environment.

A competent provider of advanced trauma management care whose absolute mastery of the basics sustains casualties using tactical combat casualty care protocols and an advanced scope of practice.

An Advanced Medical Provider who assists Ranger Medics with trauma emergencies encountered while in garrison, training, and during deployments.

Regimental Medical Charter

Provide optimal tactical healthcare support in accordance with TCCC and the Ranger Medic Handbook.

"Absolute Mastery of the Basics"

Train and operate medics that are relatively independent with highly dispersed, highly mobile combat formations in an austere environment.

"Advanced skills within a Scope of Practice"

Train and operate medics to move tactically through unsecured areas that can communicate, engage targets, and remain a combat multiplier.

"Be a Ranger on the battlefield"

Provide training to individual Rangers and leaders to provide first responder care and command/control of casualty response operations.

"Teach and mentor Rangers and Leaders in Combat Medicine"

Evaluate and develop casualty response tactics, techniques, equipment, and procedures as the standard bearer of tactical medicine for the Armed Forces.

"Set the Standard for the Armed Forces in Tactical Medicine"

SCOPE OF PRACTICE

CASUALTY RESPONSE SYSTEM – The Regiment's solution for managing combat casualties is to recognize that the problem is solved by the entire unit, not just medics, and that a casualty can occur during any phase of an operation. The principles of the casualty response system are that the first responder to a casualty can be any Ranger in the unit, that medical personnel manage casualty care, and that leaders run the mission. When a casualty is incurred, it immediately becomes a component of the unit's mission to extract, treat, and evacuate the casualty while still completing the assigned combat mission as an integrated team. Thus, every member of the unit must maintain first responder medical skills, medics must be highly proficient, and leaders must know how to properly integrate casualty management into any phase of an operation.

RANGER FIRST RESPONDER (RFR) – A Ranger First Responder is the baseline for all Rangers. This level of training equips all Rangers with treatment skills as a secondary mission to their primary mission role. The RFR medical capability provides a TCCC skillset with specific trauma skills. An RFR is always trained and employed in conjunction with a platoon medic or higher but has the skillset to provide basic medical interventions independent of any trained medical personnel. This skillset will be trained and verified annually.

ADVANCED RANGER FIRST RESPONDER (ARFR) – The Advanced Ranger First Responder medical capability is a nonmedical Ranger trained on specific first responder medical skills beyond the RFR level, to provide a higher level of trauma response during Ranger operations. This is the highest level of capability for nonmedical Rangers. The ARFR is expected to provide limited scope trauma and emergency care in a tactical or austere setting; they may work independently or in support of a medical provider. They are proficient at advanced medical procedures and basic medication administration.

PLATOON MEDIC – The Ranger Platoon Medic is the minimum standard for an individual serving as sole medical support for a Ranger mission. The Ranger Platoon Medic is a Special Operations-Advanced Tactical Paramedic (SO-ATP). The Ranger Platoon Medic provides advanced emergency medical care for critical and emergent casualties in a tactical setting, with a specific focus on trauma management within < 4 hours of injury. These personnel are employed in disaggregated operations to ensure tactical elements have adequate advanced trauma medical capabilities. The Ranger Platoon Medic also provides medical support to the platoon outside of tactical operations, is able to treat basic medical conditions independently, and is able to treat difficult medical conditions with oversight or medical direction. Ranger Platoon Medics are responsible for training and validating RFRs.

STANDING ORDERS – Advanced life support interventions, which may be undertaken *before* contacting online medical control.

PROTOCOLS – Guidelines for out-of-hospital patient care. Only the portions of the guidelines designated as "standing orders" may be undertaken before contacting an online medical director.

MEDICAL CONTROL/MEDICAL DIRECTOR/MEDICAL OFFICER – A licensed and credentialed medical provider, physician, or physician assistant who verbally or in writing states assumption of responsibility and liability and is available on-site or can be contacted through established communications. Medical care, procedures, and advanced lifesaving activities will be routed through medical control in order to provide optimal care to all sick or injured Rangers. Medical Control will always be established, regardless of whether the scenario is a combat mission, a training exercise, or routine medical care. **Note that, ultimately, all medical care is conducted under the licensure of an assigned, attached, augmenting, or collocated PHYSICIAN.**

STANDING ORDERS AND PROTOCOLS

As published, these standing orders and protocols will be used ONLY by Ranger Advanced First Responders currently assigned to the 75th Ranger Regiment who have demonstrated competency and successfully completed an ARFR course prior to deployment.

Purpose

The primary purpose of these protocols is to serve as a guideline for tactical and nontactical prehospital trauma and medical care. Quality out-of-hospital care is the direct result of comprehensive education, accurate patient assessment, good judgment, and continuous quality improvement. The protocols contained within this handbook make the following specific assumptions on when and how they are employed.

Medical Director approved medication regimens are designed to provide the ARFR with the ability to rapidly treat trauma patients in the absence of a Ranger Medic, without compromising standards of care. Appropriate documentation of diagnosis and treatment rendered in the patient's medical record will be accomplished when the unit returns to their forward operating base.

Unit protocols are not designed to conduct Medical/Civic Action (MEDCAP) missions independently. Evacuation recommendations are based on the appropriate therapy per protocol being initiated upon diagnosis. The definitions of Urgent, Priority, and Routine evacuations are based on the times found in Joint Publication 4-02.2 of 2, 4, and 24 hours, respectively.

Emergency, trauma, and tactical medicine continues to evolve at a rapid pace. Accordingly, this document is subject to change as new information and guidelines become available and are accepted by the medical community. The ARFR must continuously expand and sustain his knowledge base.

Standing Orders and Protocols

These standing orders and protocols are ONLY for use by Advanced Ranger First Responders while providing emergency care under the license of their medical director. ARFRs who are authorized to operate under the Trauma Management Team guidelines may not utilize these standing orders outside of their military employment. Revocation of privileges will be considered by the granting authority if these standards are violated.

Kit / Aid Bag Minimum Stock

The following list is what each ARFR should carry at a minimum and be used as a guide to pack their Kit and Aid Bag. The ARFR must have enough supplies to treat two multisystem trauma casualties. Items packed in the Kit provide immediate initial care to life-threatening injuries on a trauma casualty without external bags and equipment.

Common Name	Quantity	Notes
Massive Hemorrhage Control		
Tourniquet	2	
Hemostatic Dressing	2	
Pressure Dressing	2	
Airway Management		
Nasopharyngeal Airway 28Fr with Lubricant	1	
Supraglottic Airway Device	1	Any device is acceptable
Suction, Hand-Held Manual Device	1	Optional
Respiratory Management		
10G or 14G/3.25-in NCD	2	
Vented Chest Seal	2	
Bag-Valve Mask	1	
Pulse Oximetry Device	1	
Circulation/Fluid Resuscitation Management		
Intraosseous Device (STERNAL)	1	
Intraosseous Device (TIBIAL/HUMERAL)	1	
Intravenous (IV) Starter Kit	1	
Normal Saline (NS) Flush 10mL	4	
TXA	2g	2 × 10mL TXA syringes
Blood Transfusion Kit	1	
Disability/Immobilization		
Splint, Malleable	1	
Ace Wrap	2	
Miscellaneous		
Casualty Card	4	
Marker/Grease Pen	2	
Tape	1	3 inches
Shears	1	
Scalpels	1	
9 inch Peans	1	
Light Source	2	
Gloves	2 sets	
Sterile Gloves	1 set	For finger thoracostomy
Junctional Tourniquet (TQ)	1	Mission dependent

NOTES

SECTION 1

TCCC

Care Under Fire

Care under fire (CUF) is the care rendered by the first responder or combatant at the scene of the injury while he and the casualty are still under effective hostile fire. Available medical equipment is limited to that carried by the individual or by the medical provider in his aid bag.

Major goals of CUF are to move the casualty to safety, prevent further injury to the casualty and provider, stop life-threatening external hemorrhage, and **gain and maintain fire superiority – the best medicine on the battlefield!**

Tactical Field Care

Tactical field care (TFC) is the care rendered by the first responder or combatant once he and the casualty are no longer under effective hostile fire. TFC may consist of rapid treatment of the most serious wounds with the expectation of a re-engagement with hostile forces at any moment, or there may be ample time to render whatever care is possible in the field. It also applies to situations in which an injury has occurred, but there has been no hostile fire. Available medical equipment is still limited to that carried into the field by unit personnel. Time to evacuation to a medical treatment facility may vary considerably. Remember – effective hostile fire could resume at any time.

Tactical Evacuation Care

Tactical evacuation care is the care rendered once the casualty has been picked up by an aircraft, vehicle or boat. Additional medical personnel and equipment that may have been prestaged should be available in this phase of casualty management. The term "Tactical Evacuation" encompasses both Casualty Evacuation (CASEVAC) and Medical Evacuation (MEDEVAC).

TCCC Concepts

Casualty scenarios in combat usually entail both a medical problem and a tactical problem. We want the best possible outcome for both the casualty and the mission. Good medicine can sometimes be bad tactics; bad tactics can get everyone killed or cause the mission to fail. Doing the RIGHT THING at the RIGHT TIME is critical.

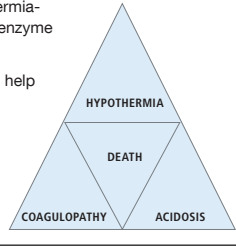
Hypotensive Resuscitation

Goals of fluid resuscitation therapy: 1) improved state of consciousness, 2) palpable radial pulse, 3) avoid over- resuscitation of shock. Basing the titration of fluids upon a monitored physiologic response may avoid the problem of excessive blood pressure elevation and fatal re-bleeding from previous clotted injury sites. **BLOOD** and blood products are the only fluid for trauma resuscitation.

Preventing the Trauma Lethal Triad

Hypothermia is a significant concern in any trauma victim because it leads to hypothermia-induced coagulopathy. This occurs by both decreasing platelet function and slowing enzyme activity in the coagulation cascade.

Prevention of hypothermia, along with hemorrhage control and fluid resuscitation, will help maintain the casualty's ability to generate heat.



Triage

Triage is the process of sorting casualties into groups based on their need for likely benefit from immediate medical treatment. Obviously, all casualties need treatment. However, accurate triage aids the provider in deciding which casualties have the greatest likelihood of survival if immediate care is rendered and which casualties can wait until the immediate care is completed. Triage ensures the greatest care for the greatest number and the maximal use of medical personnel, equipment, evacuation, and facilities. At any location or CCP, the most experienced provider assumes the role of triage officer. All casualties, including those with traumatic brain injury, must be assumed to have multisystem trauma until proved otherwise.

Triage is a dynamic and continuous process that must continue as the casualty's status changes.

TCCC Application

Care Under Fire: CUF is primarily self-aid and buddy-aid. If a patient is conscious, then direct to seek cover and provide self-treatment. If a patient is nonresponsive, when tactically feasible, move the patient to cover. Address only immediate life-threatening hemorrhage is possible. Continue the mission/fight. Leave a Ranger Buddy or report the GPS location of any patients who are separated from the maneuver element for later recovery.

Tactical Field Care: Direct all casualties through a choke point and triage into the CCP to provide appropriate treatment and accountability. Perform initial tactical trauma assessments on casualties. Separate casualties into four distinct categories using the UPR method. If a casualty can walk and talk (can follow instructions or describe injuries), then they are most likely going to be categorized as Routine. Routine casualties should tend to their own wounds if possible. Routine casualties may also assist with other casualties. If a casualty has obvious signs of death, then they should be categorized as Expectant. Casualties who require life-saving interventions cannot obey simple commands, have abnormal (or no) radial pulses, or are in respiratory distress are categorized as Urgent. All others will most likely fall into the Priority category. As soon as initial triage is completed, the primary effort is the life-saving interventions for the Urgent casualties. When moving from patient to patient, each is rendered a complete trauma assessment in a head-to-toe-treat-as-you-go manner. When the provider has completed one category group, he moves to the next. The provider should return to the Urgent category routinely, or after each other group is completed, to assess and provide continued resuscitation as needed. When all category casualties have been completed, the provider starts over with the Urgent group and cycles back through all casualties in each category. Triage is a continuing process until all casualties have been evacuated. In some cases, depending on injuries, interventions completed, or emerging complications, a casualty may be downgraded to a lower category or upgraded to a higher category. There may be instances of a small number of casualties in which a single patient is obviously Expectant while the others are obviously minimal. In this case, a patient normally classified as Expectant may be the focus of your attention. This action is for the benefit of the patient's comrades in that you attempted everything possible to save his life. Expectant casualties receive comfort measures and pain medications.

Tactical Evaluation: Triage is again conducted as casualties are packaged and prepared for evacuation. In this phase, triage is categorized into evacuation precedence of Urgent, Priority, or Routine. Urgent casualties are those who require surgical or advanced medical intervention within 2 hours to save life, limb, or eyesight. Priority casualties are those who require evacuation to a higher level of care within 4 hours. Routine casualties are those who remain including minimal, Expectant, and, depending on the tactical situation, KIA or DOW. Some minimal casualties may not require evacuation and can exfiltrate with the unit for further medical treatment on return to base. It is critical that the ARFR has a good understanding of the evacuation assets/capabilities and receiving facility's capabilities. When evacuation is imminent, casualties should be arranged in evacuation precedence keeping in mind the capability of the evacuation asset. In cases of a small asset (MEDEVAC or MH60) that can carry only a few of your casualties, Urgent casualties are loaded and evacuated first while remaining casualties are evacuated on subsequent turns of the asset. In cases of a large asset (MH47), priority litter casualties are loaded first, followed by Urgent litter casualties. This is so the Urgent casualties will be the first unloaded at the receiving facility. Minimal or walking wounded are loaded last. In all cases, the evacuation medic/provider will override the ground ARFR/medic in casualty loading based on placement of resuscitation equipment on the vehicle or aircraft.

Extended Care: Triage continues through extended care as casualty conditions may improve or deteriorate and require less or more medical care over time. TCCC management does not stop until a casualty is turned over to an equal or higher level of care.

Triage Categories & Evacuation Precedence

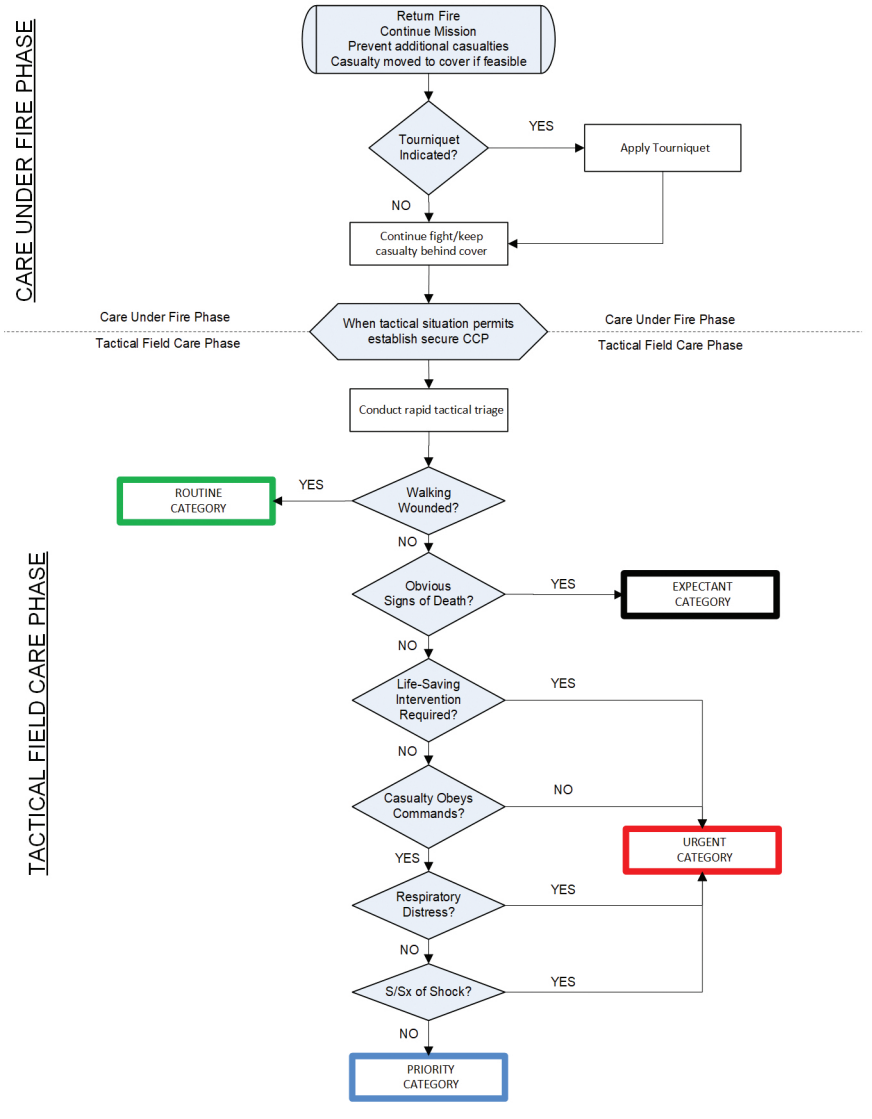
Urgent: This category include those casualties who require an immediate life-saving intervention or surgery. Example casualties include those who are hemodynamically unstable, have airway complications, chest or abdominal injuries, massive external hemorrhage, shock or burns > 20% total body surface area (TBSA). Casualties require evacuation within 2 hours.

Priority: This category includes those wounded who may need surgery but whose condition permits delay in treatment without unduly endangering life, limb, or eyesight. Example casualties include those with no evidence of shock, large soft tissue wounds with controlled bleeding, fractures of major bones, torso wounds with controlled bleeding or burns < 20% TBSA. Casualties require evacuation within 4 hours.

Routine: This category is for casualties often referred to as walking wounded. These casualties have minor injuries such as small burns, lacerations, abrasions, and small bone fractures. Casualties require evacuation within 24 hours.

Expectant (Routine): This category is for casualties who have wounds so extensive that even if they were the only casualty, they would have little hope for survival. Examples of expectant casualties are those who are unresponsive with massive penetrating head trauma, massive torso trauma, or no signs of continued life.

Tactical Triage Protocol



Tactical Trauma Assessment

Tactical Patient Assessment

Follow TCCC Guidelines of Care Under Fire, Tactical Field Care, and Tactical Evacuation Care.

The acronym **MARCH** is recommended to guide the priorities in the Care Under Fire (control of life-threatening hemorrhage only) and Tactical Field Care phases:

Massive hemorrhage – control life-threatening bleeding.

Airway – establish and maintain a patent airway.

Respiration – decompress suspected tension pneumothorax, seal sucking chest wounds, and support ventilation/oxygenation as required.

Circulation – establish IV/IO access and administer blood products as required to treat shock.

Head injury/**H**ypothermia – prevent/treat hypotension and hypoxia to prevent worsening of traumatic brain injury and prevent/treat hypothermia.

TCCC Application

Care Under Fire: Return fire and take cover. Direct or expect casualty to remain engaged as a combatant if appropriate. Direct casualty to move to cover and apply self-aid if able. Try to keep the casualty from sustaining additional wounds. Casualties should be extricated from burning vehicles or buildings and moved to places of relative safety. Do what is necessary to stop the burning process. Tactical patient assessment during this phase is limited to identifying life threatening hemorrhage in a rapid head-to-toe survey taking < 10–15 seconds or as tactically feasible. Airway management, other than positioning, is generally best deferred until the TFC phase. Stop *life-threatening* external hemorrhage if tactically feasible with an approved tourniquet.

Tactical Field Care: Consolidate casualties in CCP. Initially, conduct triage to identify which patient needs attention first and who can wait. Identify any life-threatening hemorrhage not already controlled. In this phase, the first priority is to conduct a rapid trauma assessment. A more deliberate and traditional head-to-toe MARCH survey is completed on each casualty after all life threats have been addressed. Casualties with an altered mental status should be disarmed immediately, including communications equipment. Injuries are managed in a head-to-toe-treat-as-you-go manner. Triage reoccurs during this entire phase. Delegate treatment of minor injuries to RFRs, freeing the ARFR to focus on more seriously injured. Provide instructions to ARFRs or RFRs if tasked to assist you with multisystem trauma casualties. Communicate casualty status and evacuation requirements to C2. Consolidate medical supplies in CCP. Prepare and package casualties for evacuation.

Trauma Assessment Principles

Massive Hemorrhage: Obvious external sources of bleeding should be controlled with tourniquets, direct pressure, and pressure dressings. Clamping of injured vessels is not indicated unless the bleeding vessel can be directly visualized. Sources of internal hemorrhage should be identified. Initial tourniquets are to be placed "high and tight." Effort should be made to convert these as distally as possible or to a pressure dressing as soon as the tactical situation allows.

Airway: A conscious and spontaneously breathing patient rarely requires immediate airway intervention. If the patient is able to talk normally, then his airway is intact. If the patient is semiconscious or unconscious, the tongue is the most common source of airway obstruction. Patient positioning and airway adjuncts (nasopharyngeal airway [NPA]/oropharyngeal airway [OPA]) should be the first choice to maintain a patent airway. Ranger Medics train extensively in order to proficiently conduct a surgical cricothyroidotomy. This should be the first choice for any patient requiring a definitive airway. Penetrating trauma causing C-spine fractures is almost universally fatal. One should consider C-spine fracture in blunt trauma and take appropriate precautions.

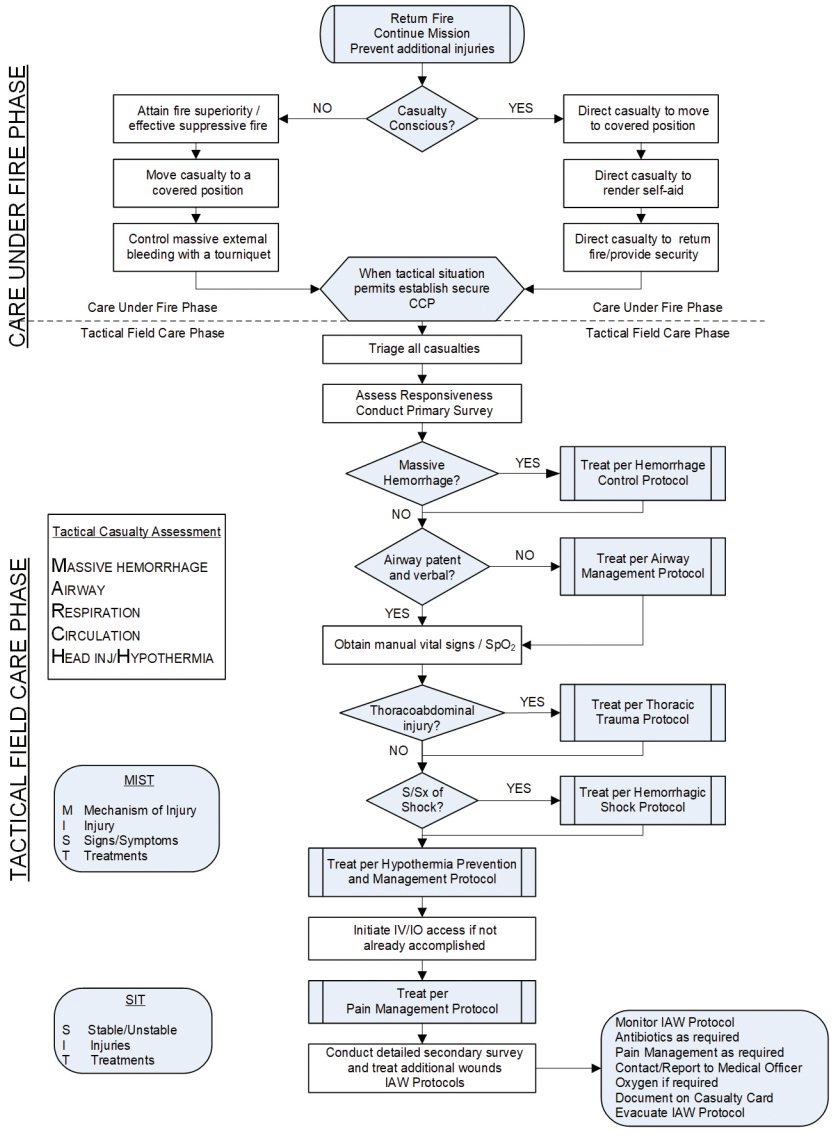
Respirations: In the conscious patient who is alert and breathing normally, no interventions are required. If the patient has an appropriate mechanism of injury and signs of respiratory distress such as tachypnea, dyspnea, or cyanosis, which may be associated with agitation or decreasing mental status, then a presumption of tension pneumothorax management is indicated.

Circulation: Important information can be rapidly obtained regarding perfusion and oxygenation from the level of consciousness, pulse, skin color, and capillary refill time. Decreased cerebral perfusion may result in an altered mental status. Skin color and capillary refill will provide a rapid initial assessment of peripheral perfusion. Pink skin is a good sign versus the ominous sign of white or ashen, gray skin depicting hypovolemia. Pressure to the thumb nail or hypothenar eminence will cause the underlying tissue to blanch. In a normovolemic patient, the color returns to normal within 2 seconds. In the hypovolemic, poorly oxygenated patient, and/or hypothermic patient, this time period is extended or absent.

Head Injury/Hypothermia: Clothing and protective equipment such as helmets and body armor should be removed only as required to evaluate and treat specific injuries. If the patient is conscious with a single extremity wound, only the area surrounding the injury should be exposed. Unconscious patients may require more extensive exposure in order to discover potentially serious injuries but must subsequently be protected from the elements and the environment. Hypothermia is to be avoided in trauma patients. A brief neurological assessment should be performed, and loss of consciousness (LOC) can be described preferably through the "alert, verbal, pain, unresponsive" (AVPU) scale. If the pupils are found to be sluggish or nonreactive to light with unilateral or bilateral dilation, one should suspect a head injury and/or inadequate brain perfusion. Assess for any fractures or deformities of extremities or joints.

Vital Signs: Vital signs should be assessed frequently, especially after specific therapeutic interventions, and before and after moving patients. As a group, Ranger patients are in excellent physical condition and may have tremendous physiological reserves. They may not manifest significant changes in vital signs until they are in severe shock. Technology can fail and ARFRs must be capable of obtaining manual vital signs.

Tactical Trauma Assessment



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SECTION 2

MASSIVE HEMORRHAGE

Hemorrhage Management

Hemorrhage Control

Extremity trauma hemorrhage is the most frequent cause of preventable combat death and can generally be prevented by the early use of a tourniquet. The use of compression dressings and/or hemostatic agents to control bleeding or convert tourniquets is imperative in continued casualty management. For internal or uncontrollable hemorrhage of the chest or abdomen, the most crucial life-saving intervention is rapid evacuation to a surgical capability. Measures that will enhance the possibility of survival of these casualties are early resuscitation with blood products, TXA, and prevention of clotting dysfunction caused by hypothermia.

TCCC Application

Care Under Fire: Stop *life-threatening* external hemorrhage if tactically feasible. Direct casualty to control hemorrhage by self-aid/buddy-aid if able. Use a Committee on TCCC (CoTCCC)-recommended tourniquet for hemorrhage that is anatomically amenable to tourniquet application. Apply the tourniquet proximal to the bleeding site, over the uniform, tighten, and move the casualty to cover. Initial tourniquet placement should be as high as possible on the limb.

Tactical Field Care & Tactical Evacuation: Assess for unrecognized hemorrhage and control all sources of bleeding. If not already done, use a CoTCCC-recommended tourniquet to control life-threatening external hemorrhage that is anatomically amenable to tourniquet application or for any traumatic amputation. Apply directly to the skin 2–3 inches above wound and never over a joint. For compressible hemorrhage not amenable to tourniquet use or as an adjunct to tourniquet removal (if evacuation time is anticipated to be longer than two hours), use a pressure dressing with a hemostatic agent. Hemostatic gauze should be packed into cavitation of wound with at least 3 minutes of direct pressure. Before releasing any tourniquet on a casualty who has been resuscitated for hemorrhagic shock, ensure a positive response to resuscitation efforts (i.e., a peripheral pulse normal in character and normal mentation if there is no traumatic brain injury). Reassess prior tourniquet application. Expose wound and determine if tourniquet is needed. If so, move tourniquet from over uniform and apply directly to skin 2–3 inches above wound. If a tourniquet is not needed, use other techniques to control bleeding. When time and the tactical situation permit, a distal pulse check should be accomplished. If a distal pulse is still present, consider additional tightening of the tourniquet or the use of a second tourniquet, side by side and proximal to the first, to eliminate the distal pulse. Expose and clearly mark all tourniquet sites with the time of tourniquet application. Use a permanent marker.

a. Reassess patient and verify bleeding is controlled.
b. Verify distal pulses are absent in extremities with tourniquets.
c. Reassess if tourniquet is required or other hemorrhage control means are appropriate.

Advanced Hemorrhage Control: Consider the early use of a junctional tourniquet for high femoral or axillary bleeding not amenable to tourniquet application. Any improvised junctional technique must be trained and practiced on to ensure proper application.

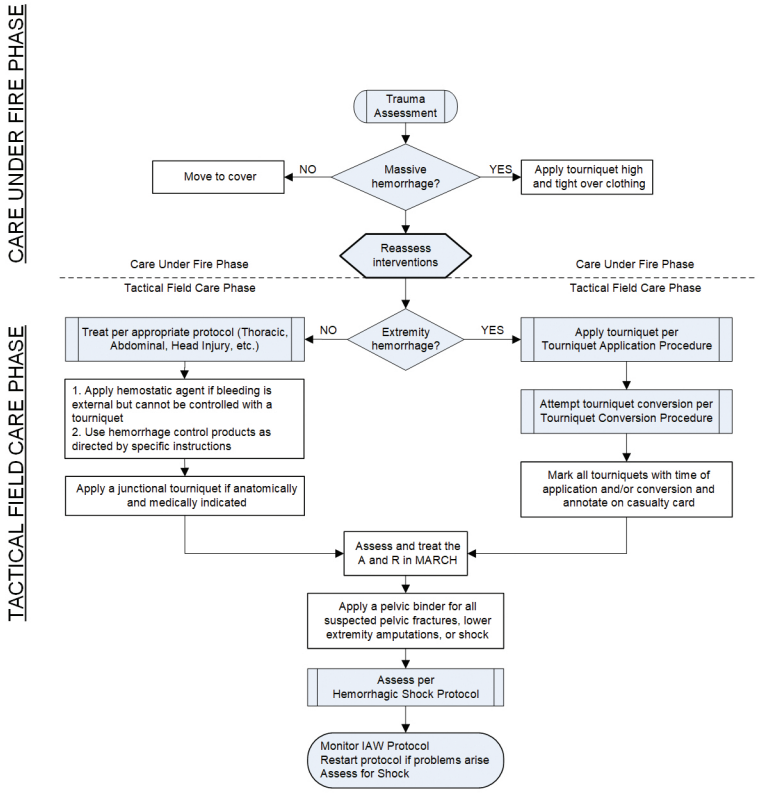
Extended Care

Tourniquet Conversions: If a tourniquet is applied, loosened, or reapplied, ensure the approximate time is recorded on the tourniquet and the casualty card. Reevaluate all applied tourniquets for efficacy and further need. Perform tourniquet conversion procedure as applicable, as early as possible, and if hemorrhage control is achieved otherwise.

Wound Management: Change and/or reinforce all hemorrhage control dressings as applicable and dependent on medical supplies. Irrigate and redress wounds (any potable water can be used for irrigation). Debride only **obviously** devitalized tissue. Change dressings every 24 hours or as needed. Consider converting to silver impregnated dressings to reduce frequency of dressing changes. Continue antibiotics. Repeat moxifloxacin 400mg orally (PO) or ertapenem 1g IV/IO/intramuscularly (IM) every 24 hours.

Abdominal Injuries: Control any visible hemorrhage from bowel. Irrigate gross debris off of exposed bowel. Attempt to gently reduce bowel back into abdominal cavity. If bowel is reduced, approximate skin (sutures or staples) and cover abdominal wound with dressing. If bowel is unable to be reduced, cover bowel with moist dressing and keep covered.

Hemorrhage Control Protocol

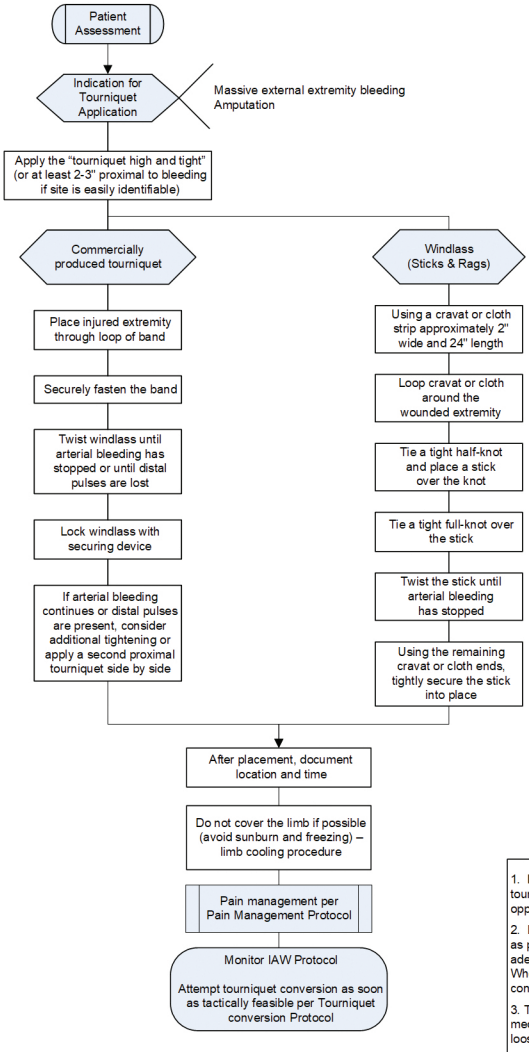


1. If bleeder is visualized or palpated, apply hemostatic agent directly to site.
2. For truncal bleeding, assume the possibility of intra-abdominal and thoracic injury.
3. If a tourniquet is applied, loosened or re-applied, ensure the approximate time is recorded on the tourniquet and the casualty card.
4. Lower extremity injuries often require a second tourniquet proximal to the initial tourniquet.

All hemorrhage control measures should be confirmed and reconfirmed to be intact before and after any movement of patient.

TRANEXAMIC ACID ADMINISTRATION:
If a casualty is anticipated to need a blood transfusion (for example: presents with hemorrhagic shock, one or more major amputations, penetrating torso trauma, or evidence of severe bleeding). Administer 2g of tranexamic acid IV/IO flush.

Tourniquet Application Procedure



DOCUMENTATION:
- Detailed Assessment
- Vital Signs
- SpO_2
- Complications encountered
- Time TQ placed

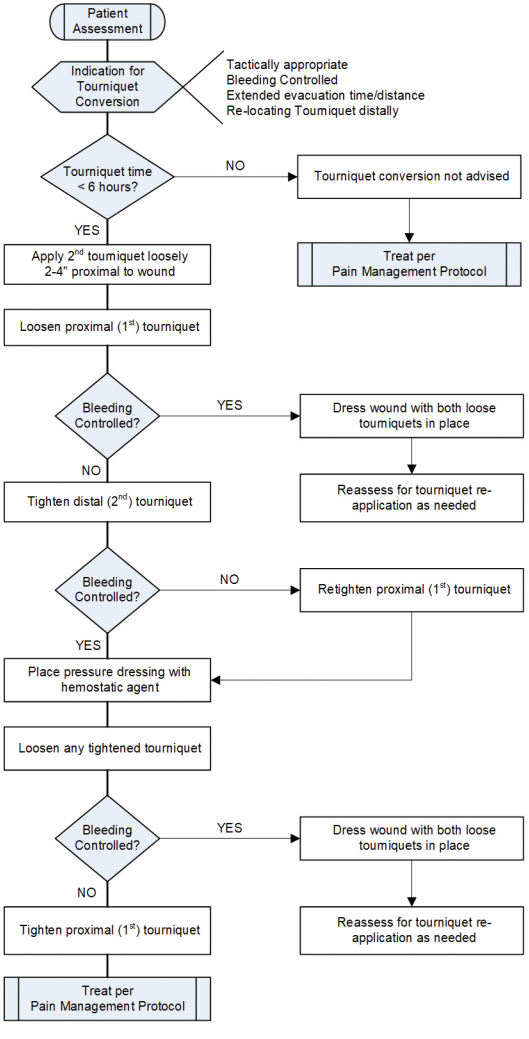
1. Depending on injury patterns, consider assessment of tourniquet tightness by eliminating a distal pulse as opposed to only stopping arterial bleeding.

2. Initial CUF tourniquets are to be placed as high and tight as possible on long bones of extremities to ensure adequate hemorrhage control during rapid evacuation. When feasible, such tourniquet applications should be converted 2-3" proximal to the wound directly over the skin.

3. Tourniquet pain is difficult to manage – titrate pain medication to desired effect. Do not allow casualty to loosen for pain relief.

4. Tourniquet Conversion is to only be performed by a Ranger Medic or ARFR.

Tourniquet Conversion Procedure



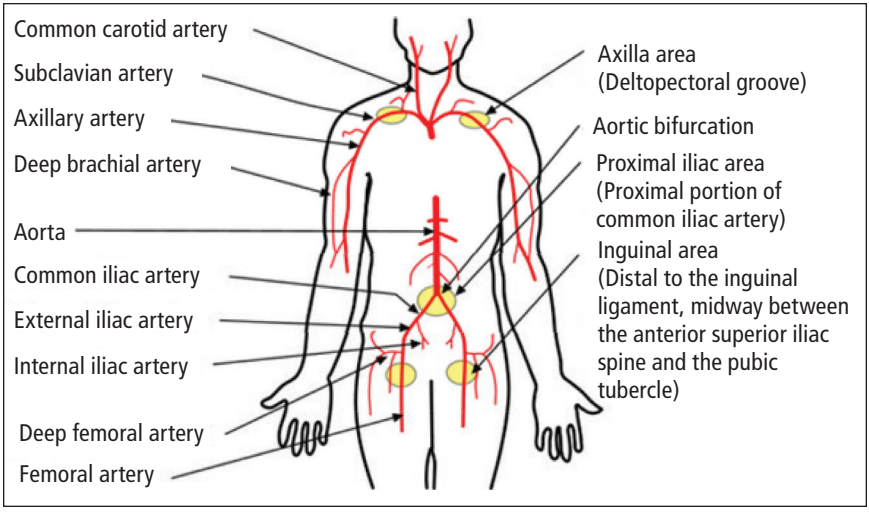
EQUIPMENT NEEDED:
- Tourniquet
- Pressure dressing

DOCUMENTATION:
- Detailed Assessment
- Vital Signs
- Date/Time of procedure
- Skin Color
- Capillary Refil
- Response to procedure
- Complications Encountered

Tourniquet Pain is difficult to manage. Titrate pain medications to appropriate effect.

Pelvic Binder Application

Junctional Tourniquet Anatomy



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SECTION 3

AIRWAY

Airway Management

Airway management must be of prime concern for any trauma casualty. The setting, conditions, and injuries must be taken into account for every casualty. In the tactical setting, hemorrhage control and shock resuscitation are more important than definitive airway management. Aggressive airway management is warranted in some casualties. However, in many casualties, simple repositioning of an airway may solve airway, breathing and oxygenation problems. Assess every patient's airway based on the setting, patient condition, and patient's pending condition, and take the appropriate action. **A patient who can breathe on his own should be allowed to breath on his own unless the injury pattern or predicted clinical course warrants a more aggressive action.**

TCCC Application

Care Under Fire: Airway management, other than patient positioning, is generally best deferred until the tactical field care phase.

Tactical Field Care:

Unconscious casualty without airway obstruction:

- Inspect oropharynx and remove any foreign body from airway or lip. Do not conduct blind finger sweeps.
- Chin lift or jaw thrust maneuver
- Nasopharyngeal airway
- Place casualty in the recovery position.

Casualty with airway obstruction or impending airway obstruction:

- Inspect oropharynx and remove any foreign body from airway or lip. Do not conduct blind finger sweeps.
- Chin lift or jaw thrust maneuver
- Nasopharyngeal airway
- Allow casualty to assume any position that best protects the airway, including sitting up.
- Place an unconscious casualty in the recovery position.
- If previous measures are unsuccessful: **PLACE SUPRAGLOTTIC AIRWAY and SEEK HIGHER LEVEL MEDICAL CARE.**

Tactical Evacuation: With every evacuation movement of a casualty, confirm airway placement and reassess airway patency.

Unconscious casualty without airway obstruction:

- Inspect oropharynx and remove any foreign body from airway or lip. Do not conduct blind finger sweeps.
- Chin lift or jaw thrust maneuver
- Nasopharyngeal airway
- Place casualty in the recovery position.

Casualty with airway obstruction or impending airway obstruction:

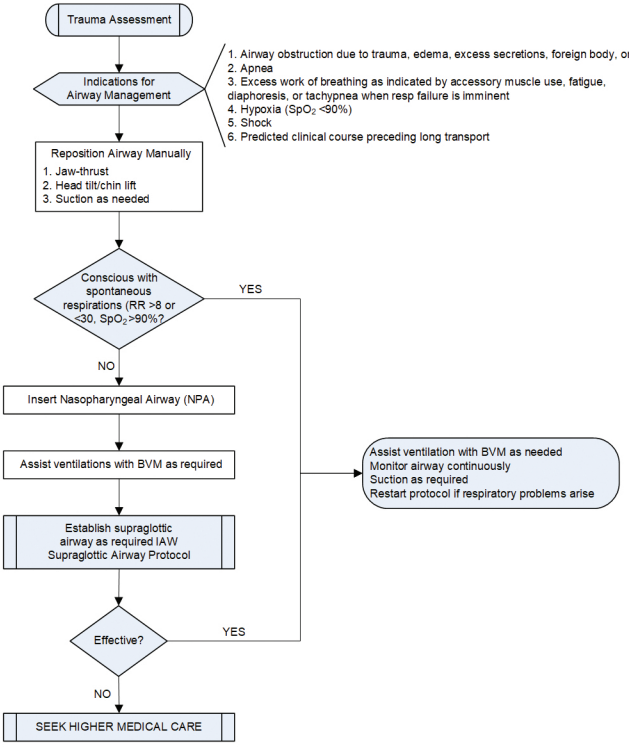
- Inspect oropharynx and remove any foreign body from airway or lip. Do not conduct blind finger sweeps.
- Chin lift or jaw thrust maneuver
- Nasopharyngeal airway
- Allow casualty to assume any position that best protects the airway, including sitting up.
- Place unconscious casualty in the recovery position.
- If above measures are unsuccessful:
  - ➢ Supraglottic Airway

Spinal immobilization is not necessary for casualties with isolated penetrating trauma.

Extended Care

1. Monitoring: Maintain continuous pulse oximetry and $EtCO_2$; document serial vital signs.
2. Verify airway patency, and with any evacuation or movement of the patient.
3. Suction: Consider periodic suctioning of the oropharynx and established airway tube.
4. Ventilation: The SAVe II Ventilator is a small, lightweight ventilator that automatically recommends lung protective settings based on the patient's height. The default settings do not have positive end-expiratory pressure (PEEP) and medics must manually set the vent to a PEEP of 5 at a minimum. The SAVe II does not require an external O_2 source, but supplemental O_2 can be attached and set at no higher than 6L/min, which provides 62% O_2. Any ventilator battery lasts for a limited amount of time. For extended periods, consider alternating between a ventilator and bag-valve mask (BVM)-assisted ventilations with an attached PEEP valve. **Keep in mind that positive pressure ventilation (from BVM or ventilator use) is a known cause of tension pneumothorax.**
5. Consider local wound care and further securing of cricothyroidotomy site if applicable.

Airway Management Protocol



DOPE

D Dislodgement – Check tube placement
O Obstruction – Consider suctioning
P Pneumothorax – Consider NCD
E Equipment failure – Disconnect vent and BVM

Airway Placement Verification

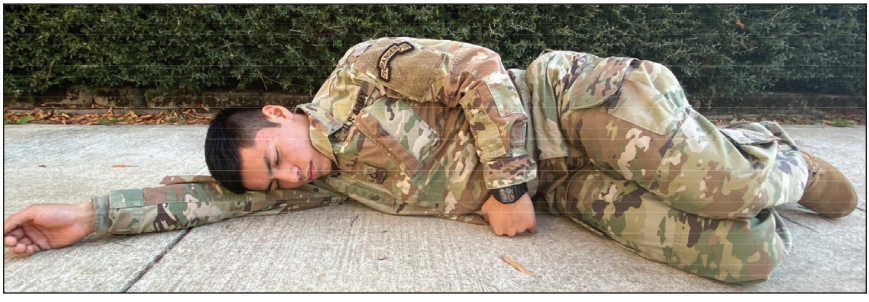
Visualization
Misting of the Tube
Auscultation
End tidal CO_2 monitor
Increase in SpO_2 if hypoxic

* DO NOT rely on auscultation or visual misting as sole placement confirmation.

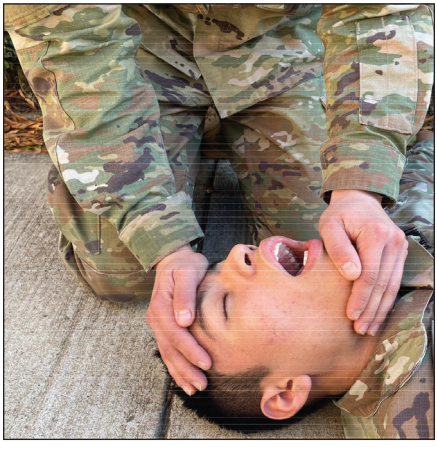
Any airway adjunct(s) should be confirmed and reconfirmed to be intact before and after any movement of patient.

Positional Airway Maneuvers

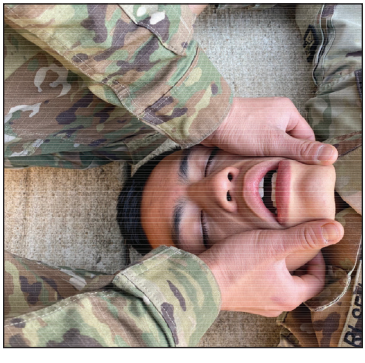
Recovery Position



Head Tilt – Chin Lift



Jaw Thrust



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SECTION 4

RESPIRATION / THORACIC TRAUMA

Thoracic Management

Thoracic Trauma

Penetrating and blunt chest trauma remains a threat regardless of the use of body armor. Hemorrhage remains the number one cause of death in thoracic trauma. Still, the primary preventable life threat is tension pneumothorax. Always consider both hemorrhagic shock and tension pneumothorax when progressively worsening respiratory distress develops in a casualty with a known or suspected torso trauma. The late signs of decreased breath sounds, tracheal deviation, and jugular vein distention may not always be present and may be difficult to assess on the battlefield. Relief of tension pneumothorax requires release of air under pressure within the chest cavity. Constant reassessment of patients with chest trauma is imperative to identify progression or reemergence of tension pneumothorax. The management of an open chest wound with an occlusive dressing, which seals the wound, may lead to development of a pneumothorax. Once sealed, patients must be monitored for development of tension pneumothorax. Continued assessment for hemothorax should follow management of tension pneumothorax.

TCCC Application

Care Under Fire: No specific action.

Tactical Field Care: In a casualty with progressive respiratory distress and known or suspected torso trauma, consider a tension pneumothorax and decompress the chest on the side of the injury with at least a 14G, 3.25-inch needle/catheter inserted in the fifth intercostal space, anterior axillary line, or second intercostal space, midclavicular line. Ensure that the needle entry into the chest is not medial to the nipple line and is not directed toward the heart. All open and/or sucking chest wounds should be treated by immediately applying a vented occlusive dressing to cover the defect and securing it in place. Monitor the casualty for the potential development of a subsequent tension pneumothorax. Casualties with evidence of torso trauma and no vital signs should have bilateral needle decompression or finger thoracostomy performed to ensure they do not have a tension pneumothorax prior to all resuscitation efforts being halted. Hemorrhage remains the number one cause of death, and aggressive blood product resuscitation should be initiated.

Tactical Evacuation: Consider finger thoracostomy if multiple needle decompressions, no improvement, life-threatening complications, and/or long transport is anticipated. Most combat casualties do not require supplemental oxygen, but administration of oxygen may be of benefit for the following types of casualties: low oxygen saturation, injuries associated with impaired oxygenation, casualties with traumatic brain injury (TBI) (maintain oxygen saturation > 95%), casualties in shock, and casualties at altitude.

Extended Care

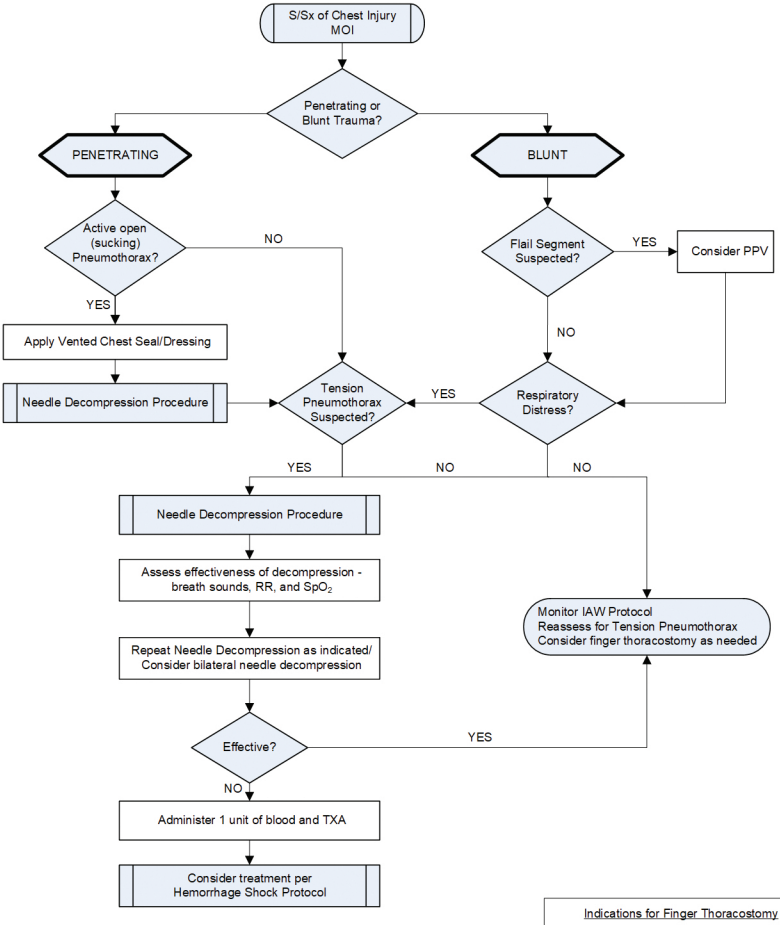
Reassess patient for development of tension pneumothorax. Consider finger thoracostomy if: patient requires multiple needle decompressions **OR** no improvement with needle decompression **OR** evacuation time is prolonged (> 1 hour) **OR** evacuation requires transport at high altitude in unpressurized aircraft. If available, provide oxygen as needed to maintain O_2 saturation > 90% (> 95% for TBI). If patient is being ventilated, maintain strict bagging cycles (1 breath every 5 seconds) and a tidal volume of approximately 500mL to allow for complete exhalation and avoid stacking breaths. Always use a PEEP valve when bagging. If sufficient supply of chest seals is available, consider removing seals, "burping" wounds, and resealing with a new occlusive dressing. Manage resuscitation fluids only to maintain a systolic pressure of 90–100, radial pulse, and/or mentation.

Flail Chest Management: Monitor for developing hypoxia secondary to lung contusions. Casualty may require positive pressure ventilation. Ensure adequate analgesia or procedural sedation as required. These casualties frequently fatigue and require definitive surgical airway.

Hemothorax: Identification of hemothorax is difficult to assess in the field. Mechanism of Injury (MOI), reduced breath sounds, difficulty breathing, and unexplained shock should lead to suspicion of hemothorax. Rapid evacuation to surgical capability, ventilation support, aggressive blood transfusion, and finger thoracostomy is indicated for hemothorax.

Accompanying Abdominal Injuries: Any injury between the nipple and the navel may be assumed to be a thoracoabdominal injury. Consider the use of vented occlusive dressings over these wounds if concerned for tension pneumothorax. Subsequently, assess patient for development of tension pneumothorax pathophysiology. Diaphragmatic rupture or injuries may occur and have a significant effect on respiratory effort. Control any visible hemorrhage from bowel using an approved hemostatic agent or gauze. Irrigate gross debris off of exposed bowel. Attempt to gently reduce bowel back into abdominal cavity. If bowel is reduced, approximate skin (sutures or staples) and cover abdominal wound with an occlusive dressing. If bowel is unable to be reduced, cover bowel with moist dressing.

Thoracic Trauma Management Protocol

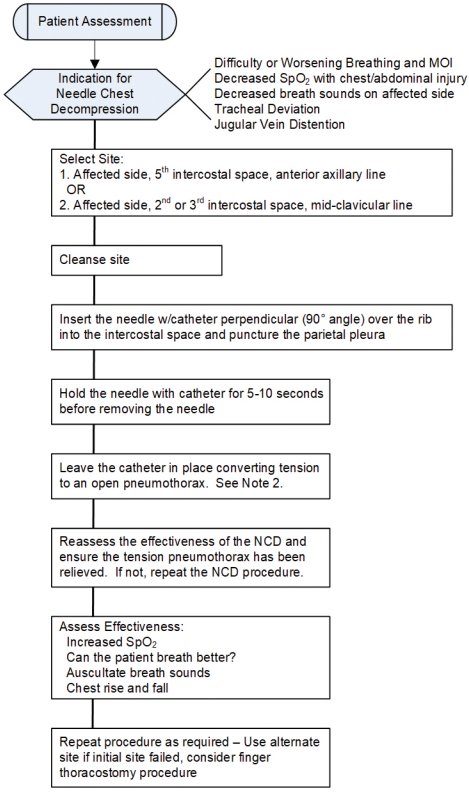


Indications for Finger Thoracostomy

1. Multiple unsuccessful needle decompressions
2. Extended time before evacuation occurs
3. Extended evacuation distance/time

1. Reassess vital signs after each intervention – including SpO_2 and $EtCO_2$.
2. If in a multiple casualty situation, consider bilateral needle decompression or finger thoracostomy on all significant chest injuries.
3. Casualties with thoracoabdominal trauma and no vital signs should have bilateral needle decompression or finger thoracostomy performed to ensure they do not have a tension pneumothorax prior to all resuscitation being halted.

Needle Chest Decompression Procedure



EQUIPMENT NEEDED:
- 10G to 14G 3.25" needle with catheter

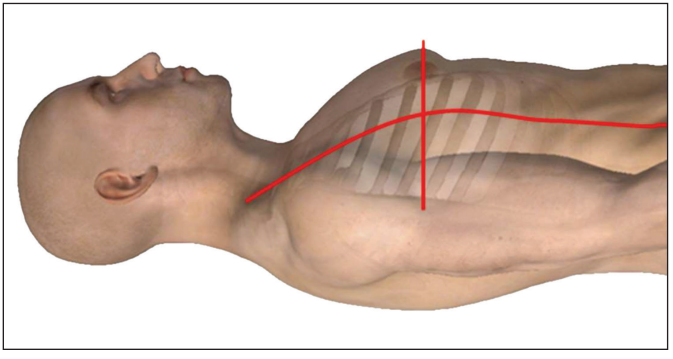
DOCUMENTATION:
- Detailed Assessment
- Vital Signs
- SpO_2
- Lung Sounds before and after decompression
- Chest rise/excursion
- Skin Color
- Capillary refill
- Response to Treatment
- Complications Encountered

1. The provider will make determination on site selection based on injury pattern and overall patient condition.
2. If you have a limited supply of needle/catheters, then remove catheter with needle. Inspect catheter before any reinsertions. If needle supply is adequate, then leave catheter in place to provide limited decompression and to provide indication of previous intervention to the next provider.

Needle Chest Decompression Procedure

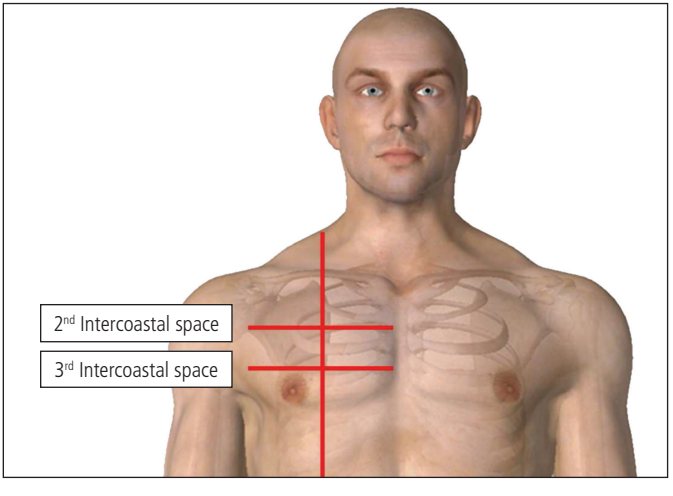
Primary site for needle chest decompression procedure

Affected side, 5th intercoastal space, anterior axillary line.

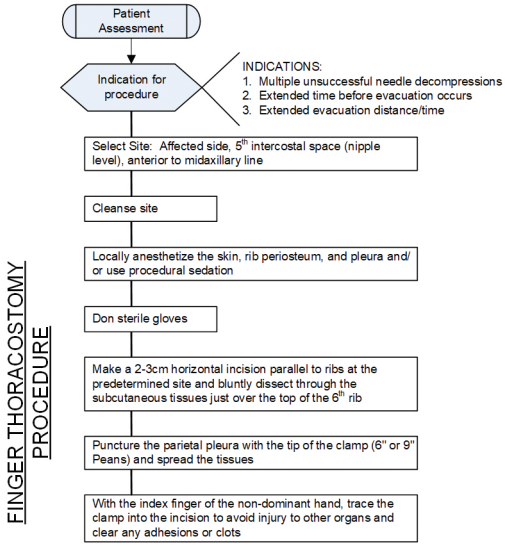


Secondary site for needle chest decompression procedure

Affected side, 2nd or 3rd intercoastal space, anterior axillary line.



Finger Thoracostomy Procedure

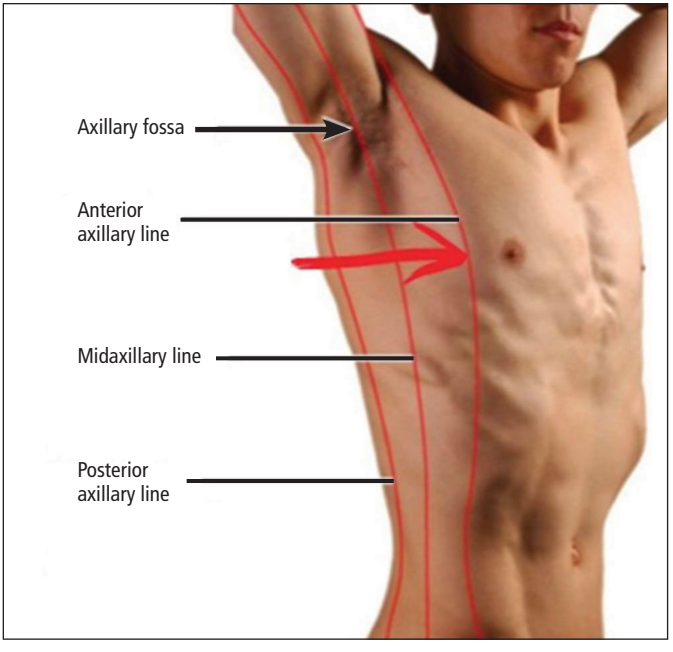


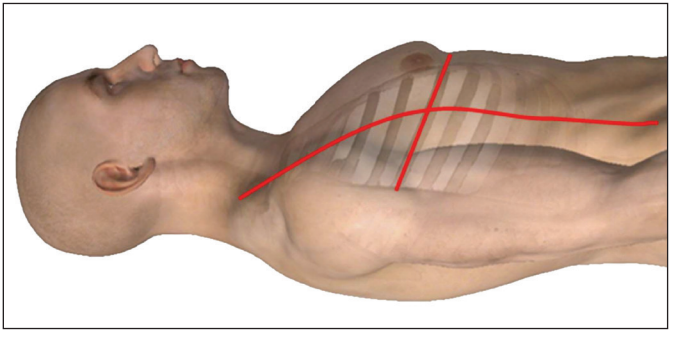
DOCUMENTATION:
- Detailed Assessment
- Vital Signs
- SpO_2
- Lung sounds before and after procedure
- Chest rise/excursion
- Skin Color
- Capillary refill
- Response to Treatment
- Complications Encountered

MINIMUM EQUIPMENT NEEDED:
- 6" or 9" Peans Forceps (clamp)
- Chlorhexidine Gluconate Solution/swab
- Scalpel, #10
- Sterile Gloves
- Securing device

Finger Thoracostomy Procedure

Select site: affected side, 5th intercoastal space (nipple level), anterior to midaxillary line at the anterior axillary line





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SECTION 5

CIRCULATION

C

Tactical Damage Control Resuscitation

Extended Care

Prevention of hypovolemic shock (inadequate tissue perfusion) is critical in a trauma casualty. Shock can be thought of as a pause in the act of dying and requires aggressive actions to prevent its progression. Once a casualty has progressed to shock, he is susceptible to the lethal triad of coagulopathy, hypothermia, and acidosis. Early preventative actions can delay hypothermia. Controlling blood loss and appropriate blood product administration can delay the progress of coagulopathy.

TCCC Application

Care Under Fire: Stop life-threatening bleeding.

Tactical Field Care: The first priority is to stop any active hemorrhage. Initiate IV access if indicated. Start an 18G or larger IV or saline lock. If resuscitation is required and IV access is not obtainable, use the intraosseous (IO) route. Assess for hemorrhagic shock; decreased mental status (in the absence of head injury) and weak or absent peripheral pulses are the best field indicators of shock. If indicated by assessment, initiate fluid resuscitation. If not in shock, resuscitation is not necessary. If in shock, administer whole blood or blood products in a 1:1 ratio. Repeat if still in shock. Warm fluids are preferred if IV fluids are required. Be aware of warmer constraints as applying pressure to increase flow may cause ineffective warming and cell lysis. Continued efforts to resuscitate must be weighed against logistical and tactical considerations and the risk of incurring further casualties. If a casualty with TBI is unconscious and has no peripheral pulse, resuscitate to restore the radial pulse. Prevention of hypothermia is critical in a shock patient. Minimize casualty's exposure to the elements. Keep protective gear on or with the casualty if feasible. Replace wet clothing with dry if possible. Get the casualty onto an insulated surface as soon as possible. Apply the Ready-Heat Blanket from the Hypothermia Prevention and Management Kit (HPMK) to the casualty's torso (not directly on the skin) and cover the casualty with the Heat-Reflective Shell (HRS). If an HRS is not available, the combination of any blanket and the Ready-Heat blanket may also be used. If the items mentioned above are not available, use dry blankets, poncho liners, sleeping bags, or anything that will retain heat and keep the casualty dry.

TXA Administration: If a casualty is anticipated to need a blood transfusion (e.g., presents with hemorrhagic shock, one or more major amputations, penetrating torso trauma, or evidence of severe bleeding). Administer 2g of TXA as an IV/IO flush as soon as possible but not later than 3 hours after injury. Record on CAX Card "2g TXA given." Drug must be properly maintained between 15°C and 30°C/59°F to 86°F. **Do not delay blood product resuscitation for a trauma patient in shock in order to administer TXA.**

Tactical Evacuation: Reassess need for IV access if not previously established. Reassess for hemorrhagic shock. If not in shock, then no IV fluids are necessary. Avoid PO fluids for casualties requiring surgical intervention. Continue resuscitation with whole blood. If a casualty with TBI is unconscious and has a weak or absent peripheral pulse, resuscitate as necessary to maintain a systolic blood pressure of 110mmHg or above. Prevention of hypothermia is even more critical for a trauma patient in moving vehicles or aircraft. Keep protective gear on or with the casualty if feasible. Remove and replace wet clothing with dry if possible. Get the casualty onto an insulated surface as soon as possible. Apply external warming devices as depicted in tactical field care if not already accomplished. Use a portable fluid warmer capable of warming all IV fluids including blood products. Protect the casualty from wind if doors must be kept open.

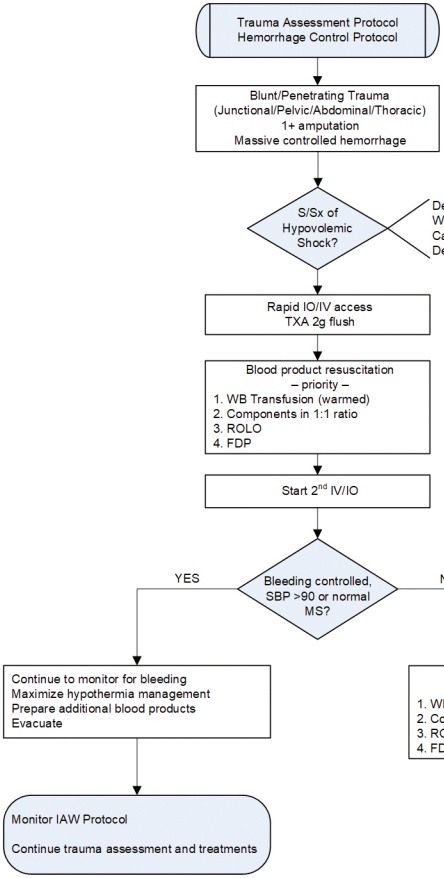
Extended Care

Fluid Management: Continue resuscitation with whole blood or blood products as indicated. Maintain a palpable radial pulse or systolic blood pressure of 90–100mmHg in all unconscious patients with noncompressible, internal hemorrhage. Maintain a normal radial pulse character or systolic blood pressure > 110mmHg in TBI patients with altered mental status.

Ranger O Low (ROLO) Transfusion: All life-saving TCCC protocols and procedures should be completed while ARFRs obtain blood for transfusion. Evacuation should not be delayed for field transfusions. ROLO may be considered for trauma casualties showing signs of hemorrhagic shock; shock from internal, noncompressible, or uncontrollable bleeding; massive blood loss with tachypnea, tachycardia, systolic hypotension and altered mental status; or extended evacuation.

C

Tactical Damage Control Resuscitation Protocol



TXA Indications:
Presence of Hemorrhagic Shock
One or more major amputations
Penetrating torso trauma
Evidence of severe bleeding
Evidence of pelvic fracture

TXA Instructions:
Only store inside and within temperature range.
If pre-drawn – replace every 7 days
Draw TXA into 10mL syringe in a sterile fashion, cap, and clearly label
Do not delay blood product resuscitation for TXA administration

1. The goal of this protocol is to prevent the lethal triad of hypothermia, acidosis and coagulopathy.
2. Fluid of choice for shock resuscitation is whole blood then component therapy in a 1:1 ratio.
3. Patient warming procedures are to be initiated as soon as possible.
4. ARFRs are expected to initiate the ROLO protocol independent of a medic and resuscitate with stored blood products if available.

Shock Management

Hypotensive Resuscitation

The employment of Hypotensive Resuscitation is meant to avoid over-resuscitation of shock. Basing the titration of fluids upon a monitored physiologic response may avoid the problem of excessive blood pressure elevation and fatal re-bleeding from previously clotted injury sites.

Shock Assessment

Important information can be rapidly obtained regarding perfusion and oxygenation from the level of consciousness, pulse, skin color, and capillary refill time. Mental status is the most important indicator of shock. Decreased brain perfusion may result in an altered mental status. The patient may progress from anxious to confused to unresponsive. Beware of the patient with an impending sense of doom. The patient's pulse is easily accessible, and if palpable, the systolic blood pressure in millimeters of mercury (mmHg) can be roughly estimated as follows:

RADIAL PULSE:	PRESSURE 80mmHg
FEMORAL PULSE:	PRESSURE 70mmHg
CAROTID PULSE:	PRESSURE 60mmHg

It is important to state, that the above pressure ranges are merely quick estimates of systolic blood pressures and are generally OVERESTIMATED and inaccurate. They are to be used during the rapid initial assessment of a trauma patient. Actual blood pressure measurement and a complete patient assessment should direct your trauma and shock management decisions.

Skin color and capillary refill will provide a rapid initial assessment of peripheral perfusion. Pink skin is a good sign versus the ominous sign of white or ashen, gray skin depicting hypovolemia. Pressure to the thumb nail or hypothenar eminence will cause the underlying tissue to blanch. In a normovolemic patient, the color returns to normal within 2 seconds. In the hypovolemic, poorly oxygenated patient and/or hypothermic patient, this time period is extended or absent.

The classic classes of shock are inaccurate and misleading but are often referred to in trauma literature. Ranger medics and ARFRs should consider mechanism of injury, mental status, pulse, and other signs when making decisions on triage, treatments, and evacuation priority.

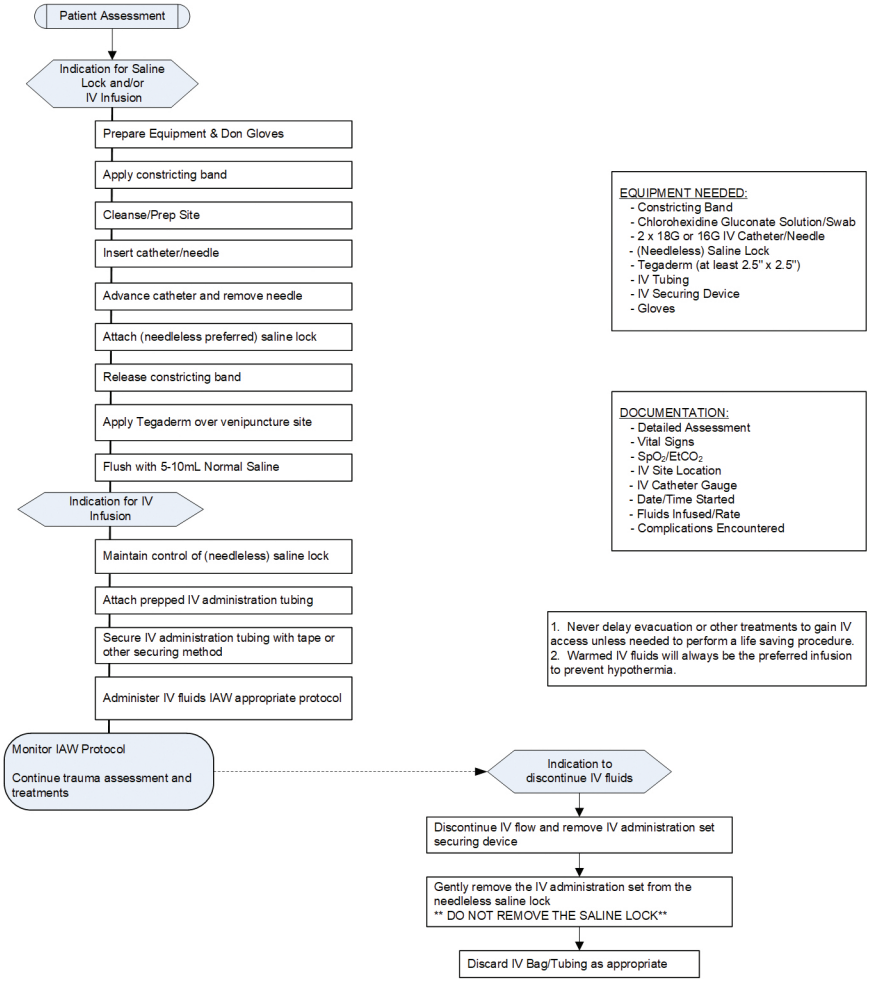
The following table is provided for educational purposes only and should not be relied upon.

Estimate of Fluid and Blood Requirements in Shock*

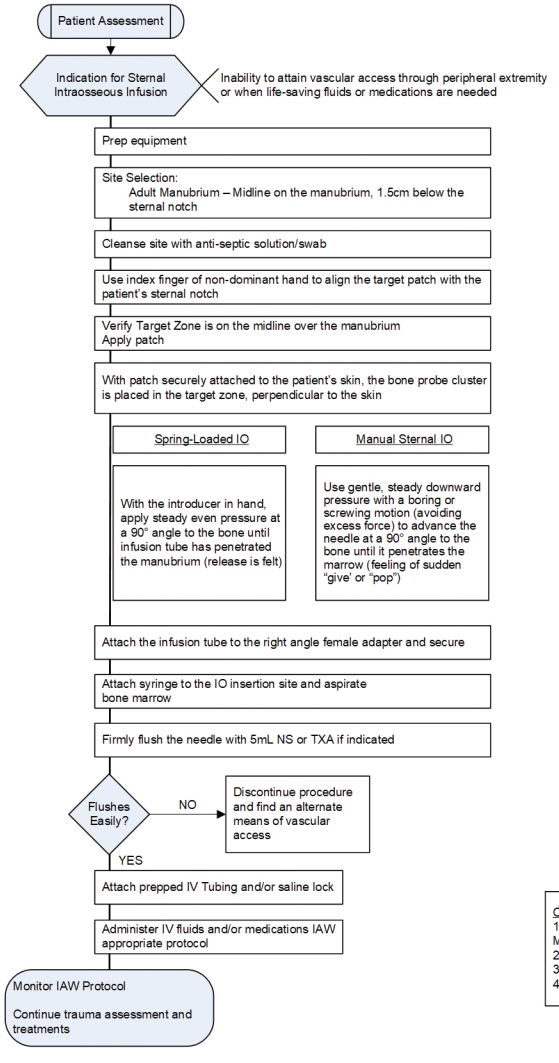
	Class I	Class II	Class III	Class IV
Blood Loss (mL)	Up to 750	750–1500	1500–2000	> 2000
Blood Loss (% BV)	Up to 15%	15–30%	30–40%	> 40%
Pulse Rate	< 100	> 100	> 120	> 140
Blood Pressure	WNL	WNL	Decreased	Decreased
Pulse Pressure (mmHg)	WNL/increased	Decreased	Decreased	Decreased
Capillary Blanch Test	Normal	Positive	Positive	Positive
Respiratory Rate (RR)	14–20	20–30	30–40	> 35
Urine Output (mL/hr)	> 30	20–30	5–15	Negligible
CNS – Mental Status	Slightly anxious	Mildly anxious	Anxious/confused	Confused/lethargic

*Modified from Advanced Trauma Life Support (ATLS)

Saline Lock & Intravenous Access Procedure



Sternal Intraosseous Infusion Procedure



MINIMUM EQUIPMENT NEEDED:
- 38.5mm 15G manual IO device
OR
- Spring-loaded IO device
- Flush

DOCUMENTATION:
- Detailed Assessment
- Vital Signs
- IO Site
- Date/time started
- Fluids Infused/rate
- Complications Encountered

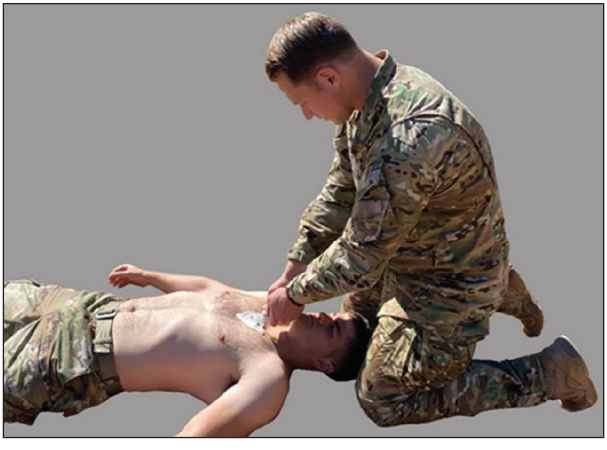
CAUTIONS:
1. Do not rock or bend during manual needle insertion. Maintain a 90° angle.
2. Do not leave catheter inserted for longer than 24 hours.
3. Do not attach a syringe directly to the IO catheter hub.
4. Consider 5-10mL lidocaine flush for pain control

C

Sternal Intraosseous Infusion Procedure

FAST 1

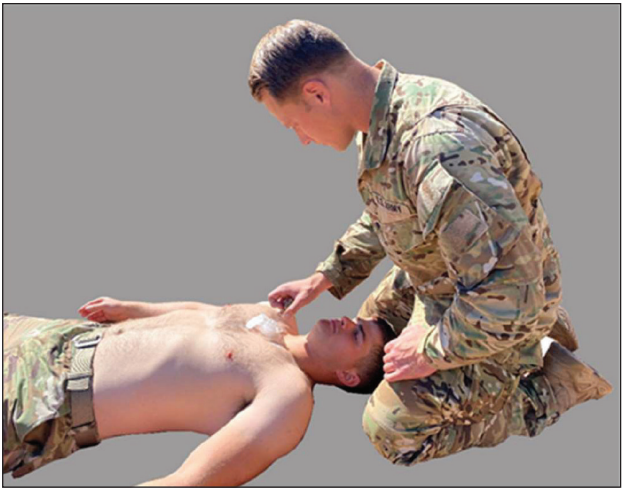
- Position yourself at the head of the casualty.
- Place both hands on FAST 1 and apply even pressure against sternum.
- Flush tube and connect tube to device once placed in sternum.



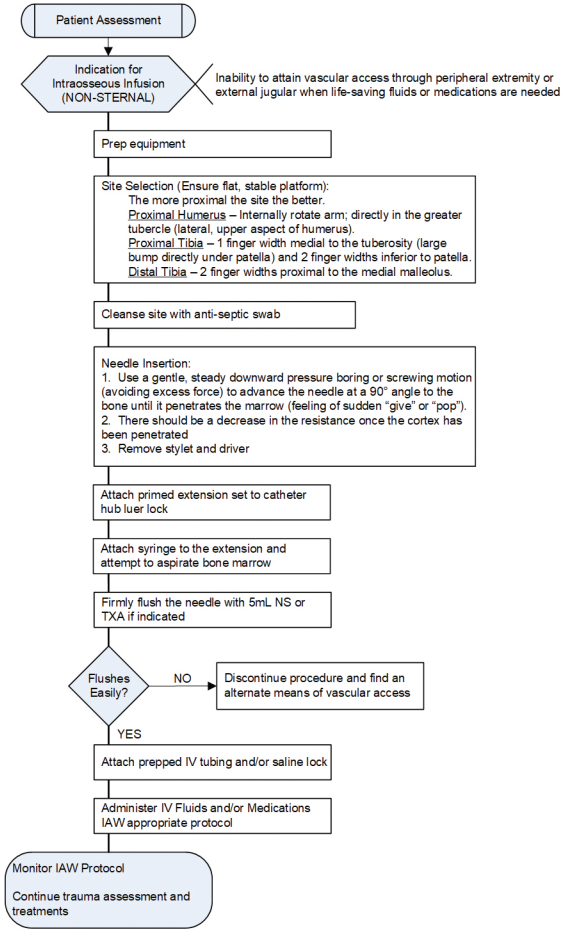
Sternal Intraosseous Infusion Procedure

T.A.L.O.N.

- Position yourself at the head of the casualty.
- Twist and push down on T.A.L.O.N. device until needle set in sternum.
- Flush tube and connect tube to device once placed in sternum.



Intraosseous Infusion Procedure (Non-Sternal)



MINIMUM EQUIPMENT NEEDED:
- 45mm 15G IO device (Humeral)
- 38.5mm 15G IO device (Sternal)
- 25mm 15G IO device (Tibial)
- Flush

CONTRAINDICATIONS:
- Fracture or injury to site
- Absence of landmarks
- Injury proximal to IO site

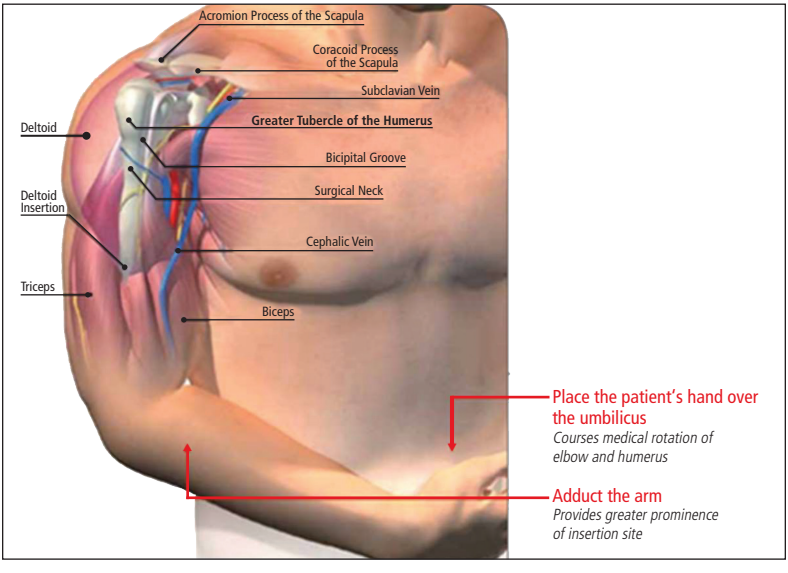
Use each device and needle size ONLY for its indicated site

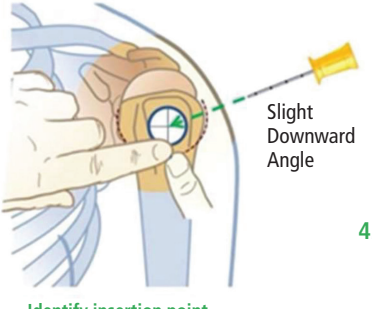
DOCUMENTATION:
- ABC's
- Detailed Assessment
- Vital Signs
- Complications Encountered

CAUTIONS:
1. Do not rock or bend during manual needle insertion. Maintain a 90° angle.
2. Do not leave catheter inserted for longer than 24 hours.
3. Consider 5-10mL lidocaine flush for pain control

Intraosseous Infusion Procedure (Humeral)

- Identify site for placement.
- Twist and push down until needle set in bone.
- Flush tube and connect tube to device once placed in bone.



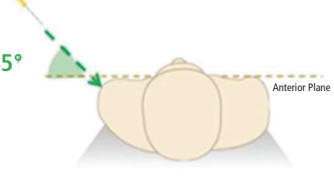


Identify insertion point

Slight Downward Angle

Angle of needle insertion

45° from the anterior plane



Additional Guidance

- 45mm needle recommended for adults
- Advance 1 to 2cm after 'pop'
- Use EZ-IO Stablizer

Intraosseous Infusion Procedure (Tibial)

- Identify site for placement.
- Twist and push down until needle set in bone.
- Flush tube and connect tube to device once placed in bone.

C

Blood Transfusion

WARNINGS

1. Confirmed O low titer is the only universally compatible fresh whole blood (FWB) type. Second choice should be non-titered O. Otherwise, transfusions of FWB must be an ABO match. ARFRs should transfuse blood from preidentified ROLO donors. For female casualties, do not delay transfusion for Rh– blood if needed.
2. Blood and blood components should only be administered by personnel who are trained in the proper procedure and the identification and management of transfusion reactions.
3. Use only collection bags designed for the collection of whole blood (WB) and administration sets designed for the administration of blood and blood components. Failure to do so may lead to fatal thromboembolic events.
4. 0.9% normal saline (NS) is the IV fluid of choice for administering with blood or blood components. Ringer's solution can be used if normal saline is unavailable. Colloids (Hextend) or dextrose-based fluids should NOT be used at any time.
5. Great care should be taken to practice aseptic technique when performing transfusions in the field to prevent subsequent infection.
6. The largest bore IV catheter should be used. An IO device may be used. Ensure that a strong flush is done, and good flow is obtained prior to using an IO infusion.
7. **ONLY CONFIRMED ROLO DONORS FROM THE MOST CURRENT LIST CARRIED BY RANGER MEDICS SIGNED BY THE REGIMENTAL SURGEON AND BATTALION SURGEON CAN BE USED.**

Signs/Symptoms (S/Sx) of Reactions

Allergic Reaction S/Sx: Diffuse, itchy rash most common. Anaphylaxis may also occur.

Anaphylactic Reaction S/Sx: Shock, hypotension, angioedema, respiratory distress.

Acute Hemolytic Reaction S/Sx:

1. Acute hemolytic reaction usually has onset within 1 hour.
2. Evidence of disseminated intravascular coagulation (DIC) – oozing from blood draw, IV sites.
3. Flushing, especially in the face.
4. Fever, an increase in core temp of > 2°F (1°C).
5. Shaking, chills (rigor).
6. Flank pain or the acute onset of pain in the chest (retrosternal), abdomen, and thighs.
7. Wheezing, dyspnea.
8. Anxiety, feeling of impending doom.
9. Nausea and vomiting.
10. Hypotension.
11. Pain, inflammation, and/or warmth at the infusion site.
12. Red or brown urine (hemoglobinuria) – the onset of red urine during or shortly after a blood transfusion may represent hemoglobinuria (indicating an acute hemolytic reaction) or hematuria (indicating bleeding in the lower urinary tract).

Febrile Non-hemolytic Reactions S/Sx: Fever not as severe with an acute hemolytic reaction; chills; dyspnea.

Transfusion Related Acute Lung Injury (TRALI) S/Sx: Development of Acute Respiratory Distress following transfusion. Often presents with hypoxemia, hypotension, and frothy, pink pulmonary secretions. Avoid female donors to reduce chances of TRALI.

Management of Reactions

The first step in treating ALL transfusion related issues is to STOP the transfusion and save all of the blood products and equipment used for administration and typing for follow-up testing.

Febrile Reaction: Diphenhydramine 25–50mg PO, per rectum (PR), or IV for urticaria.

Anaphylactic Reaction: Treat IAW Anaphylactic Management Protocol. Get help from a Ranger Medic.

Acute Hemolytic Reaction: Get help from a Ranger Medic.

Febrile Nonhemolytic Reactions: Get help from a Ranger Medic.

TRALI: Get help from a Ranger Medic.

Fresh Whole Blood Transfusion (Donor Procedure)

Patient Assessment

COMPLETE ALL STANDARD TCCC PROCEDURES & PROTOCOLS
ROLO DONOR IS PREFERRED OVER ELDON CARD CONFIRMED CROSSMATCH
DO NOT DELAY EVACUATION TO CONDUCT FRESH WHOLE BLOOD TRANSFUSION

Indication for Field Fresh Blood Transfusion

Trauma casualty showing signs of hemorrhagic shock
(absent radial pulse or altered mental status)
Stored blood products not available

WARNING!

Confirmed O Low Titer is the only universal donor for whole blood. Second choice is non-titered type O. Otherwise whole blood MUST be ABO-identical.

Refer to Anaphylaxis Management Protocol if S/Sx present of hemolytic reaction.

Confirm ROLO donor from list

Collect FWB from Donor

1. Clean access site with antiseptic swab
2. Place constricting band around donor arm
3. Place hemostat on collection tubing approx 12" from the needle
4. Perform venipuncture with needle bevel down at 15° angle
5. Lower collection bag below donor heart level and release clamp
6. Consider placement of 2x2 to adjust needle site to ensure flow
7. Tape/Secure needle site
8. "Rock" the collection bag as blood flows within it and continue rocking every 2 min. Attempt to insulate collection bag to keep warm.
9. Collect approx. 450mL (almost full bag) (use 11" piece of 550-cord around bag to estimate adequate fill)
10. Remove needle from donor and elevate to allow blood to fill collection bag
11. Double knot the collection line approx. 4" from collection bag and cut line between the knots

Assess vital signs of donor

Consider administration of 500mL of crystalloid IV to replenish volume of donor.

Monitor donor vital signs as required
Minimize exertion and exposure to possible trauma
Ensure evaluation by medical officer post-mission
Document donor procedures in health records

NOTE:

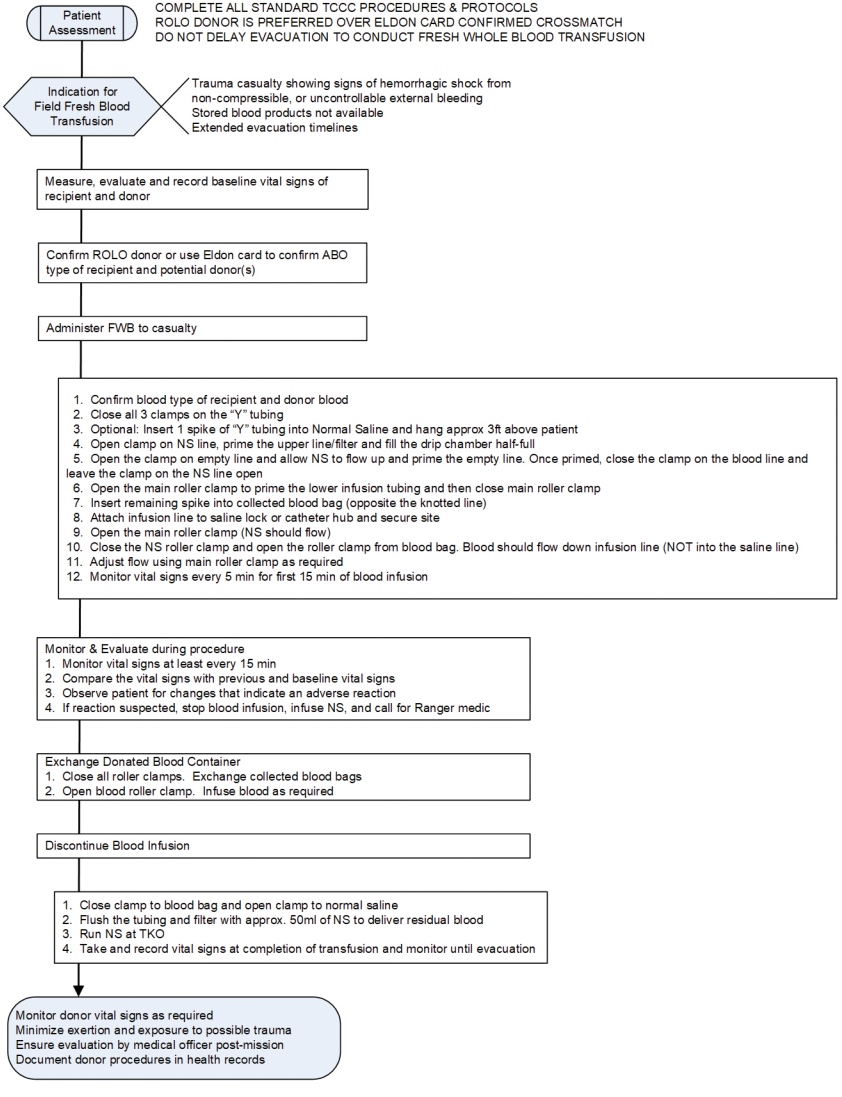
1. Donor is not restricted from duty unless symptomatic.
2. Donor should only donate once every 60 days
3. Start donor on iron supplementation 325mg qd

1. All ROLO Donors should be confirmed prior to deployment. ROLO Donor should be used to decrease the chances of a transfusion reaction and increase the speed of the procedure.
2. All blood typing should be confirmed prior to deployment. The Eldon card test is meant to be a pre-transfusion confirmation. ID (dog) tags should only be used as a last resort for blood type confirmation.
3. Attempt to monitor patient temperature during and after entire procedure as it may be the first indicator of transfusion reaction.
4. For female recipients Rh- blood is preferred but this should not delay transfusion if required.

EQUIPMENT NEEDED:

- Eldon blood typing card
- Constriction band
- 16-18G needles
- Alcohol, Iodine or Clorhexidine swabs
- 2x2 sponges
- Tape, 1 or 2"
- 450mL blood collection system with Citrate/Phosphate/Dextrose (CPD)
- Hemostat
- Blood transfusion IV tubing with 180 micron filter

Fresh Whole Blood Transfusion (Recipient Procedure)



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SECTION 6

HYPOTHERMIA / HEAD TRAUMA

Hypothermia Management

Hypothermia

Hypothermia, acidosis, and coagulopathy constitute the "triad of death" in trauma patients. The understanding of hypothermic coagulopathy with increased mortality is critical. Prevention of hypothermia **must** be emphasized in combat operations and casualty management, and at all levels of care. Hypothermia occurs regardless of the ambient temperature; hypothermia can, and does, occur in both hot and cold climates. Prevention of hypothermia is much easier than treatment of hypothermia, therefore prevention of heat loss should start as soon as possible after the injury. Keep in mind that hypothermia becomes a cardiac event as much as a temperature event.

TCCC Application

Care Under Fire: No specific action.

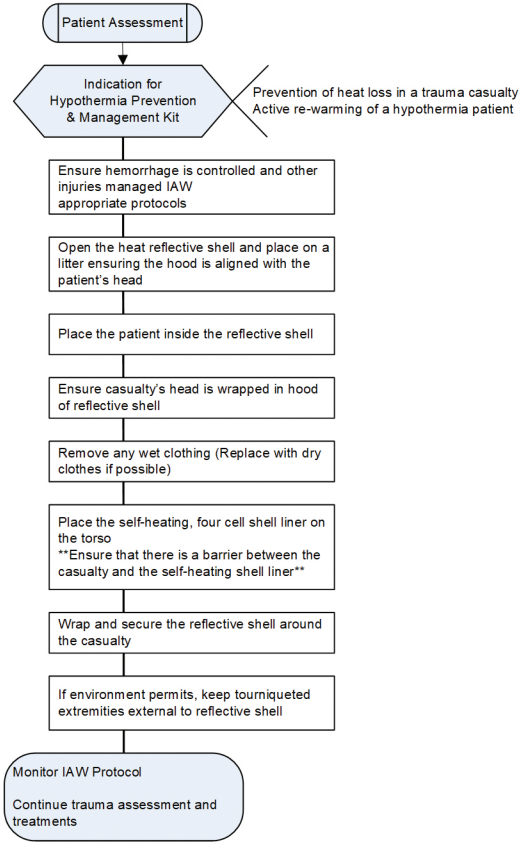
Tactical Field Care: All attention should be directed toward preventing heat loss. Stop bleeding and resuscitate appropriately. If available, warm fluids should be used. This will start generating internal heat that facilitates rewarming. Minimize the casualty's exposure to the elements. Keep protective gear on or with the casualty if feasible. Remove and replace wet clothing with dry if possible. Get the casualty onto an insulated surface as soon as possible. Apply the Ready-Heat Blanket from the Hypothermia Prevention and Management Kit (HPMK) to the casualty's torso (not directly on the skin) and cover the casualty with the Heat-Reflective Shell (HRS). If an HRS is not available, the previously recommended combination of the Blizzard Survival blanket and the Ready Heat blanket may also be used. If the items mentioned above are not available, use dry blankets, poncho liners, sleeping bags, or anything that will retain heat and keep the casualty dry. Warm fluids are preferred if IV fluids are required. Placement of a temperature dot on the forehead of the patient will assist in monitoring changes in the patients' response to treatment and will serve as a visual "clue" to remind providers to monitor the patient's temperature throughout the evacuation process.

Tactical Evacuation: Use a portable fluid warmer capable of warming all IV fluids including blood products. Protect the casualty from wind if doors must be kept open.

Extended Care

Hypothermia will result in decreased clotting ability in the trauma casualty. Prevention is the key to management, since only limited rewarming is possible in the field. Minimize the casualty's exposure to the elements. Keep protective gear on or with the casualty if feasible. Remove wet clothing and replace with dry garments if possible. Wrap the casualty with available insulating material (e.g., CoTCCC-recommended commercial systems, sleeping bags, or anything that will retain heat and keep the casualty dry). If resuscitation is required, use warmed IV fluids if possible.

Hypothermia Prevention & Management Kit Procedure



EQUIPMENT NEEDED:
- Hypothermia Kit

DOCUMENTATION:
- Detailed Assessment
- Vital Signs
- SpO_2
- Skin Color
- Complications Encountered

NOTE:
- Circumstances may preclude use of HPMK (ie, MASCAL). If this occurs, use whatever means available to keep casualty warm to include blizzard blankets, clothing from uninjured personnel, blanket found on target, etc.

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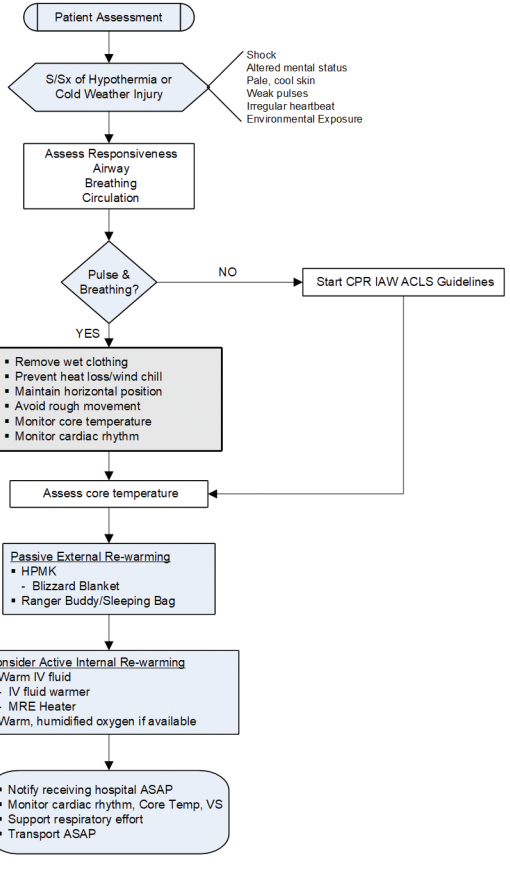
Hypothermia Management



Document:
- Signs & Symptoms
- Vital Signs
- Cardiac Rhythm
- Core Temp
- MOI
- Treatment
- Response to Treatment

1. Other Methods include: electrical, hot water baths, heating pads, radiant heat sources and warming beds
2. Give IV medications at longer than standard intervals
3. Do not defibrillate a second time until core temperature >86° F

Head Trauma

Open head injury results from application of force with penetration of the skull. The most common agents are missiles and blunt instruments. Injuries caused by blunt instruments can cause open depressed skull fractures but are usually of relatively low energy and cause only local injury to the brain. Nonetheless, these are serious wounds and have a high potential for infection.

Closed head injury results from application of force to the head that does not involve penetration of the skull but may involve scalp lacerations and facial fractures. The degree of injury to the brain is dependent on the energy transferred to the brain as a result of the force applied to the head. Closed head injury most often results from falls and motor vehicle accidents, even in an operational environment. Alteration of consciousness is the hallmark of brain injury, and may be mild or severe, immediate or delayed, brief or permanent. Delayed deterioration of consciousness may occur as a result of hematoma formation within the skull or worsening swelling of the brain. The mechanism for this impairment of consciousness is increasing intracranial pressure, with subsequent impairment of brain perfusion (blood flow).

Assessment & Management

Generally, with head injuries the primary damage is done and there is little that can be done to correct that damage. The primary goal of head injury management is to prevent secondary injuries associated with hypoxia, hypotension, anemia, hyperthermia, and hypothermia. This equates to aggressive bleeding control and airway management. Avoid hypoxia (any SpO2 < 92%), hypotension (any systolic blood pressure [SBP] < 110mmHg), and react to the signs of brain edema, herniation, or seizures.

The hallmark of head injury is alteration of consciousness. This is best assessed using the AVPU Scale. Additionally, the Military Acute Concussion Evaluation (MACE2) examination, particularly for mild TBI, should be performed. Pupillary function is also important to assess, and this can be done with any light source. In bright sunlight conditions, closing the eye for 30 seconds and observing while quickly opening demonstrates pupillary reactivity. Regular reassessment, as the tactical situation permits, is critical as a neurologic status may vary significantly over time.

Inspection: Vital signs should be assessed in any patient with a head injury and patency of the airway confirmed. The head should be inspected for signs of open injury or skull fracture. Open injury will be accompanied by a defect, and basilar skull fracture may be associated with Battle's sign (bruising behind the ear) or raccoon eyes (black eyes). Leakage of cerebrospinal (clear) fluid from the ears or nose may also be present. The pupils should be inspected for equality and/or reactivity. Unequal or nonreactive pupils in an unconscious patient are ominous signs.

Auscultation: Auscultation is generally not helpful in the evaluation of the head injury itself, but in a patient with impaired consciousness, a full exam, including auscultation of the lungs, should be performed.

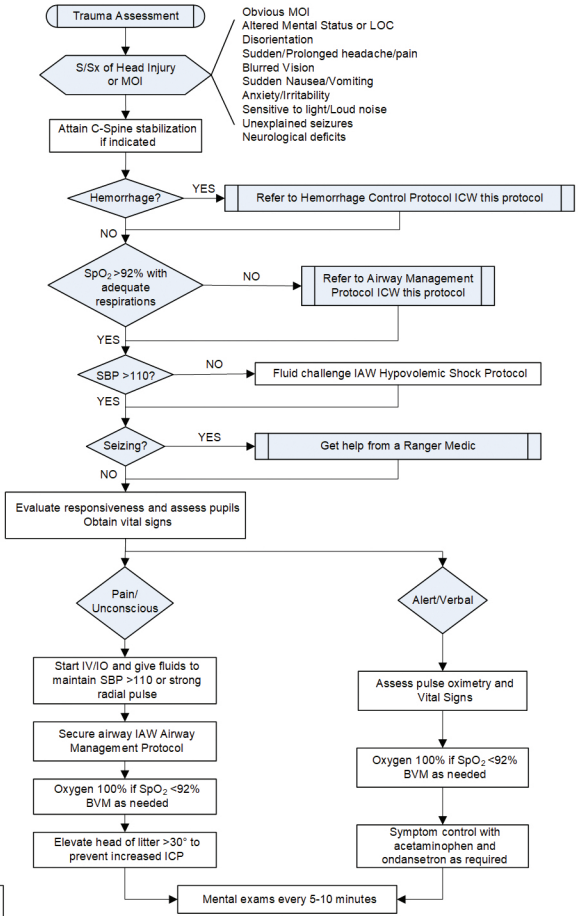
Palpation: Palpation of the head may reveal an underlying closed depressed skull fracture (an "ashtray" feel). The cervical, thoracic, and lumbar spine should be palpated to assess for tenderness or deformity, possibly indicating an associated spinal injury.

Management: Treatment involves securing the airway, maintaining SBP > 110, maintaining SpO_2 > 92%, elevating the head of the litter to 30°, stabilizing the cervical spine if indicated, dressing any wound, and establishing an IV line.

Extended Care

Key aspects of field management of severe TBI are the prevention of hypoxia and hypotension. Ensure early establishment of a definitive airway, aggressively treat respiratory compromise, administer oxygen if available (to maintain saturation SpO2 > 92%), and fluid resuscitate hypotension. **DO NOT** hyperventilate unless indicated for signs of herniation. Controlled hyperventilation may be considered as a temporizing measure for evidence of increasing brain pressure and herniation (deteriorating mental status, unequal pupils, posturing). Elevate the head of the litter to 30 degrees. Prevent hypo/hyperthermia. Antibiotic prophylaxis for penetrating head trauma: ertapenem 1g IV/IO. Ensure casualty is evacuated to a facility with a neurosurgeon available.

Head Injury Management Protocol



AVPU Responsiveness Assessment

ALERT
VERBAL – Responds to verbal stimuli
PAIN – Responds only to painful stimuli
UNCONSCIOUS – Does not respond to any stimuli

Signs of Impending Herniation

Asymmetric pupils
Fixed dilated pupil
Extensor/Flexor posturing
Worsening Mental Status from Alert/ Verbal to Pain/Unconscious

1. Oxygen 100% per NRB Mask or BVM if available for SpO_2<92%.
2. Consider supraglottic airway for unresponsiveness
3. Do not allow BP to drop below 110mmHg.
4. Isolated head injuries do not cause shock. If shock is present, look for other causes
5. Generally, head injuries should be evacuated by air using low altitude or pressurized cabin.
6. Any casualty with mTBI should undergo Ranger mTBI Return to Duty Protocol.
7. Perform serial GCS exams every 5-10 minutes.
8. All head injuries will be reported to a medical officer and require a MACE2 exam (if conscious).

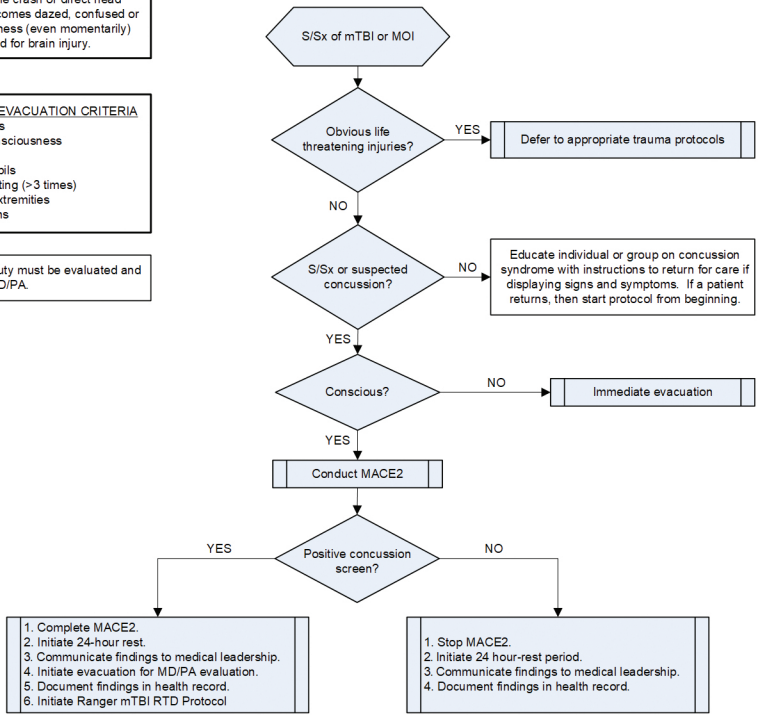
CONDUCT POST-INJURY TBI ASSESSMENT UPON RETURN TO BASE FOR ANY INDICATED CASUALTIES

Concussion Management Protocol

All personnel exposed to or involved in a blast, fall, vehicle crash or direct head impact who becomes dazed, confused or lose consciousness (even momentarily) will be evaluated for brain injury.

IMMEDIATE EVACUATION CRITERIA
LOC >5 minutes
Decreasing consciousness
Seizure
Asymmetric pupils
Repeated vomiting (>3 times)
Weakness to extremities
Clinical concerns

All Return-to-Duty must be evaluated and approved by MD/PA.



RESPONSIVENESS ASSESSMENT (AVPU)
Alert
Verbal: Responds to verbal stimuli
Pain: Responds to painful stimuli
Unconscious: No response to any stimuli

Concussion Red Flags
Deteriorating level of consciousness
Double vision
Increased restlessness, combative, or agitated behavior
Repeat vomiting
Results from a structural brain injury detection device (if available)
Seizures
Weakness extremities

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SECTION 7

MISCELLANEOUS PROTOCOLS

ACETAMINOPHEN (TYLENOL) – Combat Wound Pillpack

Class: CNS agent – nonnarcotic, analgesic, antipyretic

Action: Pain medicine action possibly through peripheral nervous system; fever reduction through direct action on hypothalamus heat-regulating center resulting in peripheral vasodilation, sweating, and dissipation of heat; has minimal effect on platelet aggregation, bleeding time, and gastric bleeding.

Dose: 325–975mg PO q6hr (max: 4g/day)

Onset/Peak/Duration: Onset varies/peak 1–3 hours/duration 3–4 hours.

Indications: For mild to moderate pain management, headache, fever reduction.

Contraindications: Acetaminophen hypersensitivity; use with alcohol.

Adverse/Side Effects: Negligible with recommended dose; rash; acute poisoning: anorexia, nausea, vomiting, dizziness, lethargy, diaphoresis, chills, epigastric or abdominal pain, diarrhea; hepatotoxicity: elevation of liver function tests; hypoglycemia, hepatic coma, acute renal failure.

Interactions: Alcohol use may increase potential for hepatotoxicity.

MELOXICAM (MOBIC)

Class: NSAID; COX2 Inhibitor, anti-inflammatory, analgesic, antipyretic

Action: Inhibits cyclooxygenase

Dose: 7.5–15mg PO daily

Indications: For mild to moderate pain management.

Contraindications: NSAID or aspirin hypersensitivity; rhinitis, urticaria, angioedema, asthma; severe renal or hepatic disease.

Adverse/Side Effects: Edema, flu-like syndrome, pain, abdominal pain, diarrhea, dyspepsia, flatulence, nausea, constipation, ulceration, GI bleed, anemia, arthralgia, dizziness, headache, insomnia, pharyngitis, upper respiratory tract infection, cough, rash, pruritus, urinary frequency, urinary tract infection (UTI).

MOXIFLOXACIN – Combat Wound Pillpack

Class: Antimicrobial – antibiotic

Action: Broad-spectrum bactericidal agent that inhibits DNA gyrase topoisomerase II, an enzyme necessary for bacterial replication, transcription, repair, and recombination; effective against gram-positive and gram-negative organisms: Staphylococcus aureus, *Streptococcus pneumoniae, Haemophilus influenzae, Klebsiella pneumoniae, Moraxella catarrhalis, Chlamydia pneumoniae, Mycoplasma pneumoniae,* and other microbes.

Dose: 400mg PO

Indications: Combat wounds that cause a break in the skin but the patient is able to take medications by mouth.

Contraindications: Poor or worsening mental status or unconsciousness.

Adverse/Side Effects: Tendon rupture, dizziness, headache, peripheral neuropathy, nausea, diarrhea, abdominal pain, vomiting, taste perversion

TRANEXAMIC ACID (TXA)

Class: Antifibrinolytic agent; synthetic lysine amino acid derivative

Action: Displaces plasminogen from surface of fibrin by binding to high-affinity lysine site of plasminogen which diminishes dissolution of hemostatic fibrin, which decreases bleeding.

Dose: Administer 2g of TXA IV/IO as soon as possible but not later than 3 hours after injury.

Indications: For patients anticipated to need significant blood transfusion presenting with hemorrhagic shock, one or more major amputations, penetrating torso trauma or evidence of severe bleeding.

Adverse/Side Effects: Blurred vision or impaired color vision. Gastrointestinal disturbances (nausea, vomiting, diarrhea) may occur but disappear when the dosage is reduced. Transient hypotension has been observed when intravenous injection is too rapid.

Mission Impact: Store at 25°C (77°F); excursions permitted to 15°–30°C (59°–86°F)

Mission Specific: May predraw, under sterile conditions and kept for 7 days before mandatory disposal. All TXA will be predrawn under Ranger Medic direct observation.

DO NOT USE IF PREDRAWN AND STORED FOR > 7 DAYS

Eye Injury

Eye Injuries

Penetrating injuries to eye globe or fracture of the orbit must be assessed with any facial trauma in the combat setting. Penetrating wounds of the eye may be very common from shrapnel and debris. Blunt trauma that may disrupt the integrity of the globe may be seen during facial trauma from falls, PLF, FRIES landings, hand-to-hand combat or motor vehicle accident (MVA)-type collisions. The primary management in any setting includes a rigid eye shield that does not put pressure on the globe of the eye. Avoid any manipulation of eye or eye globe if penetrating injury is suspected. Infection may later cause permanent loss of vision, so early broad-spectrum systemic antibiotic therapy is critical to prevent post-traumatic endophthalmitis.

TCCC Application

Care Under Fire: Stop life-threatening bleeding.

Tactical Field Care/Tactical Evacuation: If a penetrating eye injury is noted or suspected, perform a rapid field test of visual acuity and document findings. Cover the eye with a rigid eye shield (NOT a pressure patch). Ensure that the 400mg moxifloxacin tablet in the combat pill pack is taken if possible. If able to take PO: moxifloxacin, 400mg PO once a day. If unable to take PO: ertapenem, 1g IV/IM once a day.

Extended Care

Retrobulbar Hematoma: Blunt or penetrating eye trauma may result in bleeding. As the pressure in the eye socket is progressively elevated, the eye pressure will also rise. If eye pressure rises to a high enough level, vision may be permanently lost in the eye. Signs/symptoms of retrobulbar hemorrhage include pain, black eye, progressive proptosis (bulging forward of the eye), and decreased vision. The definitive management for this disorder is a lateral canthotomy that can be performed by Ranger Medics.

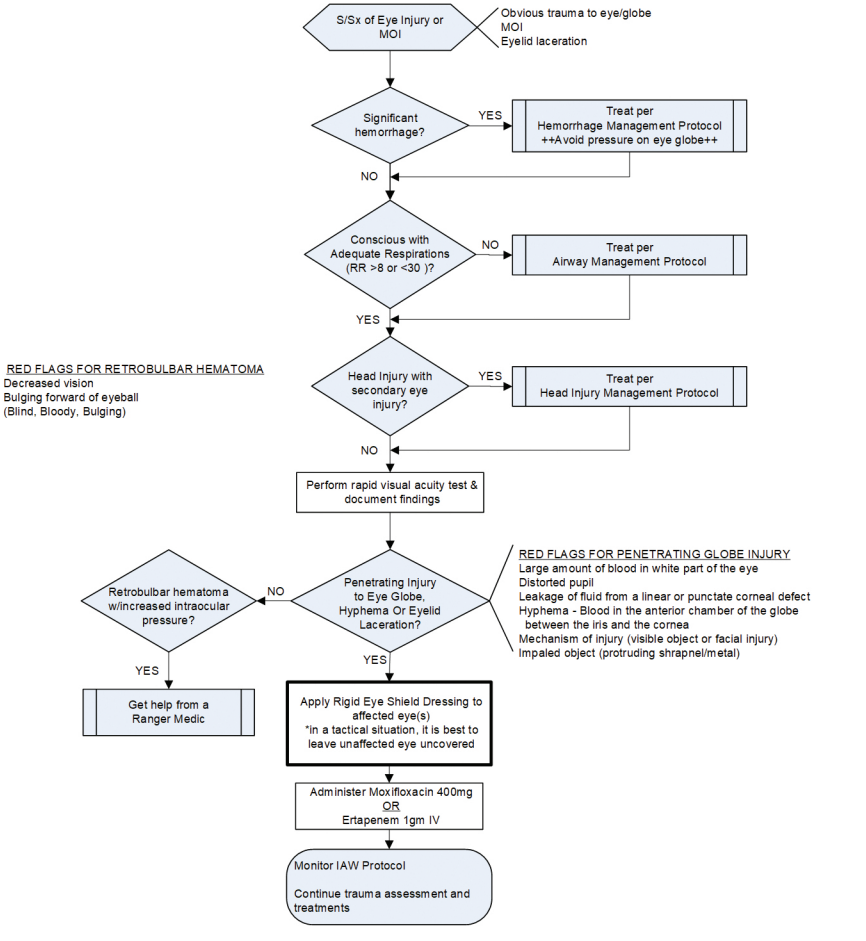
Rapid Field Visual Acuity	Test Eye Examination (TRAUMA)
Visual acuity is the vital sign of the eye in your assessment. Vision in affected eye should be checked with unaffected eye closed. A simple quantification is from best to worst: 1. Able to read print. 2. Can count the number of fingers held up. 3. Can see hand motion. 4. Can see light. Document the finding on casualty card.	**Inspect surrounding structures:** Inspect the symmetry of the eyes, eyebrows, and orbital area for any abnormalities. **Eyelids:** Inspect the patient's lightly closed eyelids for symmetry, fasciculation, tremors, and presence of eyelashes. While closed, look to ensure eyelids close completely. **Pupils:** Equal, round, reactive to light, distortion, size **Iris:** Details clear, laceration or indication of penetrating trauma **Sclera:** Obvious lacerations, redness, blood in white part of the eye **Cornea:** Obvious defects (laceration or penetration) **Ocular Motion:** Inability to move eye

Standard Visual Acuity Test

Distant visual acuity is tested using a Snellen chart with patient 20ft away in a well-lit area. Test each eye separately, with one eye being covered while testing the opposite eye. Allow a few moments for eyes to adjust between tests. If patient wears corrective vision, record two separate tests, one with and one without correction. Documentation is recorded as a fraction in which the numerator indicates the distance from the chart (20) and the denominator indicates the distance at which the average eye can read the line. (i.e., 20/40 indicates the patient is reading at 20ft what the average eye can read at 40ft. Tell patient to read the line most clear to them and then proceed to the next distance level. Record the distance in which the patient can still accurately read the text.

Peripheral visual acuity is tested using the confrontation test. Stand facing the patient at eye level and test each eye separately. While the patient covers one eye, you cover the opposing eye (Patient–Left, Examiner–Right). Fully extend your arm midway between yourself and the patient and then move it centrally with the fingers moving. Have the patient tell you when the moving fingers are first seen. Compare the patient's response with your response in the upper, lower, left and right spectrums. Record as the estimated degrees of vision, with directly ahead being 0 degrees.

Eye Injury Management Protocol



1. Never use a pressure dressing over the eye if penetrating eye trauma observed or suspected. A rigid eye shield should always be used while avoiding pressure on the globe.
2. Field expedient rigid eye shield may be protective eyewear bandaged over the eye.

Hyperthermia

Heat Injuries

Heat injuries fall into a continuum of heat cramps to heat exhaustion to heat stroke. While the mechanism of heat cramps is not fully understood, there is convincing evidence to suggest it is the result of sodium depletion or over hydration. Heat exhaustion and heat stroke represent a spectrum of disorders, which range in intensity and severity of tissue damage. The pathophysiology of heat exhaustion and heat stroke are so similar that they may represent a continuum of disease rather than separate, distinct diseases and both are characterized by sodium and water depletion. Heat cramps, heat exhaustion, and heat stroke are all illnesses related to a failure of the body to maintain fluid and electrolyte balance to the challenge of adapting to added heat loads. These conditions may develop over several days, allowing adequate time for effective intervention. The maintenance of adequate diet and fluid intake is essential. The use of dietary supplements can lead to dehydration and increased likelihood of heat injury. When faced with increased heat loads, the body is dependent on sweating to maintain a constant body temperature. The sources of the heat load may be external (a hot day), internal (a road march with 50 pounds of gear) or both (a road march in the desert sun). If the heat load exceeds the body's ability to lose heat, a heat injury will result.

Heat Cramps

The term "heat cramps" is actually a misnomer, as muscle cramping more likely results from sodium depletion during intense activity, not from heat. In fact, cooling of a fatigued muscle is often a contributing factor. Heat cramps typically occur in individuals undergoing prolonged, intense activity in a hot and humid environment. Heat cramps are brief, intermittent, and very painful but can largely be prevented by maintaining an adequate salt and fluid balance prior to and during exertion.

S/Sx: Painful, tonic contractions of skeletal muscles frequently preceded by palpable or visible muscle twitching. Fatigue, dizziness, nausea, and vomiting are common.

Management: Obtain hydration and diet history to guide management and identify likely electrolyte cause. Oral electrolyte rehydration and foods are the initial management of choice. IV crystalloid solution is indicated if more rapid treatment is needed. Mild stretching and massage of the contracting muscle will provide some relief for the intense discomfort. May return to activity after symptoms resolve but patient is at risk for return of heat cramps or other heat injury.

Heat Exhaustion/Stroke

Heat exhaustion is the most common heat illness. Although heat exhaustion in a military setting often manifests after extreme exertion, in reality, it likely develops over several days. It is a result of cardiovascular strain as the body tries to maintain normothermia in a hot environment. Heat exhaustion occurs when the demands for blood flow (to the skin for temperature control through convection and sweating, to the muscles for work, and other vital organs) exceed the heart's ability to pump blood. A body that has developed a state of salt depletion over several days, in combination with extreme exertion, is at risk for heat exhaustion.

S/Sx: Profound fatigue, chills, nausea/vomiting, tingling of the lips, shortness of breath, dizziness, headache, syncope, hyperirritability, anxiety, raised skin hair, heat cramps, heat sensations in head and upper torso. Casualty may or may not feel thirsty. Tachypnea, tachycardia, hypotension may be present. Core temperature may be normal or > 104°F. Heat stroke can be defined as a heat injury with central neurologic symptoms such as altered mental status (AMS) or seizures.

Management: Heat Exhaustion: Reduce the load on the heart with rest and cooling. Place casualty in shade and remove heavy clothing. Apply cool water to the skin, if available. Correct water and electrolyte depletion by administering oral or IV fluids. IV fluids replenish the volume and correct symptoms quickly. Patients with resting tachycardia or hypotension should initially receive up to 1–2L boluses of crystalloid solution and monitored for these vital signs to correct. If patient can tolerate oral fluids, use an oral electrolyte solution or sports drink. Ranger should limit activity for minimum of 24 hours and ease into return in activity, in a slow stepwise approach.

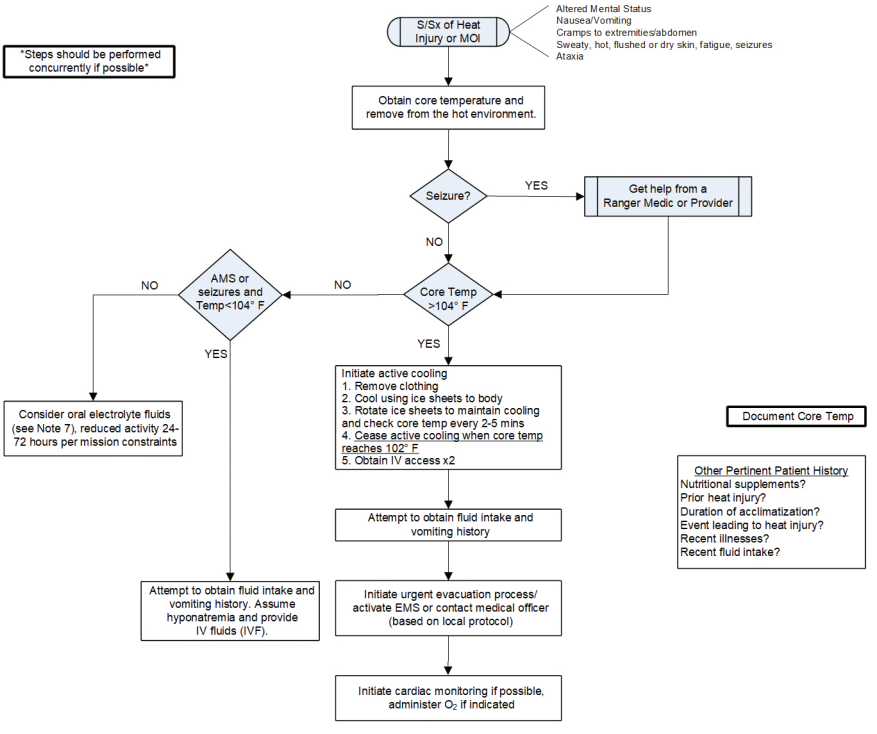
Management: Heat Stroke: Heat stroke is a true emergency and needs to be managed by rapid active cooling (ice bath immersion or rotation of ice sheets). In a patient with an undefined heat injury and temperature > 104°F, or hyperthermia and AMS, treat as heat stroke per the protocol. Do not rely solely on temperature to diagnose but have a high index of suspicion with appropriate risk factors and clinical setting and treat presumptively.

Hyponatremia

In addition to these standard heat injuries, hyponatremia, or emergently low blood levels of sodium, may be classified as a heat injury. Hyponatremia in our population most commonly occurs due to excessive water consumption that overwhelms the body's ability to maintain a normal blood electrolyte concentration. This excessive water leads to a dilution of the blood sodium and can have central nervous system effects such as seizures or AMS.

Treat all apparent heat injuries with primary concern for heat stroke. In a patient thought to have a heat injury due to environmental factors with AMS or seizures with a core temperature < 104°F attempt to gain history of excessive water consumption or recurrent clear vomiting. With a negative evaluation for heat stroke in patient with AMS or seizures, treat for presumptive hyponatremia. Treatment includes continuing emergent evacuation and administering IV fluids. Ensure large IV access for administration.

Hyperthermia (Heat) Management Protocol



1. Evac as early as possible. 2. Treat presumptively as heat stroke while working through protocol and evaluation. 3. Can initiate up to 2L IVF bolus for heat stroke while awaiting evacuation and after correctly executing active cooling. 4. IVF for heat stroke should be cold stored to 29° C or in ice sheet cooler. 5. Seizure likely due to hyponatremia, treat accordingly. 6. Hyponatremia patient often has history of excessive fluid intake and repeated clear vomiting. 7. Document initial and serial core temps and times. 8. Ensure patency of IV and large vein access for IV fluids.	9. All heat related patients must be documented and reported to a medical officer. 10. Key documentation includes: PT Hx and Hx leading up to the event; medications or supplements ingested; last meal type and time; any cardiac dysrhythmias. 11. DO NOT delay evacuation process to render treatment – treat en route. 12. Oral electrolyte fluids include Drip Drop or 1:1 dilution with sports drinks. 13. Titrate rehydration to establish normal urinary frequency and volume, restoration of pale urine color, restoration of normal skin turgor, and restoration of mucosal moisture. 14. All heat injury patients will be documented and reviewed by a medical officer.

Blast Injury Assessment

TCCC Application

INITIAL EVALUATION AND TREATMENT PER APPROPRIATE TRAUMA PROTOCOL

All unit members exposed to blast will be assessed for blast injuries as soon as tactically feasible with documentation if possible. Any indications or complications from blast injuries should warrant immediate evacuation for evaluation at a more capable facility.

Blast injuries have a wide range of severity, from minor tympanic membrane ruptures to hollow organ over-pressure injuries. All personnel must be evaluated and monitored for at least 6 hours for injuries. Submersion or confined space environments significantly increase the incidence of injury. Special caution should be taken when examining these patients.

Signs & Symptoms

HEENT – Careful inspection for ear drum rupture during examination. Intact ear drums do NOT exclude significant blast injury to other parts of the body. Check for ear discharge, ringing in ears, hearing loss.
Pulmonary – Evaluate for shortness of breath and abnormal breath sounds.
Neurologic – Evaluate for TBI with MACE2.
Abdomen – Monitor until 48–72 hours post injury.

Management

1. All asymptomatic patients should be monitored for at least 6 hours after the event to rule out late presenting complications.
2. Tympanic membrane (TM): Keep ear canal dry/covered (use cotton balls if possible) in case of TM rupture. Refer to medic or medical officer for evaluation when possible.
3. MACE2 examination needs to be accomplished on all personnel affected by the blast.
4. Pulmonary decompensation: High-flow O_2 if available. Use caution with high pressure ventilation, as this may worsen the patient's condition. Follow rules for hypovolemic resuscitation given risk for pulmonary edema. Have high suspicion for tension pneumothorax. Be prepared for needle decompression. Consider finger thoracostomy: recurrence or persistence of respiratory distress after 2 needle decompressions **OR** evacuation time > 1 hour **OR** patient requires positive pressure ventilation. For air evacuation, fly at the lowest tactically feasible altitude.
5. Abdomen: Any abdominal pain or tenderness within 48–72 hours of a blast exposure should be presumed to be a bowel perforation and warrants urgent surgical evaluation. Follow *Abdominal Pain Protocol* for urgent evacuation.
6. Consider possibility of arterial gas embolism (AGE) in patients with focal neurological deficits after pulmonary blast injury. AGE may require recompression therapy. Refer to a Ranger Medic.
7. Spine injury: Patients involved in vehicular blasts or thrown by explosions are at high risk for spinal injury. Maintain a high index of suspicion for spinal injury, especially in unconscious patients. Refer to a Ranger Medic.

Disposition & Evacuation

1. Eardrum rupture without complications – Return-to-duty after 6 hours of observation
2. Eardrum rupture with hearing loss – *Routine* evacuation
3. Neurologic injury – *Urgent for neurosurgical evaluation*
4. Pulmonary complications – *Urgent* evacuation
5. Abdominal pain – *Urgent* evacuation
6. AGE or barotrauma – *Urgent* evacuation
7. Spinal injury – *Urgent* evacuation to neurosurgical capability

Abdominal Trauma

Penetrating abdominal injuries are characterized by a violation of the peritoneal or retroperitoneal spaces by any variety of low- to high-velocity objects. Injuries represent a spectrum that includes impalement with foreign objects, stab, gunshot, and fragment wounds. Tissues are crushed and torn by the penetrating missile or they are injured indirectly by stretching and cavitation. Multiple abdominal organs are commonly damaged as a result of penetrating trauma. The management of abdominal trauma in the field centers on adequate resuscitation, pain control, and intravenous antibiotics with the goal of evacuating the patient to a location where surgical care is available. Wound care and other supportive measures should also be given.

Initial Assessment & Management

Visible evidence of abdominal trauma may not always be immediately present (especially when associated with blunt mechanisms of injury). Abdominal pain is not always a reliable indicator of abdominal injury as it may be mimicked by fractures of the ribs and pelvis, or not be readily evident because of decreased mental status from associated head or spinal cord injury. Furthermore, severe pain from other injures such as extremity fractures may mask the patient's perception of pain in the abdominal area.

Inspect for: Entrance and exit wounds, contusions and abrasions, distention, protruding bowel or omentum, gastrointestinal hemorrhage (bloody emesis or rectal bleeding), hematuria, signs of shock.

Palpation: Palpation of the abdomen can reveal tenderness, guarding, and rigidity. Assess all abdominal quadrants for tenderness. If an obvious evisceration is present, palpation should be deferred. Involuntary guarding is a reliable sign of peritoneal irritation. Pelvic stability should be assessed especially when blunt trauma is the mechanism of injury. A pelvis determined to be unstable should not be subjected to repeated manipulation to test for stability.

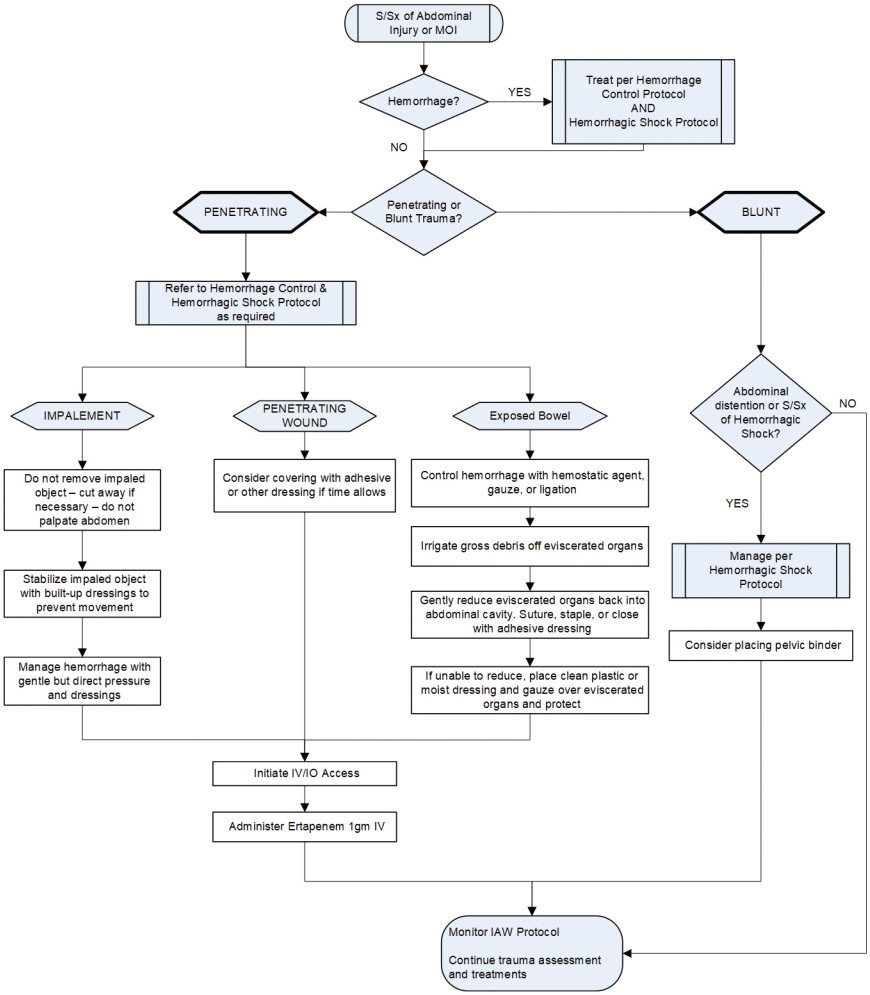
Control any visible hemorrhage from bowel using approved hemostatic agent or gauze. Irrigate gross debris off of exposed bowel. **Attempt to gently reduce bowel back into abdominal cavity. If bowel is reduced, approximate skin (sutures or staples) and cover abdominal wound with dressing.** If bowel is unable to be reduced, cover bowel with moist dressing. If uncontrolled abdominal hemorrhage is suspected, immediately begin resuscitation with whole blood or blood products in a 1:1 ratio. Resuscitation efforts should be directed at maintaining cerebral perfusion as indicated by patient's mental status if there is no associated head injury. If there is no associated head injury, a systolic blood pressure of 90–100mmHg is adequate and will prevent rebleeding from over resuscitation. The patient who is hemodynamically unstable and requires ongoing large volume resuscitation is probably bleeding from an intraabdominal or intrathoracic source.

Extended Care

Eviscerated bowel and omentum should be covered with a bandage moistened with saline or Ringer's lactate solution. Drinking water may be used if sterile fluids are not available. The wound should be reassessed and remoistened every 1–2 hours. Clamps for hemorrhage control should be applied only to easily seen bleeding vessels. Do not attempt to pull out more bowel or omentum.

Worsening pain, or worsening signs of shock indicate deterioration and should accelerate efforts to evacuate the patient to a location where surgical care is available. Antibiotic therapy should be initiated as soon as a penetrating injury is suspected. Administer ertapenem 1g IV.

Abdominal Trauma Management Protocol



Evacuation

Special Operations Forces (SOF) Aircraft Capacities

MH-60 – 2 x litter, 1 × ambulatory (optimal) **OR** 2 × litters only with auxiliary fuel tank **OR** 3 × litter (minimal en route treatment) **OR** 1 × litter and 2–3 × ambulatory.
MH-47 – 8 × litter (floor-loaded)
MH-6 – 1 × litter (floor-loaded) for emergency contingency only. Never plan an MH-6 as a primary CASEVAC platform.
HH-60 – With carousel – 4 × litter; without carousel – 2 × litter, 1 × ambulatory
CV-22 – 5 × litter (floor-loaded)

General Principles of Rescue

During all rescue operations, tactical security and prevention of additional injuries (patients and rescuers) must be under constant consideration by all participants. The principles or phases of tactical rescue include security of area/force; assessment of rescue situation; gaining access; rendering emergency care; disentanglement/extrication; removal; stabilization medical care; and evacuation. Contingency planning, training and rehearsals should always be a consideration. Consider anchoring of rolled vehicle to prevent shifting of weight. If possible, casualty collection point (CCP) should be established upwind from the site. Timing of evacuation requests must be synchronized to expected timeframes of extracting and packaging of casualties. Keep C2 informed.

Downed Aircraft Casualty Extraction Considerations

A downed aircraft can occur during any phase of tactical operation, has a dramatic effect on the operation, and should always be an assumed contingency. The immediate concern is securing the site and suppression of enemy actions. Rescuers should identify themselves as friendly when approaching a downed aircraft. Immediate casualty care is focused on coinciding extraction from burning aircraft and treatment of life-threatening injuries. Casualty collection points must be at a minimum safe distance from potential ammunition cook-off. CCP should be established upwind from site, if possible, as burning aircraft materials can be toxic. Buddy-team search parties conduct methodical searches around crash site for thrown victims. If possible, anchor the aircraft to the ground to prevent shifting or rolling. Combat Search and Rescue (CSAR) link-up and assumption of C2 should be rehearsed as contingency for all aircraft operations. N-95 masks should be included in CSAR kits to protect rescuers.

Vehicular Casualty Extraction Considerations

Vehicle rollovers, IED events, and driving accidents can occur during any phase of a tactical operation. Scene security and C2 must be established as soon as possible with the understanding that a combat engagement may continue during rescue attempts. Suppression of enemy fire remains the primary mission at all times. Ensure the safety of rescuers and casualties. Assess the scene situation to determine the need for additional assets. Recognize the mechanisms that produced injuries and consider the treatments/equipment required to manage casualties. Identify and manage life-threatening conditions and defer non–life threats to later stage. Consider cervical spine stabilization as applicable if the mechanism of injury indicates potential spine injuries. Consider threats to rescuers and casualties to include fire in vehicle, leaking fuels/products, ammunition cook-off, and other environmental conditions. Manage injuries per IAW tactical trauma protocols with deference to use of conventional/civilian techniques when indicated.

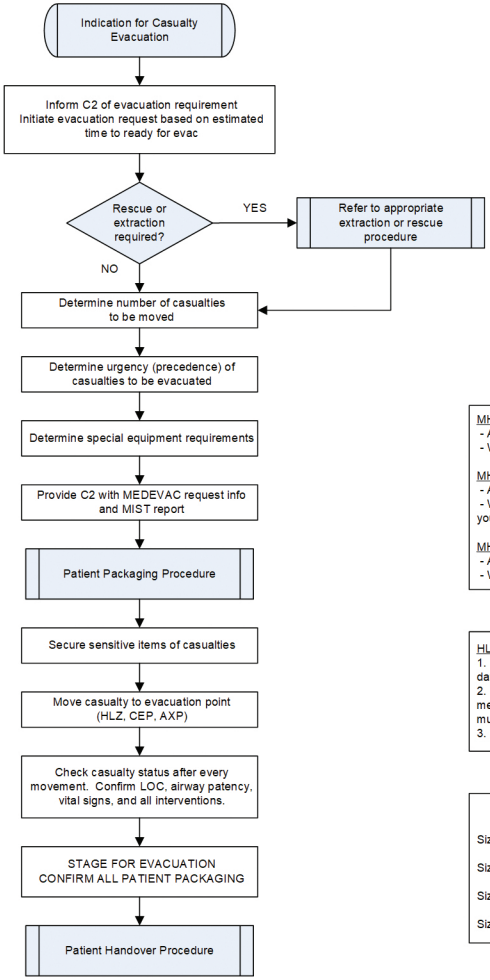
Confined Space/Building Collapse Extraction Considerations

Confined space rescues in the tactical setting include casualties who have fallen into wells, storage tanks, drainage systems, subterranean systems or trenches. Aside from the injuries incurred on initial trauma, closed spaces may contain low amounts of oxygen or potentially hazardous gases or materials. Key information requirements are number of casualties and potential hazards to patients and rescuers.

Building collapse rescue is complex, usually involves large numbers of personnel and specialized equipment, requires knowledge of building design, and will likely take an extended period of time. Security of the site is paramount. Key information is the last known position of personnel prior to the collapse. The organization of small search teams covering sectors is critical. Aside from trauma injuries involved with the collapse, rapid cardiovascular compromise is the greatest life threat as victims are extracted. Sudden cardiac arrest may occur from acidosis and hyperkalemia. Get help from a Ranger Medic.

Constant awareness of the security situation, flammable materials, and additional hazards are paramount during rescue operations.

Evacuation Protocol



MH-60 CASEVAC / UH-60 MEDEVAC:
- Always approach aircraft from 3 o'clock or 9 o'clock
- Wait for Crew Chief or Flight Medic to signal you to approach aircraft.

MH-47 CASEVAC:
- Always approach aircraft from 6 o'clock
- Wait until the ramp drops and for Crew Chief or Flight Medic to signal you to approach aircraft.

MH-6 CASEVAC:
- Always approach aircraft from 3 o'clock or 9 o'clock
- Wait for the pilot to signal you to approach aircraft.

HLZ GUIDELINES:
1. To prevent further injury to patient, injury to the other personnel, and damage to the aircraft, ensure there is little to no debris on the HLZ.
2. The HLZ should be as flat/level as possible. If the surface does not meet these conditions, and advisory must be given and the aircraft must either terminate at a hover or touch down while under power.
3. Never approach the aircraft on a downhill slope.

HLZ DIMENSION REQUIREMENTS:

Size 1	80ft (25m)	Light observation A/C (OH6 or OH-58)
Size 2	125ft (35m)	Light Utility/Attack A/C (UH-1H, H-65)
Size 3	160ft (50m)	Medium Utility/Attack A/C (UH60)
Size 4	265ft (80m)	Cargo A/C (CH-47 or CH-53)

NOTE: Rehearse and train with receiving providers and platforms ahead of missions to identify pertinent handover procedures (radio frequencies, casualty loading procedures, MASCAL contingencies, etc)

CASUALTY MARKING
RED – Urgent
GREEN – Priority
BLUE – Expectant or Routine

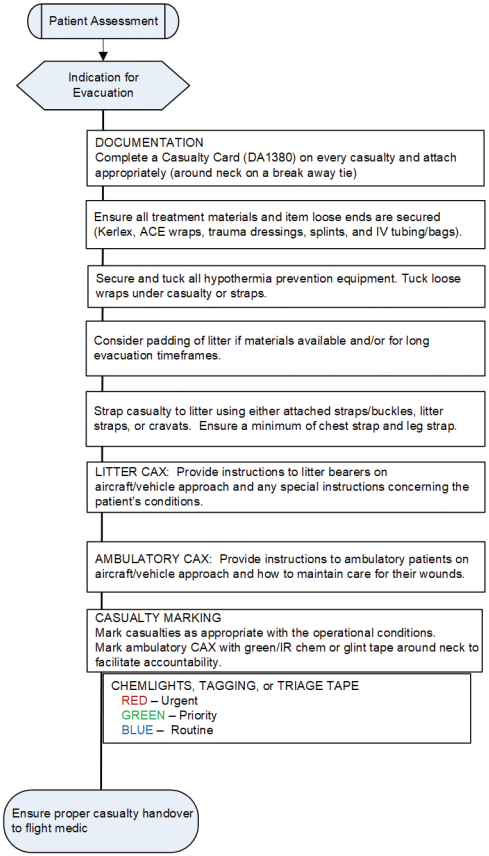
NATO MEDEVAC REQUEST	
MEDEVAC REQUEST 9-LINE	
LINE 1: LOCATION OF UNIT	HLZ GRID (MGRS):
LINE 2: CALLSIGN AND FREQUENCY AT THE PZ	CALLSIGN: FREQUENCY:
LINE 3: NUMBER AND PRECEDENCE OF CASUALTIES	A: Number of Urgent Casualties B: Number of Urgent-Surgical Casualties C: Number of Priority Casualties D: Number of Routine Casualties E: Number of Convenience Casualties
LINE 4: SPECIAL EQUIPMENT REQUIRED	A: None B: Hoist C: Extraction D: Ventilator E: Other (specify)
LINE 5: NUMBER OF CASUALTIES BY TYPE	L: Number of Litter Casualties A: Number of Ambulatory Casualties E: Number of Escorts
LINE 6: SECURITY AT PZ	N: No enemy P: Possible enemy E: Enemy in area X: Armed escort required
LINE 7: PZ MARKING	A: Panels B: Pyrotechnics C: Smoke (designate color) D: None E: Other (specify)
LINE 8: CASUALTIES BY NATIONALITY/STATUS	A: US/Coalition Military B: US/Coalition Civilian C: Non-Coalition D: Non-Coalition Civilian E: Opposing Forces/Detainee F: Child
LINE 9: NBC CONTAMINATION (In peacetime, description of terrain)	N: Nuclear B: Biological C: Chemical In peacetime: Brief description of significant obstacles on approach/departure headings and type of predominant terrain for the HLZ

NOTE: Lines 1–5 required to initiate MEDEVAC spin up

MIST REPORT	
M – MECHANISM OF INJURY AND TIME OF INJURY (IF KNOWN)	Mechanism of Injury and time of injury (if known)
I – INJURY OR ILLNESS	Injury or Illness
S – SYMPTOMS AND VITAL SIGNS	**A –** Airway status **B –** Breathing rate **C –** Pulse rate **D –** Conscious/unconscious **E –** Other signs
T – TREATMENT GIVEN	Such as tourniquet/time applied, drugs administered

SIT REPORT (used when communicating with PSG/1SG or other key personnel on the ground)	
S	STABLE/UNSTABLE
I	NOTABLE INJURIES
T	TREATMENTS RENDERED (Emphasis on medications, fluids, or procedures that cannot be seen by subsequent medics/providers)

Evacuation Patient Packaging



CASUALTY MARKING
RED – Urgent
GREEN – Priority
BLUE – Routine

Hypothermia Management

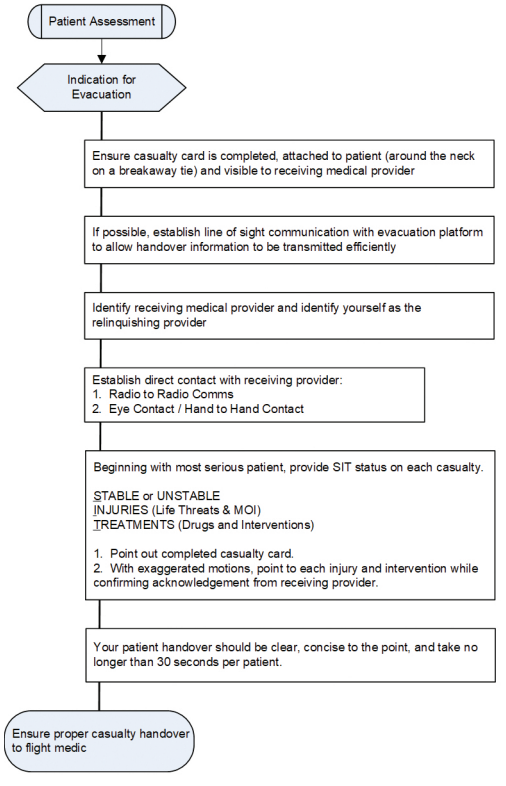
Incorrect placement of the Hypothermia Prevention and Management Kit (HPMK):

- Casualty not centered on litter.
- Heater is not properly placed on casualty.
- Blanket is not covering casualty.
- Velcro is not sealed on the HPMK.

Correct placement of the Hypothermia Prevention and Management Kit:

- Center casualty on litter.
- Place heater on casualty's torso.
- Ensure all Velcro is sealed on the HPMK.
- Place hood on casualty and seal Velcro straps around neck.
- Before movement, secure casualty with litter straps.

Evacuation Patient Handover



EQUIPMENT NEEDED:
- Casualty Card
- Communications Equipment

MINIMUM PATIENT HANDOVER INFORMATION:

Stable vs Unstable: With one arm, give a thumbs UP/DOWN and an exaggerated arm motion.

Injuries/MOI: Quick summary of life threatening injuries and MOI (GSW, blast, fall, etc).

Treatments/Drugs Administered: Interventions and Type, Dose, Route of any narcotics, antibiotics or fluids administered, emphasizing treatments that cannot be seen by receiving provider.

STANDARD PATIENT HANDOVER INFORMATION:

MOI: Quick summary of how the casualty was injured.

Stable vs Unstable: With one arm, give a thumbs **UP/DOWN** and an exaggerated arm motion.

Drugs Administered: Type, Dose, Route of any pertinent medications administered

Pertinent Vital Signs: Last pertinent VS and any trends identified.

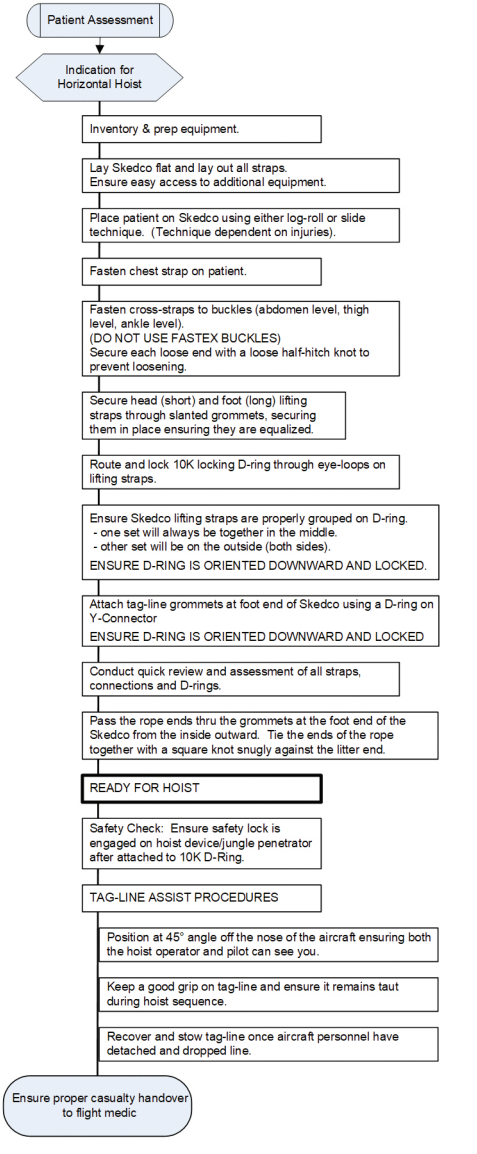
Interventions: Identify and describe results or complications.

Fluids Given: Relate type, amount and time.

NOTE: Rehearse and train with receiving providers and platforms ahead of missions to identify pertinent handover procedures (radio frequencies, casualty loading procedures, MASCAL contingencies, etc)

HANDOVER INFORMATION FLOW:
Due to excessive noise, it is key to have the casualty card completed. The flight medic will not be able to hear everything that is said.

Skedco Horizontal Hoist Procedure



EQUIPMENT NEEDED:
- SKEDCO Litter (Full-size ONLY)
- 2x Horizontal lifting straps (one long/foot end and one short/foot end)
- 10,000 lbs D-ring
- Tag-line carabiners and Y-connector

HAND & ARM SIGNALS:
Hoist Up: With one arm, give a thumbs UP and an exaggerated upward arm motion.
Hoist Down: With one arm, give a thumbs DOWN and an exaggerated downward arm motion.
Stop Hoist: With one arm, make a fist and hold arm straight out.
Emergency During Hoist: Arm held directly out 90° to side of body moving continuously to and from body.
Deploy Hoist: One arm held straight up and one arm held straight out 90° to side of body (3 o'clock position).

CAUTIONS:
1. Never attempt to grab the hoist cable when it is in mid air. Always wait for the cable to touch the ground and discharge its static charge.
2. Wear gloves when controlling the tag line.
3. Shield the casualty from rotor wash.
4. Ensure all locking D-rings are oriented in a gate down position to prevent gravity and vibrations from unscrewing the threaded lock.
5. Do not drag or grab or maneuver the Skedco using the hoist straps to prevent fraying or damage.
6. Avoid nylon on nylon friction points.

Skedco Vertical Hoist Procedure

Patient Assessment

Indication for Vertical Hoist

Inventory & prep equipment.

Lay Skedco flat and lay out all straps.
Ensure easy access to additional equipment.

Place patient on Skedco using either log-roll or slide technique.
(Technique dependent on injuries).

Fasten Chest Strap on patient.

Fasten cross-straps to buckles (abdomen level, thigh level, ankle level).
(DO NOT USE FASTEX BUCKLES).
Secure each loose end with a loose half-hitch knot to prevent loosening.

Using 30' 3/8" rope, tie a Figure-Eight Loop knot in the middle of rope leaving equal length working ends of rope.

Pass each end of the rope through grommets at the head end of the Skedco pulling the Figure-Eight Loop knot against the litter.

Continue feeding unused rope through grommets and carrying handles all the way to the foot end of the Skedco. Ensure that both ends remain equal in length.

Pass the rope ends thru the grommets at the foot end of the Skedco from the inside outward. Tie the ends of the rope together with a square knot snugly against the litter end.

Bring ends of rope over the end of the Skedco. Pass thru lower carrying handles and secure with another square knot. Safety each end with an over hand knot. Secure drag handle to chest strap.

Attach 10K D-Ring to the loop of the Figure-Eight Loop knot.

READY FOR HOIST – Attach to hoist system

Safety Check: Ensure safety lock is engaged on hoist device/ jungle penetrator after attached to 10K D-Ring.

TAG-LINE ASSIST PROCEDURES

- Attach Tag-line to carrying handles on patient's right side.
- Keep a good grip on tag-line and ensure it remains taut during hoist sequence.
- Recover and stow tag-line once aircraft personnel have detached and dropped line.

Ensure proper casualty handover to flight medic

EQUIPMENT NEEDED:
- SKEDCO Litter (Full-size ONLY)
- 30' 3/8" rope
- 10,000 lbs. D-ring
- Tag-line with carabiners and Y-connector

HAND & ARM SIGNALS:
Hoist Up: With one arm, give a thumbs UP and an exaggerated upward arm motion.
Hoist Down: With one arm, give a thumbs DOWN and an exaggerated downward arm motion.
Stop Hoist: With one arm, make a fist and hold arm straight out.
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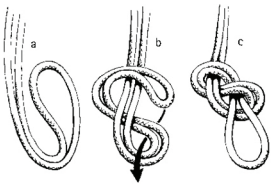
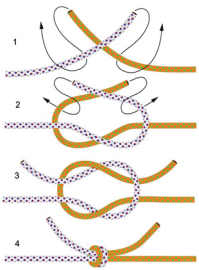




Canine TCCC Management

Canine trauma management follows the same TCCC/MARCH principles as for humans. This section covers specific deviations and/or requirements from human protocols, which may improve survivability of MPC trauma patients. Handlers are trained in these principles and will usually be the first to initiate aid.

Safety: Injured MPCs may bite from fear and/or pain, even with decreased consciousness, posing a risk to anyone nearby. Wounded MPCs **MUST** be muzzled when performing assessment and procedures unless presenting with respiratory distress. Sedation/pain meds are authorized for MPCs not amenable to physical exam or treatment.

CANINE CASUALTIES WILL NEVER SUPERCEDE WOUNDED RANGERS IN PRIORITY

TCCC

Care Under Fire: Handler Wounded: Remove the injured MPC to cover if tactically feasible. Every handler should have members of their platoon identified and comfortable working with the MPC. This person will help maintain control of the injured MPC while another medic or ARFR provides care.

Tactical Field Care: MPC moves to CCP with other casualties. Medic triages other casualties before attending to MPC's wounds. Handlers and/or other ARFR/RFR will provide initial care until medics can divert their attention. Remove equipment and tactical vests to fully assess the chest area. Provide sedation/pain meds (dosages on MPC Card) as needed in conscious patients to complete exams and treatments. Communicate MPC casualty status and evacuation requirements through normal C2 channels.

Tactical Evacuation: MEDEVAC per usual manner according to precedence (Urgent, Priority, Routine). However, MPCs will not precede other casualties of the same category. Handlers or trained representatives must remain with the MPC throughout transport. Always reassess the patient and all interventions after movement. Always complete a K9 Casualty Card and maintain with the patient throughout transport. Complete a casualty AAR in the normal manner and include the RVET on all communications. MPC casualty information is maintained in the Pre-Hospital Trauma Registry the same as Rangers.

M³ARCH

Muzzle/Massive Hemorrhage: Control extremity bleeding with combat gauze and pressure bandages. CAT tourniquets are large, and effectiveness can be tricky. If used, place above the stifle or elbow for injuries distal. SOF-T tourniquets are 100% useless on dogs. Pack GSWs to the neck, hip and shoulder with combat gauze using hemostats or curved 8" forceps.

Airway: First check the airway to ensure it is clear using a finger sweep. Then determine the dog's breathing pattern, rate and if it is having difficulty to determine if interventions are necessary.

a. NPAs are not functional in MPCs.
b. Emma/EtCO_2 Monitor. (Ref Range is 35–45mm Hg). Opioids can depress the CNS leading to a higher CO_2 reading. Pain will cause an animal to hyperventilate and decrease the CO_2 reading.

Respirations:

a. Remove the vest. Check both sides of the chest and neck.
b. In the conscious patient with an actively sucking wound – use a large vented occlusive dressing. Try to cover as much surface area as possible with the occlusive dressing. Wrap the chest circumferentially with an elastic bandage if adherence is a problem. Be careful not to restrict breathing. Be prepared to treat a pneumothorax or hemothorax.
c. Dogs with pneumothorax and/or hemothorax often have increased resistance when bagging.
d. Needle decompression: Place between 6th to 8th intercostal spaces cranial to the rib using a standard 14G catheter. Place in highest portion of chest when laterally recumbent to remove air and lower third (near sternum) to remove fluid. Repeat needle decompressions often indicates need for finger thoracostomy.

Circulation: Make sure there is not major bleeding and control, as necessary. Penetrating wounds to the neck that you believe communicate with the thorax (or severs major vasculature of the neck), obvious penetrating wounds to the chest, abdomen or hip are all considered significant mechanisms of injury. Treat for hemorrhagic shock if two or more clinical signs below are seen:

a. Pulse > 160bpm.
b. Loss of consciousness.
c. Weak femoral pulse.
d. HR > Systolic Blood Pressure.

Hypothermia: PLACE HPMK

CBRN

The goals of Chemical, Biological, Radiological, and Nuclear (CBRN) trauma medicine are to limit and minimize exposure/contamination, treat the immediate life threats, and administer appropriate antidotes or countermeasures. Assessment and treatment of CBRN casualties follows the modified **MARCH** algorithm (MARCH)[2]. Combat the mentality of a CBRN patient dipped in agent as a "candied apple." Instead, think of these patients as stepping in a mud puddle.

Massive hemorrhage, Mask check – control life-threatening bleeding.

Airway, Administer Antidotes (ATNAA, CANA) – establish and maintain a patent airway.

Respiration, Rapid Spot Decontamination (RSDL) – decompress suspected tension pneumothorax, seal sucking chest wounds, and support ventilation/oxygenation as required.

Circulation, Administer Countermeasures – establish IV/IO access and administer blood products as required to treat shock.

Head injury/Hypothermia – prevent/treat hypotension and hypoxia to prevent worsening of traumatic brain injury. and prevent/treat hypothermia.

Use **CRESS** to quickly determine the agent of concern, conduct triage and recognize symptoms.

C – Consciousness (unconscious, convulsing, altered)

R – Respirations (present, labored, absent)

E – Eyes (pupil size, equal, round, reactive to light)

S – Secretions (absent, normal, increased)

S – Skin (diaphoretic, cyanotic, dry, hot)

CBRN casualties present unique challenges and the medic must constantly ask what is killing the casualty now. These patients can suffer from trauma, poisoning, or both trauma and poisoning. Always treat the most immediate life threat.

TCCC Application

Hot Zone: Depending on the agent, consider any area with agent to be the same as receiving effective fire. Always wear multiple sets of nitrile gloves when operating in a CBRN environment. Treatments in this zone are limited to MAR[2]. Prevention of additional casualties, medic safety, and removing the patient from the area are the highest priorities. Check and find massive hemorrhage. Only expose on the casualty what is needed to save a life. Use the DRY-WET-DRY technique and RSDL for decontamination.

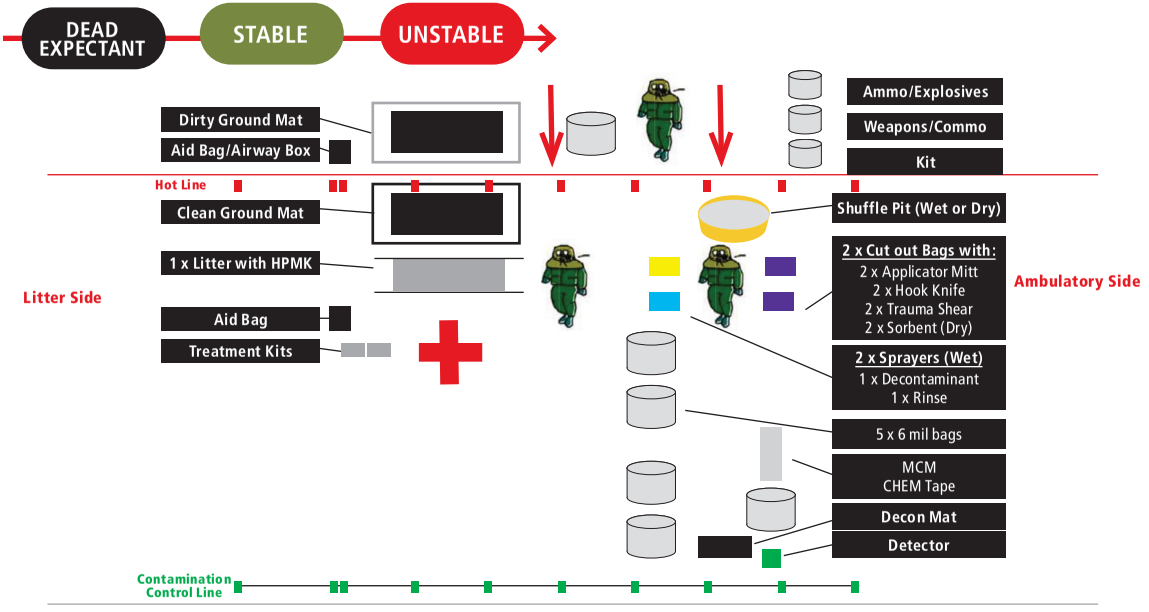
Warm Zone: These treatments begin when moved to the Dirty CCP, are in conjunction with decontamination, and consist of CHE[2]. All Hot Zone treatments should be reassessed and possibly replaced with clean ones. Use the command "Expose to treat" in order to quickly communicate to any assistants the immediate need to decontaminate the head/face and chest, to facilitate mask removal and for sternal IO placement. This allows ventilatory support and rapid dosing of countermeasures. Removing contamination by any means available may mean the difference between life and death, as this limit continued dosing. Do NOT perform any unnecessary procedures in the Warm Zone. Only address immediate threats to life that cannot wait for decontamination to be completed. The Warm Zone is for DECON, not medical care.

Trauma Assessment Principles

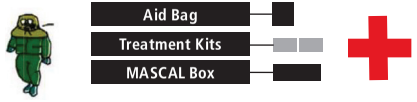
Hot Zone: Tourniquets placed over a CBRN suit are prone to fail. Check the casualty's mask to ensure it is in place. Assess the patient's airway and determine if it makes sense to unmask the casualty to provide an airway in a contaminated environment. If the ARFR is breathing filtered air, the casualty should be too. Use a Resuscitator Device Individual Chemical (RDIC) as needed. Administer antidotes based on the presumed agent. Use ATNAA/CANA for nerve agent and CyanoKit for cyanide once removed from the exposure. Assess respiratory changes and determine if they are due to an agent or trauma. Use Rapid Spot Decontamination for any visible agent, around breaches in the suit, and any exposed skin. Use the DRY-WET-DRY technique and RSDL or soap and water for decontamination.

Warm Zone: Administer countermeasures if required – IV/IO drips, suction, and ventilatory support. Respiratory difficulty due to poisoning should be treated with ventilatory support if required. Treatment with nebulized albuterol, solumedrol 125mg IV, and/or racemic epinephrine should wait until the Cold Zone. Assess circulation and provide resuscitation if required. Nerve agent poisonings may require atropine drips for treatment. Preventing hypothermia is critical and decontamination should occur quickly as the patients will be exposed and wet. Manage head wounds as required.

Schematic – DIRTY CCP



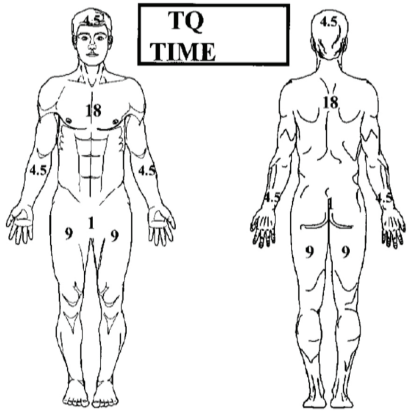
Notes:
- Triage flows from left to right in the hot zone
- Casualty flow moves from top to bottom in this diagram
- Medical Personnel, at least one designated clean and one designated dirty



Name/Unit _____

DTG:_____ **ALLERGIES:**_____

Friendly Unknown **NBC**



GSW BLAST MVA Other_____

TIME				
AVPU				
PULSE				
RESP				
BP				

DA FORM 7656, XXX ####

A: Intact Adjunct Cric Intubated

B: Chest Seal NeedleD ChestTube

C: TQ Hemostatic Packed PressureDrsg

FLUIDS: IV IO

NS / LR 500 1000 1500

Hextend 500 1000

Other:

DRUGS (Type / Dose / Route):

PAIN

ABX

OTHER

First Responder's Name_____

Ranger Casualty Card (adopted as DA Form 7656)

Pre-Combat Inspections. Every combat unit will conduct precombat inspections (PCIs) prior to launching on a mission. PCI are conducted from the lowest leadership levels to the highest; no individual will be exempt.

PRE-COMBAT INSPECTIONS

- Individual Rangers
  - ➢ Ranger Bleeder Kits (BCKs)
  - ➢ TQ on kit serviceable
- Squad Casualty Response Kit
- ARFR Bag
  - ➢ Evacuation Equipment (Skedco, Litters, etc.)
  - ➢ Vehicle mounted aid bags
- Individual Equipment (weapon, night vision googles, radio, packing list, mission- specific)
- Aidbags (Pack and/or reconfigure as required)
  - ➢ Select appropriate aid bag system per mission requirements
  - ➢ Ensure packing list meets IAW-recommended ARFR Standards
- Re-Supply Packages (pack and/or reconfigure per mission requirements)
  - ➢ Reconfigure per mission specifics (ground, air, etc.)
  - ➢ Utilize speedballs, bundles, or pull-off configured as required
  - ➢ Pre-position as required with aircraft and vehicles or at staging base with BLOC and logistics teams
- Evacuation Assets (quads, vehicles, etc.)

Casualty Collection Point

Casualty Collection Point Operations

Casualty collection point (CCP) operations must be well planned and rehearsed. In the planning phase, both unit leadership and members of the CCP element have critical responsibilities. In the execution phase, the members of the CCP must act as a cohesive team with every member fulfilling his responsibilities. A CCP will never be exactly the same as it was on a previous mission. However, there are critical guidelines in the planning and execution of any CCP.

CCP SITE SELECTION

- Reasonably close to the fight
- Near templated areas of expected high casualties
- Cover and concealment
- In building or on hardstand (exclusive CCP building limits confusion)
- Access/trafficable to evacuation routes/assets (foot, vehicle, aircraft)
- Proximity to lines of drift on the objective
- Adjacent to objective choke points (breeches, HLZs, etc.)
- Avoid natural or enemy choke points
- Area allowing passive security (inside the perimeter)
- Good drainage
- Expandable if casualty load increases
- Consider placement of CCP locations near recognizable landmarks such as airfield control towers, fire stations, religious buildings, or local medical facilities

UNIT LEADERSHIP CCP DUTIES & RESPONSIBILITIES

- **Planning Phase**
  - ➢ Evacuation plan by phase of the operation
  - ➢ CCP locations, HLZ/AXP locations
  - ➢ Security of CCP, security of HLZ/AXP
  - ➢ Allocate aid and litter (A&L) teams and carry evacuation equipment
  - ➢ Accountability/reporting plan
  - ➢ Distribution/task organization of medical personnel
  - ➢ Precombat inspections of junior medics, Squad Casualty Response Kits, and individual Ranger BCK/RFR tasks
  - ➢ Conduct casualty response rehearsals
- **Execution Phase**
  - ➢ Establish and secure CCP
  - ➢ Provide assistance to medics with ARFR augmentation and directing aid and litter teams
  - ➢ Gather and distribute casualty equipment and sensitive items
  - ➢ Accountability and reporting to higher
  - ➢ Request evacuation and establish CASEVAC link-up point
  - ➢ Manage KIA remains (or as coordinated by BLOC/S4)

BATTALION-LEVEL MEDICAL PERSONNEL CCP DUTIES & RESPONSIBILITIES

- **Planning Phase**
  - ➢ Provide recommendations and advise leadership on medical support
  - ➢ Recommend to the unit leadership and coordinate as required:
    - CCP locations of subordinate units by phase
    - Medical task organization and distribution
    - Ground (on the target) evacuation plan and assets for all targets
    - Air/ground (off the target) evacuation plan and assets for all targets
    - CCP, HLZ, and evacuation asset security for all targets
  - ➢ Augmentation requirements of subordinate units
  - ➢ Link-in with the tactical operations center
- **Execution Phase**
  - ➢ Triage, treatment, monitoring, and packaging
  - ➢ Delegation of treatment
  - ➢ Request assistance from other medical or platoon assets
  - ➢ Provide guidance and recommendations to leadership on casualty management

UNIT MEDICS CCP DUTIES & RESPONSIBILITIES

- **Planning Phase**
  - ➢ Provide recommendations and advise to leadership on medical support
  - ➢ Medical support planning by phase of the operation
  - ➢ Casualty Response and Evacuation Plan by phase of the operation
  - ➢ Recommend to the unit leadership and coordinate as required:
    - CCP locations by phase
    - Medical task organization and distribution
    - Ground (on the target) evacuation plan and assets
    - Air/ground (off the target) evacuation plan and assets
    - CCP, HLZ, and evacuation asset security
  - ➢ Pre-combat inspections of junior medics, Squad Casualty Response Kits, and Individual Ranger BCK/RFR tasks
- **Execution Phase**
  - ➢ Triage, treatment, monitoring, and packaging
  - ➢ Delegation of treatment
  - ➢ Request assistance from other medical or unit assets
  - ➢ Provide guidance and recommendations to leadership on casualty management and evacuation

CCP OPERATIONAL GUIDELINES

- 1SG/PSG is responsible for casualty movement, accountability, and everything outside the CCP:
  - ➢ Provides for CCP structure and organization (may be color coded with chemlights)
  - ➢ Maintains C2 and battlefield situational awareness
  - ➢ Controls aid and litter teams and establishes security
  - ➢ Strips, bags, tags, organizes, and maintains casualty equipment outside of treatment area as possible
  - ➢ Ensures reallocation of equipment as required (weapons systems, etc.)
  - ➢ Accountable for tracking casualties and equipment into and out of CCP and provides reports to higher
  - ➢ Casualties move through CCP entrance/exit choke point which should be marked with an IR chemlight
- Medical personnel are responsible for everything inside the CCP:
  - ➢ Triage officer sorts and organizes casualties at choke point into appropriate treatment categories
  - ➢ Medical officers and/or medics organize medical equipment/supplies and render treatment to casualties
  - ➢ Directs ARFRs, RFRs, A&L teams assist with treatment and packaging of casualties
- Minimal casualties should remain with original element or assist with CCP security if possible
- KIAs should remain with original element or be transported to the BLOC
- All CCP Personnel:
  - ➢ Maintain security
  - ➢ Maintain adequate treatment
  - ➢ Maintain situational awareness
  - ➢ Maintain organization
  - ➢ Maintain control of equipment and supplies

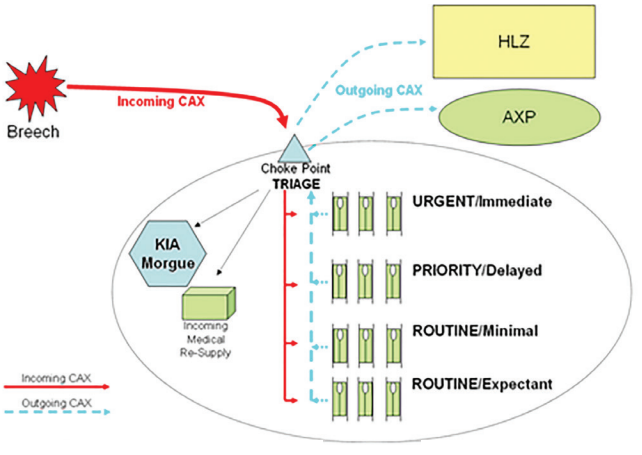
CCP WITHIN A BUILDING GUIDELINES

- Ensure building is cleared and secured
- Enter and assess the building prior to receiving casualties
  - ➢ Use largest rooms
  - ➢ Consider litter/Skedco movement (can you do it in the area?)
  - ➢ Separate rooms for treatment categories?
  - ➢ Determine location of choke point/triage
  - ➢ Minimize congestion
- Remove/relocate furniture or obstructions
- Color-code rooms to treatment categories (mark doors, etc.)

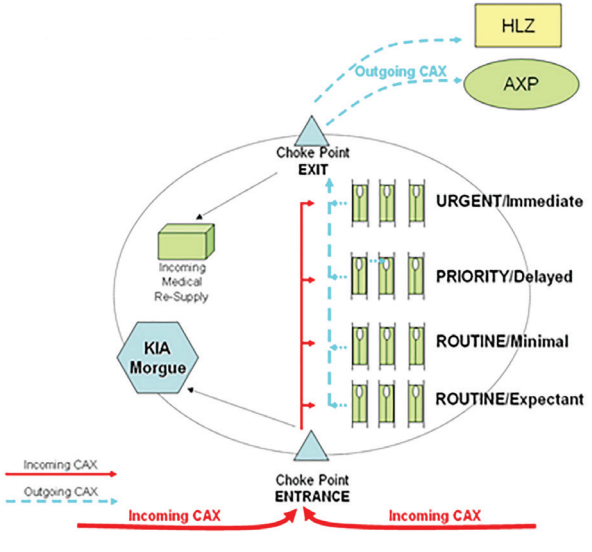
CCP DIAGRAMS

The following diagrams are common templates for the layout and organization of casualty collection points (CCPs). No template is perfect and should be reasonably modified based on the setting, terrain, and mission circumstances.

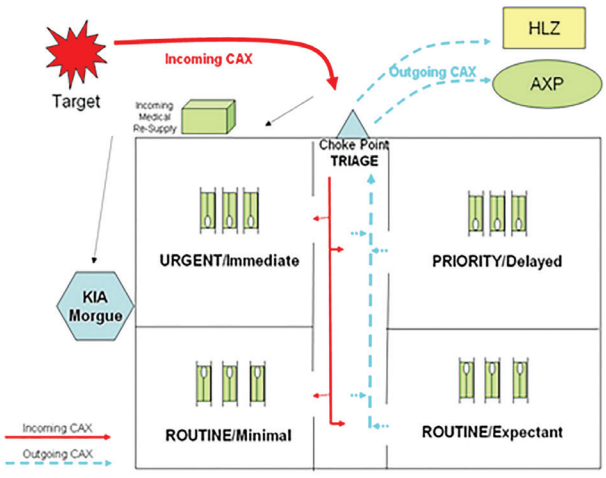
CCP/CEP Template 1 (Adjacent to Breech)



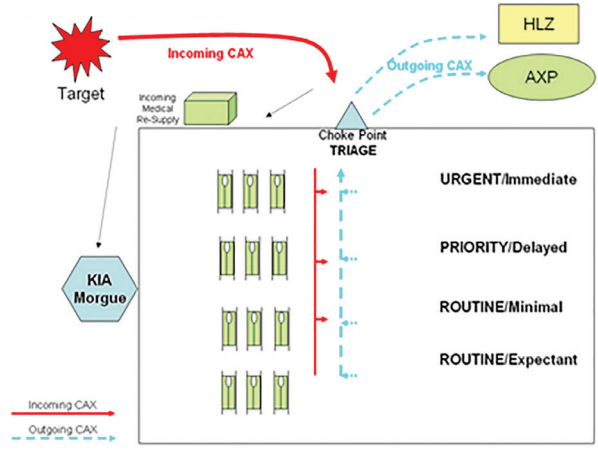
CCP/CEP Template 2 (Flow Through Style)



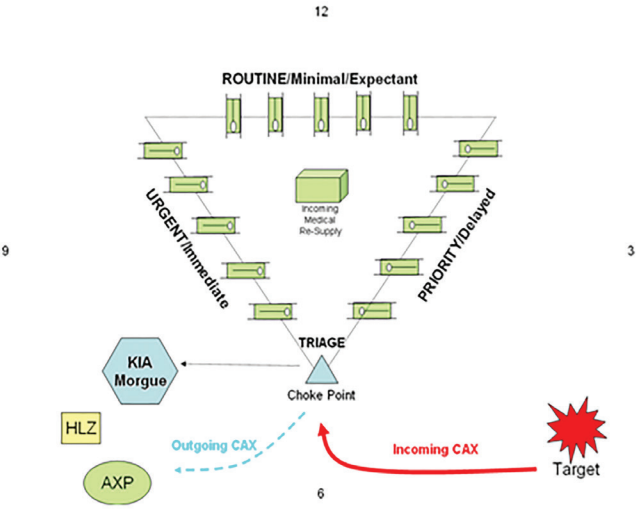
CCP/CEP Template 3
(Building – Rooms)



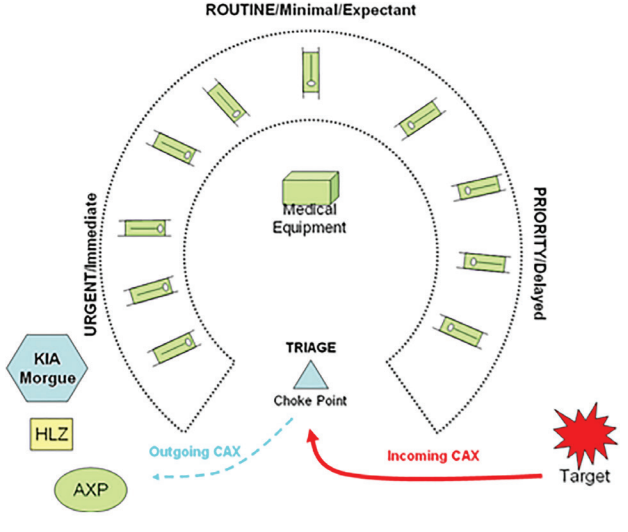
CCP/CEP Template 4
(Building – Open/Hanger)



CCP/CEP Template 5
(Open Area/Filed)



CCP/CEP Template 6
(U-Shaped)



Reference Charts

AVPU Responsiveness Assessment

ALERT
VERBAL – Responds to verbal stimuli
PAIN – Responds only to painful stimuli
UNCONSCIOUS – Does not respond to any stimuli

Normal Vital Signs

Heart Rate (beats/min)	Respiratory Rate (breaths/min)	Systolic Blood Pressure (mmHg)	Temperature (° Fahrenheit)
55-100	12-20	110-140	98.6

Ranger Bleeder Control Kit Contents		
The bleeder control kit will be worn on the left side of the body or the lower back.		
Common Name	**Quantity**	**Notes**
Massive Hemorrhage Control		
Tourniquet	2	
Hemostatic Dressing	2	
Pressure Dressing	1	
Airway Management		
Nasopharyngeal Airway 28Fr with lubricant	1	
Respiratory Management		
Vented Chest Seal	2	
10G or 14G/3.25" NCD	2	
Miscellaneous		
TCCC Card, DD Form 1380	1	

HAZARDOUS TRAINING MEDICAL COVERAGE DUTIES & RESPONSIBILITIES

Senior Coverage Medic/ARFR

- Plan and coordinate medical support requirements and considerations
- Identify hospitals and evacuation routes
  Conduct hospital site survey as required
  Conduct face-to-face with hospital ED Conduct route recon from target to hospital
- Establish target medical coverage plan and casualty flow
- Brief OIC/NCOIC medical support plan
  Clarify OIC/NCOIC responsibilities and guidance
  Clarify medical responsibilities and guidance
- EXECUTION duties:
  Patient treatment and monitoring on target and en route
  Advise OIC/NCOIC as required
  Update OIC/NCOIC/higher HQ on condition of evacuated casualties
  Inform unit medical officer of all casualties
- After training event
  Follow-up any evacuated casualties and update C2 and medical director clean, refit, store all coverage equipment
  Submit AAR IAW unit or event-specific requirements

OIC/NCOIC of Event

- Overall responsible for administrative coverage (including medical)
- Request/track external medical support requirements
- Ensure appropriate type and number of vehicles with assigned drivers are dedicated to medical coverage
- Ensure appropriate communications equipment is allocated to medical personnel
- Link medical coverage plan with overall administrative coverage plan
- EXECUTION duties:
  Collect casualty data and report to higher HQ
  Request MEDEVAC
  Identify and establish MEDEVAC HLZ

HAZARDOUS TRAINING MEDICAL COVERAGE PLANNING

Maps & Route Recons

- Request/purchase/acquire appropriate maps of training areas, adjacent military installations, and cities
- Conduct map and ground recon of training areas (specifically key entrance and exit points)
- Identify hospitals/fire/EMS locations

Identify Special Coverage Considerations

- Weather
- Animals
- Plants
- Terrain hazards (high angle or high altitude)

Identify Hospitals

- Primary and alternate evacuation hospital (one should be a Level 1 Trauma Center)
- Conduct hospital site survey and face-to-face
- Determine hospital communications:
  - ED phone line
  - ED ambulance line
  - Patient admin phone line
  - Security line phone line
- Determine routes and directions to hospitals
- Where are special injuries evacuated?
  - Neurosurgical
  - Burns
  - Trauma centers
    - Level 1 (Neurosurgeon on staff 24 hours)
    - Level 2 (Neurosurgeon on call, but not on site 24/7)

Vehicle Requirements

- **Driver:** A dedicated driver – NOT the medic/ARFR covering the event. Must be familiar with training area and evacuation routes.
- **Ambulance:** A dedicated, climate controlled, covered vehicle capable of carrying at least 1 litter. The vehicle must provide environmental control and adequate space for medical equipment. Mark vehicle as appropriate (ambulance symbols or lights).
  - Optimal vehicles:
    - Van (15PAX only)
    - Large SUV (Expedition, Tahoe, etc.)
    - FLA (M996/M997)
  - Suboptimal vehicles
    - Open HMMWV/GMV
    - MEDSOV (tactical operations only – not for admin coverage)
    - Small SUV (Explorer, Durango, Cherokee, etc.) or small van (7PAX)

Communication Requirements

- Equipment
  - FM radios or installation “brick” radios
  - Cell phone
- Radio nets and frequencies
  - Administrative coverage (DZSO Net)
  - Exercise/target control or observer/controller nets
  - Tactical nets
- En route evacuation communications
  - Cellphone to notify receiving facilities
  - Borrowed local radios
- Establish speed dials/specific channels
  - Receiving medical facilities and evacuation assets

EQUIPMENT REQUIREMENTS

Standard Medical Equipment

- Rigid litter
- Splint sets
- Oxygen/masks/BVM
- Suction, mechanical, and manual
- Mechanical traction splint
- Vital signs monitor
- Litters
- Blankets/hypothermia management
- Trauma aid bag
- Pain management

Special Equipment Considerations

- Hot weather
  - ➢ Ice sheets
  - ➢ Fans (battery operated)
  - ➢ Cold packs
- Cold weather
  - ➢ Rescue wraps/patient heaters
  - ➢ IV fluid warmer
- Rescue
  - ➢ High-angle rescue kit
  - ➢ Skedco
- Blood products for high-risk training

MEDICAL COVERAGE DURING TACTICAL EXERCISES

- Plan for all casualties to be evacuated to Level 1 or 2 trauma centers ONLY
- If evacuation time to primary center is more than 20 minutes, training is considered HIGH RISK
- Obtain pre-deployment site survey (PDSS) Checklist from MEDO
- All casualties go through the tactical evacuation channels unless life, limb, or eyesight is threatened. A Ranger exercise does not "go admin" unless absolutely required to save the injured Ranger
- All patients are treated to US standard of care and unit protocols
- Vehicles do not enter or move on drop zones without Drop Zone Safety Officers permission and notification of the tactical C2
- Use of white lights during night operations will be minimized to patient care
- If possible, use the tactical unit's capabilities to move casualties to minimize impact on the ongoing exercise
- Notify receiving medical facilities of incoming casualties and status
- Keep training event OIC/NCOIC informed of patient status with routine updates
- Inform unit medical officers of casualties and status

PRE-COVERAGE INSPECTIONS

NO RANGER IS EXEMPT FROM PCIs

Inspect/Inventory Medical Equipment

- Inventory IAW Hazardous Coverage Checklist
- Function check all mechanical devices and monitors
- Check battery charges

Inspect Vehicle(s)

- PMCS of vehicle
- Fuel level
- Dispatch or rental agreement
- Maps/routes posted

Support Equipment

- Communications equipment
- Strobe lights/flashlights/headlamps
- Night vision
- GPS
- Rescue equipment

PRECOVERAGE REHEARSALS

- Drive routes to hospitals during daytime and nighttime. Determine/record time from training site to hospital. Consider civilian traffic pattern interference on evacuation route
- Brief OIC, NCOIC, OPFOR, and role-players on medical coverage plan and actions. Specifically, CCP or MEDEVAC locations and casualty notification/evacuation request procedures
- Conduct rehearsal of casualty movement in the exercise area and prep for evacuation

75th Ranger Regiment Trauma Management Team

Hazardous Training Medical Coverage Checklist

CHECKLIST	INITIALS	NOTES/FINDINGS
VEHICLE/AMBULANCE		
Vehicle with Dispatch or Rental Agreement		Dispatch Date:
Dispatch Book with Incident Forms		
PMCS of Vehicle		Last PMCS:
Fuel Level (if < 1/4 tank, refuel)		Fuel Level:
Warning Strobe Light for Roof		
Spotlight (with car charger)		
EMS Magnetic Symbols (4 sides of vehicle)		
MEDICAL EQUIPMENT		
Account for and test all equipment before and after mission		
Litter with Straps		
Cervical Collar		
BVM with O_2 Tubing		
O_2 Set (tank, regulator, nonrebreather mask)		PSI Level:
Airway Kit		
Suction, Mech (with battery and car charger) Function Check		Status:
Suction (manual operated)		
Splint Set (Velcro applied)		
Mechanical Traction Splint (with straps)		
Blankets (2 each)		
Hypothermia Protection System (HPMK or Rescue Wrap)		
Vital signs monitor (with cables, attachments, and car charger) Conduct complete function check		Monitor Type: Calibration Date:
Thermometer, electronic (with probe and covers (min 10))		
Blood Glucose Monitor (with test strips and lancets)		
Ice Cooler (with 50/50 ice/water and 15 saturated sheets)		
Trauma Hangbag		
Chemlight set (min 3 each of 3 colors)		
MEDIC INDIVIDUAL EQUIPMENT		
Trauma Pack		
Ranger Medic Handbook		
Narcotics and Medications Kit		
Admin Head Lamp		
Cellphone (with car charger, key numbers preprogrammed)		Phone Number:
Field Sick Call Kit (as directed)		
Night Vision Goggles (as directed)		
GPS Navigation System (as directed)		
Radio (as directed)		
EVACUATION SUPPORT EQUIPMENT		
Trauma SF 600 (20 each) and RGR CAX Card (20 each)		
Hazardous Training Medical Coverage Checklist (20 each)		
Map of Training Area		
Hospital Directions (with strip map from training area)		
Hospital Site Survey (with phone numbers)		
VS-17 Panel		
Strobe Light (with battery)		
Evacuation Procedures Checklist		
550 Cord (30ft) and Tape, 100pmh		

Medic Name _____ Date _____

Training Event _____ Location _____

SR Medic or Ranger NCOIC/OIC Name & Countersign: _____

NOTES


RANGER
RANGER
75
RGT

THE RANGER CREED

Recognizing that I volunteered as a Ranger, fully knowing the hazards of my chosen profession, I will always endeavor to uphold the prestige, honor, and high esprit de corps of my Ranger Regiment.

Acknowledging the fact that a Ranger is a more elite soldier who arrives at the cutting edge of battle by land, sea, or air, I accept the fact that as a Ranger, my country expects me to move further, faster and fight harder than any other soldier.

Never shall I fail my comrades. I will always keep myself mentally alert, physically strong, and morally straight, and I will shoulder more than my share of the task, whatever it may be, one hundred percent and then some.

Gallantly will I show the world that I am a specially selected and well trained soldier. My courtesy to superior officers, neatness of dress, and care of equipment shall set the example for others to follow.

Energetically will I meet the enemies of my country. I shall defeat them on the field of battle for I am better trained and will fight with all my might. Surrender is not a Ranger word. I will never leave a fallen comrade to fall into the hands of the enemy and under no circumstances will I ever embarrass my country.

Readily will I display the intestinal fortitude required to fight on to the Ranger objective and complete the mission, though I be the lone survivor.

RANGERS LEAD THE WAY

978-1-7332239-8-0