

**XVIII Airborne Corps and Fort Bragg
Regulation 40-5-1**

Medical Services

**Prevention of
Environmental Casualties
(Heat and Cold)**

**Headquarters
XVIII Airborne Corps and Fort Bragg
Fort Bragg, NC
24 May 2012**

SUMMARY OF CHANGE

XVIII Airborne Corps and Fort Bragg Regulation 40-5-1-1
Prevention of Environmental Casualties (Heat and Cold)

This is a new regulation. There are no changes.

Medical Services
Prevention of Environmental Casualties (Heat and Cold)

FOR THE COMMANDER:



STEVEN J. SMITH

COL, GS
Chief of Staff

Official:



NAN C. SANDERS

History. This publication establishes and prescribes unit/activity responsibilities concerning the prevention of environmental casualties. This is the initial publication of this regulation. Fort Bragg Master Policy 21, dated 18

May 2011, previously addressed the prevention of environmental casualties, and is revoked.

Summary. This regulation establishes comprehensive risk management guidelines for the prevention of environmental injuries on Fort Bragg. Commanders at all levels are responsible for the planning and execution of environmental injury prevention.

Applicability. This regulation applies to all military personnel, including military personnel of the Army National Guard of the United States and the Army Reserve stationed at Fort Bragg.

Proponent and exception authority. The proponent agency for this regulation is the XVIII Airborne Corps Surgeon.

Restrictions. Approved for public release; distribution unlimited. Local reproduction is authorized.

Suggested Improvements. Users are invited to submit comments and suggest improvements directly to HQ XVIII Airborne Corps, Office of the Corps Surgeon, 2175 Reilly Road, Stop A, Fort Bragg, NC 28310.

Distribution. This publication is available in electronic media only.

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Glossary

Chapter 1

Introduction

Prevention of environmental casualties is a command responsibility involving the education of leaders and supervisors; the employment of physical fitness training principles; and the management of activities according to weather conditions. Practical, yet effective risk reduction measures must be initiated by leaders to minimize risks. Despite all efforts, environmental casualties will occur in military operations. Commanders/supervisors must do all they can in order to ensure Soldiers do not become environmental casualties.

1-1. Purpose

This policy provides guidance to reduce environmental casualties, prevent environmental injuries, defines environment casualties, and establishes environmental casualty reporting procedures for personnel assigned to XVIII Airborne Corps.

1-2. References

Required and related publications are listed in Appendix A.

1-3. Explanation of abbreviations and terms

Abbreviations and special terms used in this regulation are explained in the glossary.

Chapter 2

Responsibilities

2-1. Commanders and supervisors will:

- a. Establish a physical conditioning program in accordance with (IAW) FM 21-10 and FM 21-18, adapted to the operational environment, that enables Soldiers to attain the highest possible physical fitness level in a gradual and progressive manner.
- b. Safeguard the health of all personnel through active supervision and discipline, especially in hot and cold weather.
- c. Develop an internal policy, providing guidance to all personnel on the prevention and management of heat and cold casualties in garrison and field environments.
- d. Train all personnel in cold/heat casualty recognition, prevention, risk reduction measures, and basic first aid. Annual classes will be conducted prior to the onset of hot and cold seasons. Additional specific training may be required for hot and cold weather operations.
- e. Monitor the employment of heat and cold casualty prevention countermeasures.
- f. Establish procedures for the collection and dissemination of the heat index during the hot environment and the weather forecast, temperature, wind speed, and wind chill factor during the cold environment.

g. Utilize unit field sanitation team or other trained personnel to monitor the heat stress index at training/work location.

h. Report all suspected or confirmed occurrences of environmental casualties, as described in AR 190-45.

i. Keep personnel informed of the temperature, wind chill, and/or heat stress index along with associated work-rest cycles and hydration requirements to minimize casualties. Provide guidance for the continuation and/or modification of training or the mission to avoid unnecessary risk to Soldiers.

j. Review medical and physical readiness of Soldiers and acclimatization status (Appendix C) as part of the risk assessment procedures for all training and operational activities.

2-2. Command Surgeons

a. Monitor environmental injury rates in their command and advise commanders on risk reduction measures.

b. Ensure environmental casualties are reported as required in AR 190-45.

c. Conduct a medical investigation of the risks and risk reduction measures surrounding reported incidents and back brief the Corps Surgeon's Office on the results of the investigation. Medical personnel should work closely with safety personnel to ensure appropriate medical advice is rendered during environmental injury investigations.

2-3. Brigade Safety Officers

Assist commanders in conducting training schedule audits using composite risk management principles in order to identify and prevent events where the risk for environmental injuries is high. The cumulative effects of heat should weigh heavily in the risk assessment process and the development of training schedules.

2-4. Soldiers

Maintain appropriate physical conditioning, drink appropriate amounts of water, refrain from use of unnecessary medications/dietary supplements, and inform leaders of difficulties/concerns when needed to protect his/her own or others' safety.

Chapter 3

Risk Reduction and Coordination

3-1. Risk Reduction

Leaders will incorporate environmental conditions in their risk assessments and update as weather conditions change. Leaders should make a reassessment 1-2 hours prior to high risk or strenuous events such as a 20km timed road march or run greater than 5 miles. High risk events

will exceed standard work-rest guidelines and must therefore be handled as high risk regardless of weather. As soon as the first environmental casualty occurs, commanders must assess the status of the whole unit. Presented in Appendix B are environmental casualty risk reduction measures that commanders can implement. Risk reduction measures that should be considered for high risk events can be found in Appendix C. Supporting preventive medicine personnel can provide additional guidance on risk reduction measures.

3-2. Coordination of high risk events

Since high risk events have the potential to result in an expanded need for medical services (e.g., emergency room, acute care clinic), providing information on these events to the Chief, Emergency Services, Womack Army Medical Center (WAMC) is imperative. When planning a high risk event for a Brigade (BDE) or Brigade Combat Team (BCT) size element, provide the date and time of the event to the Chief, Emergency Medicine, WAMC a minimum of 45 days prior to the event.

Chapter 4

Casualty Reporting Procedures

These reporting requirements are not intended to replace safety reporting requirements such as those found in AR 385-10 and the DA Pam 385-40. Environmental casualties occurring in high risk events resulting in death or hospitalization are reportable events in XVIII Airborne Corps. Units will report environmental casualties to the XVIII Airborne Corps G3, Current Operations Watch Team using the Significant Event/Serious Incident Reporting (SIR) process. The Current Operations Watch Team will then notify the Corps Surgeon's Office, 396-5772/6516. After duty hours, the Current Operations Watch Team will forward this information to the Corps Surgeon's Office the following duty day.

4-1. Serious Incident Reporting of an Environmental Casualty

In accordance with AR 190-45, death from exposure to environmental conditions (heat or cold) is a Category II reportable serious, incident and hospitalized environmental casualty(s) from a high risk event is a Category III reportable serious incident. All SIRs are telephonically submitted to the XVIII Airborne Corps G3, Current Operations Watch Team, 396-0371/0372.

4-2. Significant Event Reporting of an Environmental Casualty

Clusters (two or more) of environmental casualties from high risk events as defined in the glossary of this regulation, regardless of hospitalization or not, will be reported as a significant event to XVIII Airborne Corps G3, Current Operations Watch Team.

4-3. Information required for reporting environmental casualties

- a. Information for reporting environmental casualties is the name, last four of the Soldier's social security number (SSN), grade, unit of casualty, and unit contact person/number.
- b. Category/disposition of patient (hospitalized, quarters, return to duty). Severity of hospitalization (SI or VSI), when applicable.

- c. Diagnosis (presumed or confirmed). Clinical diagnosis of an environmental injury (heat stroke, frostbite, trench foot, or hypothermia) may take up to 48 hours to medically confirm.
- d. Time/date group of incident/occurrence.
- e. Circumstances leading to the environmental casualty.

4-4. Follow-up reporting

Within 48 hours following the initial casualty report, a follow-up report on the clinical diagnosis confirming the type of environmental injury and the patients' status will be provided to the XVIII Airborne Corps Surgeon's Office by the Command Surgeon during duty hours. After duty hours, this information will be transcribed and reported to the XVIII Airborne Corps Surgeon's Office the following duty day. If the unit does not have a Command Surgeon, the XVIII Airborne Corps Surgeon's Office will be responsible for the follow-up report.

Appendix A References

Section I Required Publications

Army Regulation 40-501
Standards of Medical Fitness

Army Regulation 190-45
Law Enforcement Reporting

Army Regulation 635-40
Physical Evaluation for Retention, Retirement, Separation

Army Regulation 670-1
Wear and Appearance of Army Uniform and Insignia

Technical Bulletin MED 507
Heat Stress Control and Heat Casualty Management

Technical Bulletin MED 508
Prevention and Management of Cold Weather Injuries

Field Manual 21-10
Field Hygiene and Sanitation

Field Manual 21-18
Foot Marches

Field Manual 5-19
Composite Risk Management

Training Circular 21-3
Soldier's Handbook for Individual Operations and Survival in Cold Weather Areas

Section II Related Publications

This section contains no entries.

Appendix B

Suggested Environmental Casualty Risk Reduction Measures

B-1. Prevention of Heat Casualties

Information on heat casualty identification and basic first aid can be found in TB MED 507, Heat Stress Control and Heat Casualty Management.

a. Physical Fitness. Physical fitness is the single most important factor in preventing heat casualties. Commanders are responsible for the physical fitness of their Soldiers and the conditioning program required to optimize fitness. Physical fitness must be compared with the task to be accomplished (duration, intensity, and load). Heat illness occurs primarily when a Soldier tries to exceed their current physical capability. Soldiers without demonstrated appropriate levels of physical fitness (e.g., new Soldiers) must undergo progressive physical conditioning, IAW TB MED 507, before attempting strenuous physical events in hot weather. According to published Army research, a Soldier who is unable to run one mile in less than eight minutes has a 5.6 times greater relative risk of becoming a heat casualty. Soldiers with a Body Mass Index (BMI) of greater than 26 have a 3.6 times greater relative risk of becoming a heat casualty. Command Surgeons can assist in evaluating a Soldier's BMI.

b. Water Replacement. Adequate water intake is an important factor in preventing heat casualties. Fluid replacement guidelines in TB MED 507 will be used to estimate the drinking requirements for personnel based upon activity and heat category. Drinking enough water and fluids is the Soldiers' personal responsibility, but it is the commander's responsibility to supervise and ensure the Soldier is hydrating in proper amounts. Leaders should ensure Soldiers are hydrating prior to an event and also consider the Soldier's previous day's activities when assessing hydration status. Activity the day prior to an event is a significant contributing risk factor to a Soldier becoming a heat casualty. Leaders should be aware of Soldiers using dietary supplements as these can interfere with the body's water uptake and the body's natural cooling mechanisms. Dietary supplements are discussed further in paragraph 1a. Overhydration (>1.5 quarts per hour, or >12 quarts per day) must also be avoided. See Appendix C, *Obtain and Use Heat Condition Information*, for water intake requirements based on heat category.

c. Acclimatization. Acclimatization is necessary to permit the body to reach and maintain efficiency in its cooling process. Acclimatization begins with the first exposure and is fairly well developed within four or five days in highly fit individuals, with almost complete acclimatization in two weeks. During acclimatization, work should be accomplished during the cooler hours of the day while alternating work with rest periods. First day exposure should not exceed moderately hot conditions (defined as less than 85 degrees Wet Bulb Globe Temperature (WBGT)), and should allow rest periods in shade for at least 5 minutes, alternating with no more than 25 minutes of easy/moderate work in the heat. Continued moderate work in the heat for two or four hours per day will achieve maximum acclimatization. The level of work in the heat can be slowly progressed up to the limits in the work-rest chart at the end of two weeks. Acclimatization does not reduce, but may increase, water requirements. Sleep loss, dehydration, and certain medications/dietary supplements counteract the effects gained through acclimatization.

d. Medical Condition. Soldiers who are more prone to heat casualties should be closely monitored and perhaps limited in level of activity. These include those who are overweight, dieting, have chronic medical conditions, are taking medications (such as antihistamines), have had recent illness (e.g., fever, acute infections, immunization reactions, vomiting, or diarrhea), have had alcohol intake within the past 24 hours, use dietary supplements containing ephedrine alkaloid or hormones, or have been past heat casualties. Medical consultation should be utilized to determine appropriate levels of physical activity for these personnel.

e. Replacement of Salt Loss. Salt replacement in most cases is adequately accomplished through consumption of all meals. Salt requirements decrease with acclimatization. Use of salt tablets is not recommended. When heavy sweating may exceed 60-90 minutes, consider consuming a carbohydrate-electrolyte beverage similar to half-strength sports drinks (e.g., during this period alternate between drinking a sports drink and water).

f. Schedule Modification. Work schedules must be modified to fit the environmental condition and the physical/medical fitness of the Soldier. Alternating work and rest periods, IAW TB MED 507, will optimize individual productivity during hot weather. Perform heavy work in the cooler hours of the day, such as early morning or late evening. Consider holding formations for shorter periods or out of direct sunlight during hot weather. March Soldiers over grass rather than pavement. Conduct field lectures and break periods in the shade or in well ventilated areas.

g. Previous Day's Activities. Heat has a cumulative effect, while most heat injuries occur between 0600 and 0800 hours when it is NOT heat CAT V, the previous day's heat category and activities have a direct impact on the overall risk. Most EHIs occur when the previous day's heat index was CAT V.

h. Clothing. Exceptions to the prescribed wear of uniforms may be authorized to preserve the Soldier's health. Clothing and equipment should be worn in a manner that will permit free circulation of air between the uniform and the body. Clothing should be loose fitting at the neck, wrists, and ankles. With command permission, uniform modifications, such as rolling up sleeves, unbuttoning or removing the Army Combat Uniform (ACU) shirt, or unblousing the ACU pants may be implemented. Reduction in layers of clothing or removal of Kevlar assists in reducing body temperature. Mission Oriented Protective Posture (MOPP) gear and body armor are especially heat retentive (adds ten degrees to the WBGT reading).

i. Diuretics, Dietary Supplements, and Medications. Caffeine and alcoholic beverages have diuretic properties, which increase the risk of dehydration. Energy drinks have become popular with Soldiers; however, these beverages often contain ingredients which are diuretics. Energy drinks have been identified as a contributing factor in numerous serious heat injury cases. Water, in lieu of energy drinks, should be used to hydrate before strenuous activity. Some medications and dietary supplements have been associated with increased heat injury due to interference with the body's ability to regulate heat, sweat, and process fluids. Personnel using antihistamines, cold preparations, or blood pressure medications are at higher risk for becoming a heat casualty. Individuals taking drugs that affect the kidneys (there are many, including

NSAIDS such as Motrin/ibuprofen and naproxen) should avoid high doses of creatine. Creatine is a popular supplement among Soldiers; however, it has adverse side effects, including muscle cramping, gastrointestinal disturbances, kidney problems, or dehydration. High doses of creatine may negatively affect kidney function. Some supplements are thermogenic and actually raise a person's core temperature while at rest; physical activity further raises the core temperature. Ephedrine is a dangerous supplement which is banned by the United States (US) Food and Drug Administration; however, Soldiers are still able to obtain supplements containing ephedrine via the internet. Bottom line: Leaders must know their Soldiers and ensure they are educated with respect to the effects, positive and negative, of supplements on their health. The US Army Institute of Public Health has compiled information on supplements at its website located here: <http://phc.amedd.army.mil/topics/healthyliving/n/Pages/DietarySupplements.aspx>. This site contains a link to the Natural Medicines Comprehensive Database which is a reliable resource for healthcare providers and leaders.

B-2. Prevention of Cold Casualties

Leaders should understand that heat casualties can also occur during cold weather. Proper use of preventive measures, which are inspected and enforced by all leaders, will markedly reduce the incidence of cold casualties. Weather conditions, such as temperature, humidity, wind velocity, and precipitation affect the loss of body heat. Leaders must therefore adjust activities and the uniform of their Soldiers as the environmental conditions change. Information on identification and basic treatment of cold casualties can be found in TB MED 508, Prevention and Management of Cold Weather Injuries.

a. Weather. The wind chill phenomenon is related to the heat loss of unprotected body surfaces, such as the face and ears. Historically, a large number of cold injuries occur after sudden weather changes. During the cold season, commanders should obtain frequent weather forecasts of wind and temperature. Leaders can use the wind chill chart to evaluate this information.

b. Type of Activity. The incidence of cold injury varies greatly according to activity and environmental conditions. Units in reserve or rest areas generally have fewer cases. Units in holding missions or on static defense (missions with little or no activity) have greater exposure potential and thus, are at an increase risk for sustaining cold casualties. It is important for unit commanders to institute periodic vigorous activity when ambient temperatures reach -20 or below. This exercise should not be carried to the point of perspiration.

c. Clothing. The Extended Cold Weather Clothing System (ECWCS) will provide protection of the head, torso, and extremities from 40 degrees (F) to -60 degrees (F). The ensemble uses the layering principal to conserve body heat. Loose layers of clothing with air space between them, under an outer wind and water resistant garment, provide maximum protection. The ensemble is generally comprised of four layers:

- (1) Polypropylene undershirt/drawers.
- (2) Fiber pile shirt/pants.

(3) Polyester batting coat and trouser liner.

(4) Extended Cold Weather (i.e., Gortex) camouflage parka and trousers. Further information on suggested clothing layering for physical training and work can be found in TB MED 508.

d. Previous cold injury. A previous cold injury of significant extent (frostbite or trench foot) increases the individual's risk of subsequent cold injury, not necessarily involving the body part previously injured. Recurrent cold injuries tend to be much more extensive, with increased tissue damage.

e. Activity. Too much or too little activity may contribute to cold injury. Over activity causes perspiration, which can lead to dehydration and sweat trapped in clothing, reducing the insulating quality of the clothing. Conversely, immobility generates less body heat resulting in cooling, especially of extremities and parts of the body in contact with the ground or other surfaces. Establish shelters in locations accessible to personnel exposed to cold, where they can rest, warm up, and dry out. Rotate troops as often as possible when they are assigned relatively stationary duties, such as guard duty, in defense positions, or at check points.

f. Drugs and medication. Physicians should advise patients of any adverse effects on peripheral circulation or sweating, when prescribing drugs and medications in cold climates.

g. Alcohol affects peripheral blood flow, increases body heat loss, suppresses shivering, and impairs judgment. The physiological dangers of hypothermia and frostbite are greatly increased when under the influence of alcohol.

Appendix C

Required Risk Reduction Measures for Timed Road Marches and Runs Greater than Five Miles

C-1. General

Timed road marches under combat loads and runs greater than five miles exceed the definition of hard work, and the inherent risk will always be assumed to remain high regardless of the environmental or mitigating actions. Because these events are “High Risk,” the first O6 in the chain of command must approve the operation and ensure a risk assessment has been completed.

C-2. Steps to minimize casualties:

- a. Promote physical conditioning programs that follow guidelines set forth in FM 21-18 and FM 21-20. Compliance with the road march conditioning program will, after a 30 day preparatory training period, produce a Soldier who can march 12 miles in less than 3 hours, loaded to about 60 pounds, when energy expenditure at that rate would cause exhaustion in 2 ½ hours for Soldiers who have not received special conditioning training.
- b. Ensure adequate hydration and consumption of well-balanced meals the day prior to the event. Individuals should consume recommended amounts of water the day prior and in the morning (one to two hours before the event).
- c. Establish a re-hydration plan for the event with strategically placed water points every two miles.
- d. Limit strenuous physical activity and heat stress exposure during the entire day prior to the event.
- e. Set the start time for the event during the coolest part of the day to maximize exposure to the lowest heat category.
- f. Modify uniform to enhance cooling; such as, unblousing ACU pants, unbuttoning the ACU top, or removing and carrying the helmet.
- g. Monitor the heat index along the event route. Ensure communication of heat index updates can be communicated between monitors and leadership.
- h. Ensure participants are actually consuming appropriate amounts of water (usually 1 quart per hour, but no more than 1.5 quarts per hour) along the route. (Example: During road marches have Soldiers slightly open and invert their canteen to validate consumption. Soldiers who have water remaining in their canteen at checkpoints will consume remaining water prior to continuation of event. Persons not consuming sufficient water should be considered for removal from the event.).
- i. Avoid the use of a dietary supplements and energy drinks, (see paragraph B-1i).

j. Conduct active surveillance along the route of the event by medical personnel or combat lifesavers trained in the recognition of heat injury signs stationed along the event route.

k. Medically evaluate all participants at checkpoints to identify signs of confusion, disorientation, etc. Trained medical providers will remove Soldiers displaying signs of heat injury from the course for further evaluation before being allowed to continue. Confused or disoriented personnel will be removed. Rectal temperatures up to 104 degrees Fahrenheit (F) to 105 degrees (F) are common without heat stroke, but personnel with a rectal temperature greater than 105 degrees (F) will be removed. Further information on initial (field) treatment algorithm for potential exertional heat injuries can be found in appendix E.

l. Consider removing participants who are more than 6 minutes behind the pace setter (in a 12-mile road march) at the halfway point.

m. Have onsite medical support and transportation readily available. This medical support will include the capability for active cooling and intravenous (IV) re-hydration. This should begin in the field and continue during transport to the hospital.

Appendix D
Obtain and Use Heat Condition Information

D-1. Obtaining Heat Condition Information

a. Obtain heat condition information per your unit’s standard operating procedure (SOP), or contact the local supporting Preventive Medicine detachment or section. Units may also call 907-HEAT to obtain the current heat category; however, should keep in mind that the heat category may differ at their location. Heat condition may be reported as:

- (1) Category: 1, 2, 3, 4, and/or 5.
- (2) Wet bulb globe temperature (WBGT) index.

b. Use heat condition information to determine required water intake and work/rest cycles (Table D-1).

c. Training by lecture or demonstration, maintenance procedures on equipment, or personal hygiene activities (such as, skin and foot care) can be performed during rest periods.

Table D-1
Fluid Replacement Guidelines for Warm Weather Training (Applies to Average Acclimated Soldier Wearing Hot Weather Uniform)

Heat category	WBGT index degrees f	Easy work		Moderate work		Hard work	
		Work / rest min	Water intake qt/hr	Work / rest min	Water intake qt/hr	Work / rest min	Water intake qt/hr
1	78-81.9	NL	1/2	NL	3/4	40/20	3/4
2 (green)	82-84.9	NL	1/2	50/10	3/4	30/30	1
3 (yellow)	85-87.9	NL	3/4	40/20	3/4	30/30	1
4 (red)	88-89.9	NL	3/4	30/30	3/4	20/40	1
5 (black)	> 90	50/10	1	20/40	1	10/50	1

Notes:

The work/rest times and fluid replacement volumes will sustain performance and hydration for at least 4 hours of work in the specified heat category. Individual water needs will vary ± 1/4 quart/hour.

NL= no limit to work time per hour.

Rest means minimal physical activity (sitting or standing) accomplished in shade, if possible.

CAUTION: Hourly fluid intake should not exceed 1 1/4 quarts.

Daily fluid intake should not exceed 12 liters.

Wearing body armor adds 5°F to WBGT Index.

Wearing all MOPP overgarments adds 10°F to WBGT Index.

Table D-2
Examples of easy, moderate, and hard work

Easy Work	Moderate Work	Hard Work
Weapon maintenance Walking hard surface at 2.5 MPH, < 30 lb load Guard duty Marksmanship training Drill and ceremony	Walking loose sand at 2.5 MPH, no load Walking hard surface at 3.5 MPH, < 40 lb load Calisthenics Patrolling Individual movement techniques, such as low crawl, high crawl Defensive position construction	Walking hard surface at 3.5 MPH, > 40 lb load Walking on loose sand at 2.5 MPH with load Field assaults

Notes: Warning hourly fluid intake should not exceed 1 1/4 quarts. Daily fluid intake should not exceed 12 liters.

D-2. Enforce individual preventive medicine measures

a. Leaders must enforce water intake by:

(1) Observing Soldiers drinking required amounts. Encourage frequent drinking of water in small amounts.

(2) Ensuring Soldiers practice good field hygiene.

(3) Providing cool water; if desired, you can add flavoring after disinfection to enhance consumption. Personnel should use their canteen cup for consumption of flavored water. DO NOT add flavoring to canteen water; use only plain water in canteen.

(4) Ensuring troops drink water before starting any hard work or mission (in the morning, with/after meals).

(5) Ensuring buddy system is being used.

(6) Frequently checking Soldiers' canteens for water; not beverages.

(7) Making sure Soldiers have adequate time to eat and drink as mission permits. Permit personnel to consume carbohydrate/electrolyte beverages (sports drinks) as supplemental nutrients under conditions of extreme calorie and water requirements; such as, extremely vigorous activities.

b. Leaders must reduce heat injuries by:

(1) Enforcing work/rest cycles when the mission permits. Permitting personnel to work/rest in the shade, if possible.

(2) Encouraging Soldiers to eat all meals for needed salts.

(3) Adjusting workload to size of individuals, when possible.

(4) Be prepared for heat casualties and decreased performance when water and work/rest cycle recommendations cannot be met.

(5) Consider previous day's activities and heat category as part of your comprehensive risk management program to prevent heat injuries.

D-3. Modify wear of the uniform. Direct/authorize Soldiers to:

- a. Keep skin covered while in sun.
- b. Keep uniform loose at neck, wrists, and lower legs (unblouse pants).
- c. If the medical threat from biting insects is high, keep sleeves rolled down and pants bloused in boots.

D-4. Identify special considerations

Identify and modify training/physical activity for Soldiers with high-risk conditions of heat injuries, such as:

- a. Diseases/injuries, especially fevers, vomiting, diarrhea, heat rash, or sunburn.
- b. Use of alcohol within the last 24 hours.
- c. Overweight/unfit.
- d. Over 40 years old.
- e. Fatigue/lack of sleep.
- f. Taking medication (especially for high blood pressure, colds, or diarrhea).
- g. Previous heatstroke/severe heat exhaustion.
- h. Lack of recent experience in a hot environment.

Appendix E

Initial (Field) Treatment Algorithm and Profiling Guidance for Potential Exertional Heat Injuries (EHI)

E-1. Signs/Symptoms and Initial (Field) Treatment, IAW AR 40-501 and TB Med 507.

a. “Heat” Cramps (not an EHI). Isolated painful muscle spasms of the legs, arms, and torso are effectively treated with oral sodium (salty snacks) and fluid replacement. Transport to a medical facility if not resolved within 60 minutes. Soldier will be removed from training for remainder of day as this is risk factor for an EHI.

b. “Heat” (Parade) Syncope (not an EHI). Fainting or collapse caused by blood pooling in the legs (not pumping to the brain). It occurs, commonly, immediately after (not during) running if the runner doesn’t cool down by walking or jogging. It also occurs in formations if the leg muscles aren’t periodically flexed to pump the pooling blood out of the legs. The “casualty” should improve rapidly with shade, water, and laying flat with the legs elevated. If in doubt and not improving within 3 minutes or resolved within 15 minutes, treat as a “Heat Stroke” per section E-1d, below.

c. Heat Exhaustion (HE). Heat exhaustion is defined as a syndrome of hyperthermia (core temperature at time of event usually $\leq 40^{\circ}\text{C}$ or 104°F) with physical collapse or debilitation occurring during or immediately following exertion in the heat, with no more than minor central nervous system (CNS) dysfunction (such as, headache, dizziness). The HE resolves rapidly with minimal cooling intervention. Individual episodes of HE are not cause for referral to a medical evaluation board (MEB). However, Soldiers who experience three episodes of HE in less than 24 months, require referral to an MEB. Soldiers diagnosed with HE are individually profiled as determined by the treating privileged provider. Soldiers with HE pending referral to a MEB will be profiled using guidance provided in AR 40-501, table 3-2.

d. Heat Injury (HI). Heat Injury is defined as HE with clinical evidence of organ (for example, liver, renal, stomach) and/or muscle (for example, rhabdomyolysis) damage without sufficient neurological symptoms to be diagnosed as heat stroke. Single episodes of HI are not cause for an immediate referral to a MEB. However, Soldiers who experience three episodes of HI in less than 24 months or a single episode with severe complications (for example, compartment syndrome) of such a nature that the complications interfere with successful performance of duty, require referral to a MEB. Soldiers demonstrating any of the following complications, despite two weeks of rest, should be referred to the appropriate medical specialist for consideration of referral to a MEB; persistent residual kidney injury; persistent elevation of serum creatine kinase (CK) more than five times the upper limit of the lab normal range; or persistent elevation of transaminases more than three times the upper limit of the lab normal range. All Soldiers diagnosed with HI will be placed on a temporary profile, numerical designator four in the PULHES physical capacity factor P, (T4-(P)), for a period of one week. After the one-week period, the Soldier will be reevaluated and individually profiled as determined by the treating privileged provider. Soldiers diagnosed with HI and pending referral to a MEB will be profiled using guidance provided in AR 40-501, table 3-2.

e. Heat Stroke (HS). Collapse (especially during exertion) or mental status change (giddy, confused, anxious, agitated, combative, seizure, unconscious) of any duration with or without any heat exhaustion signs/symptoms is a medical emergency. Heat Stroke casualties in humid environments are sweating (may not be sweating in desert environments).

(1) Verify and manage airway, breathing, and circulation (ABCs).

(2) Stop casualty from exerting, provide shade, remove excessive clothing making every attempt to maintain privacy (keep undergarments) and pour water over the casualty while getting the Medic and safety vehicle or FLA.

(3) Obtain an initial rectal temperature. Oral temperatures can vary 12 degrees F from rectal temperatures in exercised individuals.

(a) Rectal Temperature less than 103 degrees F with any "Heat Stroke" sign or symptom: transport emergently to a medical facility capable of a full evaluation. Hyponatremia (water intoxication) or other deadly condition may exist. Avoid IV hydration unless shock is present. Cool to 102 degrees F during transport.

(b) For rectal temperatures greater than 103 degrees F, apply ice water soaked sheets and towels (ready in a cooler) around the body and head and change them out every 60 seconds.

(c) The patient should not be evacuated until the core temperature is less than 102 degrees or until EMS arrives, at which time the casualty will be turned over to EMS personnel. The EMS personnel are required to continue rapid cooling methods on the casualty during transport to the receiving Medical Treatment Facility. Communicate with the receiving medical facility (clinic or hospital) provider before and during transport. Stop cooling at a rectal temperature of 102 degrees F to allow slight overshoot. Obtain IV access. (Intravenous hydration (one liter NS bolus then KVO) is discouraged unless the casualty is in shock or has dry mucus membranes.) Provide medical turnover to the accepting medical provider. Medics will not return to the field until released by the accepting medical provider.

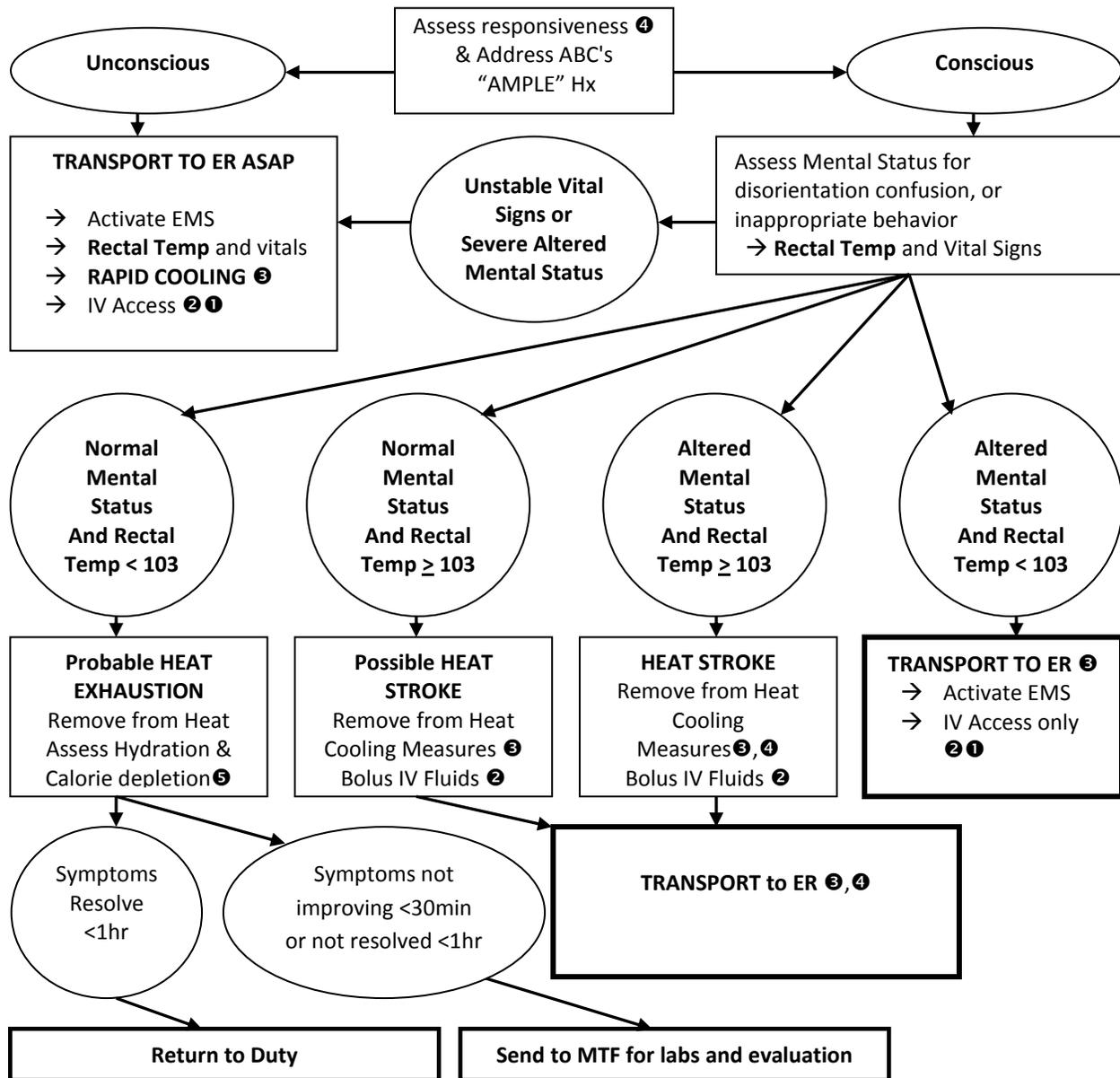
(4) Following an episode of HS, the Soldier will be placed on a T4-(P) profile for a period of two weeks. After the two-week period, the Soldier will be reevaluated weekly for the need of a continuing profile and/or referral to a MEB. This reevaluation will include an assessment for the presence, or absence, of physical damage and/or complications and any contributing risk factor(s) that may have increased the Soldier's inability to tolerate heat exposure. For profile guidance, see AR 40-501, table 3-2. During the reevaluation period, the Soldier will be classified into one of the following three categories:

(1) Heat Stroke without sequelae, demonstrated by all clinical signs and symptoms resolved by two weeks following the heat exposure event.

(2) Heat Stroke with sequelae, to include any evidence of cognitive or behavioral dysfunction, renal impairment, hepatic dysfunction, rhabdomyolysis, or other related pathology that does not completely resolve by two weeks following the heat exposure event.

(3) Complex HS that is recurrent, or occurring in the presence of a non-modifiable risk factor, either known (for example, a chronic skin condition such as eczema or burn skin graft) or suspected (for example, sickle cell trait or malignant hyperthermia susceptibility). Soldiers with complex HS require referral to a MEB. The Soldier's provider should consider referring the Soldier to a center with clinical expertise in heat illness for further evaluation.

Appendix F
Exertional Collapse / Incapacitation Field Algorithm



- ① **DO NOT DELAY COOLING OR TRANSPORT FOR THESE ACTIONS.**
- ② Cooled NS IV Fluid per provider guidance. If mucous membranes dry or “shock” present then bolus 1 L then KVO. If mucous membranes wet, other signs of overhydration or CHF or T<103 then NS @ KVO; Reassess ongoing IVF need from clinical response, lung exam, urine output, and labs.
- ③ **Aggressive cooling while preparing transfer and while in route if Rectal T > 102. DON'T DELAY COOLING: Ice water towels or sheets wrapped around body. Ice packs with pouring water over casualty. Cold IV fluids. Fanning. Vehicle air conditioning max OR windows open. Helicopter Rotor wash. Stop cooling when the rectal temperature drops below 102.**
- ④ Use C-Spine immobilization and back board for trauma.
- ⑤ Elevate legs, minimize clothing, rest in shade, oral rehydration & food or energy drink as indicated, reassess frequently.

Figure F-1. Exertional Collapse / Incapacitation Field Algorithm

Glossary

Section I Abbreviations

ABCs

Airway, breathing, and circulation

ACU

Army Combat Uniform

AR

Army Regulation

BCT

Brigade Combat Team

BDE

Brigade

BMI

Body mass index

CAT

Category

DA

Department of the Army

ECWCS

Extended Cold Weather Clothing System

EHI

Exertional heat injury

ER

Emergency room

FM

Field Manual

FORSCOM

United States Army Forces Command

HE

Heat exhaustion

HI

Heat injury

HS

Heat stroke

HQDA

Headquarters, Department of the Army

IAW

In accordance with

IV

Intravenous

KM

Kilometer

MEB

Medical Evaluation Board

MOPP

Mission-Oriented Protective Posture

MPH

Miles per hour

MTF

Medical treatment facility

NSAID

Non-steroidal anti-inflammatory drug

PVNTMED

Preventive medicine

SI

Seriously ill/injured

SIR

Serious incident report

SOP

Standard operating procedure

SSN

Social Security number

VSI

Very seriously ill/injured

WAMC

Womack Army Medical Center

WBGT

Wet bulb globe temperature

Section II**Special Terms****Cluster of Environmental Casualties**

A grouping of two or more heat/cold casualties resulting from a common event or activity.

Cold Injury

Cold casualty that has been medically validated with frostbite, hypothermia, or trench foot.

Dietary Supplement

General term for a variety of non-prescription products: vitamins, minerals, amino acids, proteins, botanicals (including herbal preparations), glandular extracts, and other animal products. Under current law, manufacturers of dietary supplements are not required to provide proof of safety or efficacy to the Food and Drug Administration prior to marketing. Since these products are not regulated by the Food and Drug Administration, the manufacturers do not have to disclose ingredients or health hazards associated with using their products nor do the claims made on the label have to be accurate or truthful.

Environmental Casualty

Presumptive classification of an individual that has experienced a change in their health status due to environmental conditions (heat or cold) and/or activity.

Environmental Injury

Soldiers with these conditions may have incurred a permanent injury and will be referred to a medical evaluation board.

Exertional Heat Casualty

Nontraumatic illness generally presenting as staggering or collapse during or immediately following strenuous physical activity (e.g., running, road marching). Symptoms vary and

include dizziness, fatigue, headache, visual abnormalities, thirst, muscle cramps, gastro intestinal distress, and the individual may exhibit signs of confusion, disorientation, or in extreme cases, loss of consciousness.

Heat Injury

Heat casualty that has been medically validated with heat stroke or multiple episodes of heat exhaustion (three or more in less than 24 months).

High Risk Event

For the purpose of this policy, a high risk event is a timed 20km road march or runs greater than 5 miles.

Serious Incident

Any actual or alleged incident, accident, misconduct, or act primarily criminal in nature, that because of its nature, gravity, potential for adverse publicity, or potential consequences warrants timely notice to HQDA through FORSCOM. The death of an environmental casualty is a serious incident.

Significant Event

An event of command interest that is not a serious incident (e.g., environmental casualty(s) from a high risk event).