UNITED STATES MARINE CORPS
MARINE CORPS INSTALLATIONS EAST-MARINE CORPS BASE
PSC BOX 20005
CAMP LEJEUNE NC 28542-0005

MCIEAST-MCB CAMLEJO 6200.1A
G-4/SAFE

05 AUG 2021

MARINE CORPS INSTALLATIONS EAST-MARINE CORPS BASE, CAMP LEJEUNE ORDER 6200.1A

From: Commanding General
To: Distribution List

Subj: EXERTIONAL HEAT INJURY (EHI) PREVENTION AND MANAGEMENT

Ref: (a) NAVMED P-5010-3
(b) MCO P5102.1B Ch 1
(c) MARADMIN 111/15
(d) BUMEDINST 6220.12
(e) NEHC-TM-OEM 6260.6A

Encl: (1) EHI Risk Identification, Prevention, and Treatment
(2) Heat Flag Activity Limitation
(3) Work/Rest Ratios and Fluid Replacement Guide
(4) Physical Conditioning and Acclimatization Program Guides

1. Situation. Marine Corps operations place personnel in very hot and humid environments. This Order establishes requirements for the execution of Exertional Heat Injury (EHI) prevention programs in II Marine Expeditionary Force (II MEF), U.S. Marine Corps Forces, Special Operations Command (MARFORSOC), and Marine Corps Installations East-Marine Corps Base, Camp Lejeune (MCIEAST-MCB CAMLEJ), subordinate commands and tenant activities aboard Marine Corps Base Camp Lejeune.

2. Cancellation. MCIEAST-MCB CAMLEJO 6200.1.

3. Mission

a. To prevent EHI's to Marines, Sailors, and civilian personnel by providing policy and procedural guidance, per references (a) through (e).

b. Summary of Revision. This Order has been updated from a joint Order to an MCIEAST-MCB CAMLEJ Order. This Order should be reviewed in its entirety.

4. Execution

a. Commander's Intent and Concept of Operations

(1) Commander's Intent

(a) Commanders, Commanding Officers (COs), and Officers-in-Charge (OICs) shall fully implement and comply with this Order from 1 May to 31 October of each year. Local policies and orders may be issued as long as those policies equal or exceed this Order.

(b) All Marines and Sailors will use risk assessment prior to operational exercises and physical training (PT) events.

(2) Concept of Operations. Commanders, COs, and OICs all support the Automated Heat Stress System (AHSS) and EHI initiatives by:

(a) Ensuring that commands are properly posting and disseminating heat stress conditions and units receiving this information are properly using it.

(b) Ensuring all Marines and Sailors receive EHI risk and management training at least annually. Individuals must feel free to report EHI risk factors and symptoms.

(c) Ensuring individuals with personal risk factors are identified, evaluated, cleared, and educated by a medical provider; and that they are monitored by a supervisor/buddy for EHI symptoms.

(d) Designating a sufficient number of EHI-trained Hospital Corpsmen, who will not participate in the training evolution, to monitor the event, assist stragglers, and transport heat casualties.

(e) Safety vehicles shall be equipped with coolers containing sheets and towels in an ice-water slurry. Plan and execute unlocking key access points along event route to prevent unnecessary delays in emergency medical response and transport.

(f) Providing the evolution time, location, and EHI risk assessment to the supporting Navy Medicine Readiness and Training Command (NMRTC) Unit.

(g) Recording and disseminating local Wet Bulb Globe Temperature Index (WBGTI) data, in accordance with reference (a).

(h) Preventing EHI in accordance with references (a) through (e) and enclosures (1) through (4).

(i) Training, conditioning, and acclimatizing personnel per enclosure (4), before participation in events where there is risk of EHI. Maintain physical conditioning year-round.

(j) Caring for EHI casualties per enclosure (1).

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(k) Ensuring all EHI cases are reported in both the Risk Management System (RMI) by unit safety representatives in accordance with reference (b) and the Navy Disease Reporting System Internet (NDRSI) site by unit medical personnel, in accordance with references (a) and (e).

b. MCIEAST-MCB CAMLEJ:

(1) Comply with reference (a) to maintain and operate WBGTI equipment, provide readings to subordinate commands, post heat index flags in accordance with enclosure (3) of reference (a), and implement controls.

(2) Coordinate with the local NMRTC to ensure that: The emergency medical system, medical clinics, and emergency department have standing operating procedures (SOPs) and equipment in place for EHI management including ice/water cooling; all personnel receive EHI training at least annually, in accordance with reference (a); this Order is reviewed and updated at least annually by a medical expert.

(3) Provide a link to current AHSS data from the camp/station website (https://ahss.mcieast.usmc.mil), including hourly WBGTI updates. Once at/above Red Flag conditions, the website will be updated every 30 minutes until return to Yellow or Green Flag.

(4) Maintain a backup system capable of providing accurate WBGTI data.

(5) Provide a primary and alternate point of contact to the Assistant Chief of Staff (AC/S), G-6.

(6) Ensure that the AC/S, G-3/5 maintains SOPs for operations, maintenance, and communications of the WBGTI system.

c. II MEF and MARFORSOC:

(1) Ensure all unit safety or medical department representatives document annual training for all personnel to recognize, prevent, and provide first aid treatment for heat stress injuries and the most serious heat stress condition, heat stroke, per reference (a).

(2) Medical Support. Medical records of Marines and Sailors who have suffered a heat-related illness must be flagged for ease of identification of susceptible Marines and Sailors for close monitoring by the Hospital Corpsmen. The Hospital Corpsmen or medical officer must evaluate Marines and Sailors with illnesses, especially those with fever or dehydration, to determine fitness for PT or other training operations in the environment. Err on the side of caution and place Marine or Sailor on light duty if in doubt.

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(3) Marines who are taking dietary supplements shall inform their senior leadership to ensure close monitoring of the Marine or Sailor to reduce the potential for additional heat stress injury.

5. Administration and Logistics. Any deviations or requests for changes to this Order must be routed to II MEF Health Services for consideration and concurrence.

6. Command and Signal

a. Command. This Order is applicable to all active duty and reserve Service Members attached to II MEF, MARFORSOC, MCIEAST-MCB CAMLEJ, and their respective subordinate commands and elements.

b. Signal. This Order is effective the date signed.

ANDREW M. NIEBEL

DISTRIBUTION: A/B/C

EHI Risk Identification, Prevention, and Treatment

1. General. EHI occurs commonly in Marines and Sailors exerting themselves in hot, humid, low-wind environments, and is affected by multiple contributing factors relating heat loss to metabolic and environmental heat accumulation. The spectrum of EHI ranges from simple heat cramps to life threatening heat stroke. Permanent damage and death are directly related to the amount of time the Marine or Sailor is at the high core body temperature. No instruction or guide can cover all possible situations. Common sense and an understanding of the basic concepts presented here are essential to the effective identification, prevention, and treatment of EHI. The following guidelines provide for risk identification, prevention, and treatment of EHI:

2. Risk Factors

a. Environmental

(1) Exertion in high WBGT conditions (yellow flag and above), per enclosure (2), especially when the effects of heat and exertion were noticeable on the preceding day. The effects of heat and exertion are cumulative and dangerous.

(2) Wearing clothing or equipment that restricts cooling (add 10 degrees Fahrenheit to WBGT when wearing helmet, flack, and pack, or Mission Oriented Protective Posture (MOPP) gear).

(3) Competition, peer pressure, or orders that push individuals beyond their ability (e.g., unit runs and conditioning hikes, physical fitness test (PFT)).

(4) Most heat strokes occur during the PFT, unit runs of three miles or less, unit marches of six miles or less, and field activities.

(5) Exercising in a high solar radiation environment (e.g., training during the hottest hours of the day).

b. Personal

(1) Poor Physical Conditioning. EHI risk is three times higher in individuals who are overweight, who possess a Body Mass Index (BMI) greater than 26, or run slower than eight minutes per mile on average on the PFT.

(2) Illness/Dehydration. Fever, vomiting, diarrhea, or respiratory illness within 24-hours precludes exerting in heat. Illness within three days requires medical clearance prior to engaging in physical exertion.

(3) Pushing beyond comfortable physical exertion (physical effort unmatched to environmental conditions).

(4) Fatigue and Stress. Less than seven hours sleep in the last 24-hours, jet lagged (flight crossed five time zones in last five days), high heat load/work in the days prior, and excessive worries or stress.

(5) Acclimatization less than two to three weeks, per enclosure (4).

(6) Inadequate hydration and nutrition (calories and salt).

(7) Medications and supplements include, but are not limited to, allergy and common cold medicines (e.g., diphenhydramine or pseudoephedrine), blood pressure medicines (e.g., diuretics, beta-blockers, angiotensin-converting-enzyme inhibitors, calcium channel blockers, etc.), depression medicines (e.g., tricyclic antidepressants), stimulants (e.g., ephedra or Ma Haung), and alcohol (no more than two drinks for males or one drink for females per day within two days prior to event). Voluntary dehydration, laxative, and diuretic use to reduce weight is especially dangerous.

(8) Prior EHI and/or family history that supports predisposition for EHI. Disregarding regulations, improper diagnosis, and improper treatment of heat casualties. These risk factors are additive for the person who is at a higher risk for an EHI.

3. Prevention

a. Leaders must know their personnel.

b. Ensure proper rehydration regimens and work/rest cycles are followed.

c. Observe and listen to junior personnel. Stop high intensity training for these individuals when signs are present of a problem. Personnel must know they can communicate changing EHI risk and symptoms or stop exerting without fear of reprisal.

d. Individuals should condition and acclimatize their bodies per enclosure (4), and not push themselves or others beyond their ability in heat. High intensity drills/events should not conducted for Marines or Sailors who are not acclimatized.

e. Apply the principles of risk management before, during, and after evolutions. Pay attention to the WBGTI, per enclosure (2). High exceptional heat events should be conducted during low risk times.

f. Provide rest with active cooling, meals, and fluids, per enclosure (3).

g. Minimize or eliminate group conditioning unit marches and runs. Group activities should be solely for strengthening group intrinsic values, such as trust and cohesion. The slowest individual should pace group physical activities.

h. Identify individuals at risk and monitor them closely with peers and leaders.

i. Individuals should get at least seven hours of sleep each night to promote recovery from fatigue (prior day's work or jet lag). Ensure sleeping, messing, and recreation quarters are screened and ventilated by natural or mechanical means. A night time WBGTI higher than 80 degrees Fahrenheit warrants air conditioning or fan cooling, if feasible.

j. Individuals should maintain ideal body weight by regular activity and proper nutrition.

k. Diuretics, laxatives, or other means to dehydrate (e.g., wearing clothes that promotes excessive sweating or fluid restriction) should not be used to reduce weight. Official weigh-ins should not occur within 48-hours of a PFT or event in heat.

l. Avoid alcohol use.

m. If a Marine or Sailor suffers an EHI, leaders will check the entire unit, and apply risk management to consider event cancellation or modification.

n. Provide EHI education and training for everyone at least annually and when determined necessary by leaders.

4. Signs/Symptoms and Initial Field Treatment

a. Heat cramps are isolated painful muscle spasms of the legs, arms, and torso that can be effectively treated with oral sodium (salty snacks) and fluid replacement. Heat cramps are not EHIs. Transport to an NMRTC if not resolved within 60 minutes.

b. Heat (Parade) Syncope is fainting or collapse caused by blood pooling in the legs vice pumping to the brain. It occurs commonly immediately after, not during, running if the runner does not cool down by walking or jogging. It also occurs while standing in formations if the leg muscles are not periodically flexed to pump the pooling blood out of the legs. The Marine or Sailor casualty should improve rapidly with shade, water, and lying flat with the legs elevated. Heat (Parade) Syncope experiences are not EHIs. If the

Marine or Sailor casualty is not improving within three minutes or resolved within 15 minutes, treat as a heat stroke, per paragraph 4d below.

c. Heat Exhaustion occurs when a Marine or Sailor, while participating in physical exertion evolutions, does not feel well and may not be able to keep up or continue. Fatigue, malaise, headache, nausea, vomiting, cramps, rapid breathing, rapid heart rate, or dizziness may occur, but with no altered mental status. Core body temperature may be between 101 and 104 degrees Fahrenheit at the time of collapse. Treat heat exhaustion by elevating the legs above the heart, properly hydrating, minimizing clothing, and resting in a cool place. If the individual looks good, has normal vital signs (including core temperature less than 103 degrees Fahrenheit) and mental status, they may be observed. If a heat exhaustion casualty gets worse, is not improving within 30 minutes, or is not resolved within one hour, transport the casualty to a medical emergency department -- not a medical clinic or aid station -- for evaluation.

d. Heat stroke is a medical emergency that occurs when a Marine or Sailor, while participating in physical exertion evolutions, collapses or displays an unusual change in their mental status (e.g., confused, anxious, agitated, combative, convulsive, unconscious) of any duration, with or without any heat exhaustion signs or symptoms. Heat stroke casualties sweat in humid environments, but may not sweat in desert environments. Core body temperature may be 104 degrees Fahrenheit or greater. Organ damage can occur and be life threatening. In the event of a heat stroke casualty, the following protocols pertain:

(1) Verify and manage Circulation, Airway, and Breathing (CAB), commonly known as Basic Life Support.

(2) Stop EHI casualty from exerting, provide shade, and remove excessive clothing, making every attempt to maintain privacy. Pour water over the casualty while summoning the Hospital Corpsman and safety vehicle. Other cooling methods are listed in paragraph 5c below. Obtain an initial rectal temperature as it drives treatment. Oral temperatures can vary 12 degrees Fahrenheit from rectal temperatures in exercised individuals.

(3) When rectal temperature is less than 103 degrees Fahrenheit with any heat stroke sign or symptom, transport to a NMRTC capable of a full evaluation. Hypernatremia (water intoxication) or other deadly condition may exist. Avoid Intravenous (IV) hydration unless shock is present. Cool to 102 degrees Fahrenheit during transport using methods described in section paragraph 5c below.

(4) When rectal temperature is greater than 103 degrees Fahrenheit, the following protocols pertain:

(a) Urgently transport the EHI casualty to the supporting heat deck capable medical facility for intensive ice water cooling. Apply ice water soaked sheets and towels (ready in a cooler) around the body and head and change them out every 60 seconds during safety vehicle (or ambulance) transport.

(b) Communicate with the receiving medical facility (clinic or hospital) provider during transport.

(c) Stop cooling at a rectal temperature of 102 degrees Fahrenheit to prevent hypothermic overshoot.

(d) Obtain IV access. Intravenous hydration at one liter Normal Saline (NS) given at a large volume (i.e., "bolus") then 'Keep Vein Open' (KVO) is discouraged unless the EHI casualty is in shock or has dry mucus membranes.

(e) Once at the supporting heat deck capable facility, the Hospital Corpsman will provide proper and sufficient medical information on the EHI casualty to the accepting medical provider. The Hospital Corpsmen will not return to the field until secured by the accepting medical provider.

5. Emergency Heat Deck Treatment (Branch Clinics and Emergency Department). The medical officer may alter this protocol as clinically indicated.

a. Verify and manage CAB.

b. Obtain the initial rectal temperature and vital signs, and establish large bore IV access.

c. Patients with a rectal temperature greater than 102 degrees Fahrenheit shall be aggressively cooled to 102 degrees Fahrenheit using one or all of the following methods (EHIs are often mass casualties):

(1) Heat Deck Method. Pack ice and pour water over and around the casualty on a mesh stretcher placed over a water filled pool. This method is used at Marine Corps Base, Quantico and Marine Corps Recruit Depots. Cooling rates as high as 0.4 degrees Fahrenheit per minute are observed (15 minutes to cool from 108 degrees Fahrenheit to 102 degrees Fahrenheit). No deaths occurred at Marine Corps training locations since this method has been employed. A similar result can be achieved with ice and water with the casualty on the ground. Use a sheet under the casualty and hold it up at the sides/corners (similar to the shape of a taco) to keep the ice around the casualty.

(2) Ice Water Immersion Method. Immerse EHI casualty in an ice water pool (circulating water cools more rapidly). A cooling rate of 0.35 degrees Fahrenheit per minute is ideal.

(3) Field and Transport Methods of Choice

(a) Serial wrapping every 60 seconds with ice water soaked sheets around the body and towels around the head (similar to the shape of a burrito).

(b) Place ice or "cool packs" in the groin and armpits while pouring water over the EHI casualty. Without water, this method is equal to ambient cooling.

(c) During transportation, cooling efforts should be continued by setting the air conditioning (if available) to the coldest setting or permitting passage of air currents through the open door of the field ambulance or helicopter.

(d) Hose with water.

(e) "Ice Cold" (40 degrees Fahrenheit) IV fluid. Cooling rates 0.1-0.4 degrees Fahrenheit per minute, depending on fluid volume and rate.

(f) Spray with tepid water and fan. This evaporative method used in air-conditioned emergency rooms for gentle cooling of classic heat stroke is less effective in humid environments. The cooling rate of 0.1 degrees Fahrenheit per minute (one hour to cool from 108 degrees Fahrenheit to 102 degrees Fahrenheit) results in 10 to 20 percent heat stroke death.

d. Monitor the rectal temperature continuously or at least every five minutes with the other vital signs until the rectal temperature is less than 102 degrees Fahrenheit and then every 15 minutes thereafter. Note: Pneumonia is a common diagnosis when the patient cannot be cooled effectively and shivers.

e. Stop cooling when the rectal temperature drops below 102 degrees Fahrenheit.

f. IV fluids will be NS at a rate to be determined by the medical provider. Obtain IV access for all unstable casualties. IV hydration is often not required unless the EHI casualty is in shock or has signs of dehydration such as dry mucus membranes and abnormal vital signs. Lung sounds should be evaluated and documented before a second liter is provided. Pulmonary edema is a complication of EHI. Hyponatremia may coexist. Dehydration is usually not significant. IV hydration is indicated to treat Rhabdomyolysis.

g. Perform an initial mental status exam and continually monitor for changes. If the patient is unconscious, consider early transport via ambulance to the closest appropriate hospital or higher level trauma center. If transport a hospital or level trauma center is delayed or deferred, perform cooling with cardiac monitoring. Note: Seizure, coma, and cardiac dysrhythmias often resolve with rapid cooling. Ensure cooling is continued, without delay, with ice and water while waiting for and during transport. Attend to CAB.

h. Obtain glucometer glucose reading. If the glucose reading is less than 70, provide the patient with additional glucose at the medical officer's discretion. Glucose may be given orally (if conscious) or IV.

i. Patients with a respiratory rate greater than 30 or any mental status changes regardless of respiratory rate should be placed on oxygen via facemask at eight to 10 liters per minute.

j. Document treatment on the Heat Casualty Treatment Record SF 600, appendix C, or a generic SF 600.

6. Transport, Admission, and Disposition Guidelines (after cooling to 102 degrees Fahrenheit)

a. Transport all EHI casualties to a medical facility (hospital) capable of performing studies listed in paragraph 7 below when they are not available at the heat deck facility (clinic). The medical provider will contact the receiving medical provider. Copies of all medical documentation, to include the Heat Casualty Treatment Record and/or the medical provider's notes and nursing notes, as applicable, shall accompany transport.

b. All EHI casualties will be monitored until all studies, including laboratory data, are reviewed by a medical provider and the patient's symptoms are resolved. Table 1, EHI Casualty Management Based on Presenting Symptoms and Clinical Chemistries guides, but does not dictate, transport to a hospital and admission decisions. EHI casualties are placed sick-in-quarters with follow-up within 24 hours.

7. Laboratory and Studies. Electrolyte results are necessary to guide further hydration and management of EHI complications. Blood for labs may be drawn during IV placement. Normally this is deferred to the medical facility capable of completing the labs.

a. 20 cubic centimeters (cc) of blood shall be withdrawn for laboratory analysis.

b. Heat panel labs include Complete Blood Count (CBC), Liver function Test (LFT), Creatine Kinase (CK), and Urinalysis (UA).

c. Labs will be ordered as "STAT" and expeditiously transported to the laboratory.

d. Consider the need for an Arterial Blood Gas, platelet count (PT), electrolytes (PTT), Fibrinogen Split Products, or Chest X-Ray.

8. Post Stabilization Care

a. Vital signs and mental status assessments are performed a minimum of every 15 minutes for one hour and then every hour until discharge from the emergency department, unless otherwise directed by the attending physician.

b. If the patient's mental status is appropriate and they are not nauseated, they may eat and drink as much and as often as desired (i.e., ad lib). Patients must demonstrate the ability to tolerate oral intake prior to release from the emergency department.

9. Follow-up Care

a. Document follow-up visits in the medical record.

b. Patients discharged from hospital admission will be evaluated by a medical officer within 24 hours and their lab values will be reviewed and followed at the discretion of the medical officer.

c. Repeat labs regularly/daily until the CK is less than 1,000 units per liter (U/L) and all other labs are normal.

10. Documentation

a. The Armed Forces Health Longitudinal Technology Application (AHLTA) should be used to document the encounter.

b. If AHLTA is unavailable, the Heat Casualty Treatment Record SF 600, appendix C, or a generic SF 600 will be then used for documentation of all confirmed or suspected EHIs. The SF 600 will then be scanned into AHLTA.

11. Reporting

a. Unit safety representative will report all EHIs in the Risk Management Information (RMI) program in accordance with reference (b).

b. Medical department representatives will report all EHIs to the supporting NMRTC (e.g., Naval Medical Center Camp Lejeune (NMCCL) Department of Public (DPH) Preventative Medicine (PM) Department, Naval Health Clinic Cherry Point (NHCCP), NMRTC Beaufort, etc.). Reporting will be done by Emergency Room staff for patients treated in the Emergency Room and by the specific unit medical personnel for

patients treated at the Battalion or Regimental Aid Station (BAS/RAS). The supporting NMRTC will report the EHIs in the Navy Diseases Reporting System Internet (NDRSI) site in accordance with references (a) and (d).

12. Clinical Procedures when a Medical Provider, Clinic Heat Deck, or Heat Deck Team is Not Available

a. Refer to paragraph 4, "Signs/Symptoms and Initial Field Treatment," above in this enclosure.

b. Contact the Duty Medical Provider for direction regarding treatment and transport. If a medical provider is not available, call 9-1-1 to transport the EHI casualty to the emergency department. Go with the ambulance to assist ice water cooling during transport.

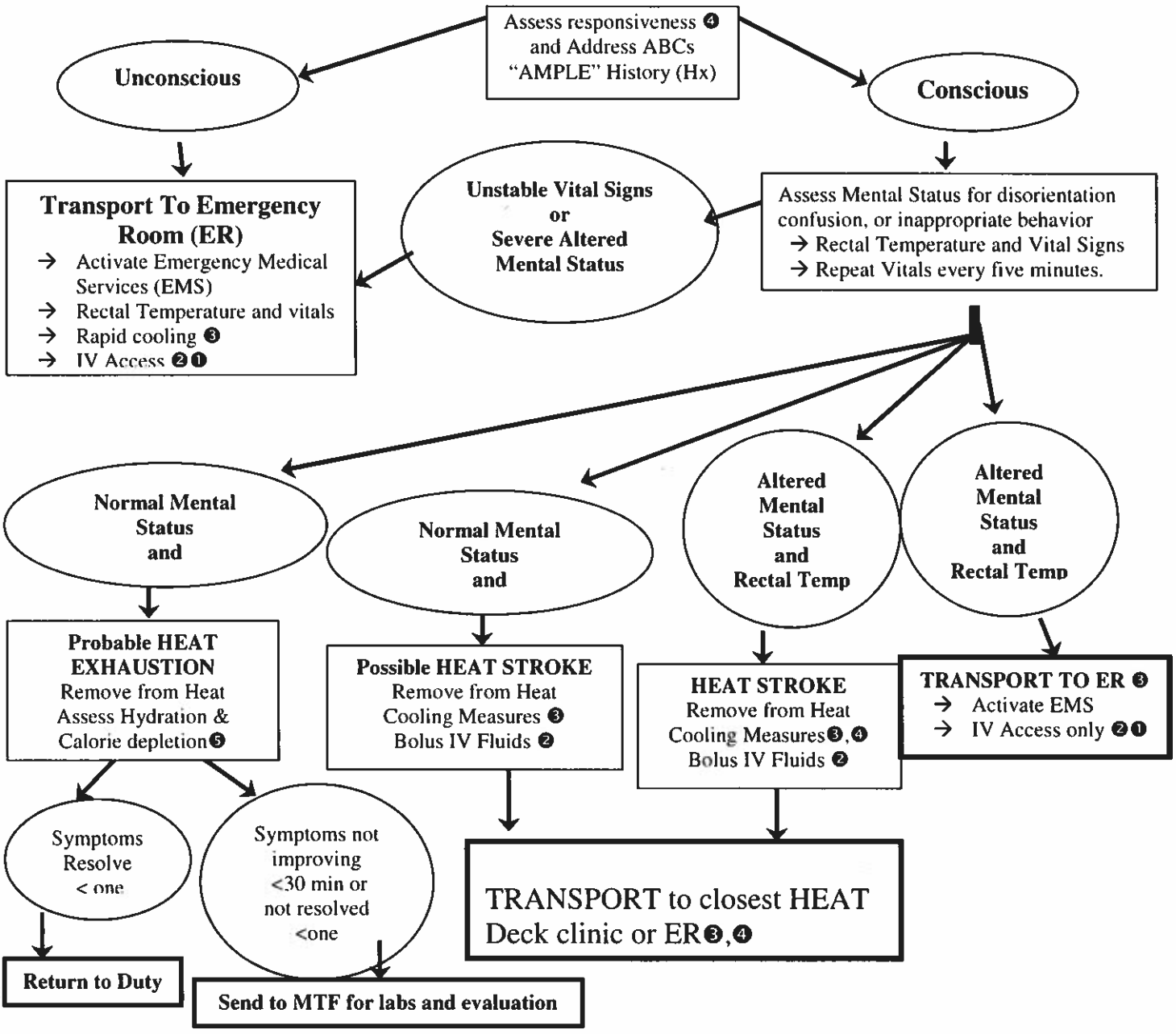
13. Duty Status and Return to Duty

a. Patients who have suffered an EHI and have normal neurological exam and normal labs throughout may be returned to full duty 24 to 48 hours after all symptoms have resolved and have been cleared by their Medical Officer or Independent Duty Corpsman (IDC). It is recommended that the patient gradually recondition themselves to prior level of exercise tolerance.

b. Patients who have suffered an EHI and have normal neurological exam but abnormal labs, values of which can show up one to five days after, can be returned to full duty 24 to 48 hours after all labs have normalized and all symptoms have resolved, and they have been cleared by their Medical Officer or IDC. It is recommended that the patient gradually recondition themselves to prior level of exercise tolerance.

c. Patients who have suffered an EHI and have abnormal neurological exam (i.e., heat stroke) will require three to four weeks of light duty after the event prior to consideration to be returned to full duty. During the first week, the patient will be restricted to no individual or unit exercise or physical training (PT). The following two weeks will consist of a gradual increase in exercise stress and the temperature in which it is done. Final clearance for a return to full duty after the three week period will be given by the Medical Officer.

Exertional Collapse/Incapacitation Field Algorithm
For use by Hospital Corpsmen in the Field
or as presented in Medical Aid Stations



❶ Do not delay cooling or transport for these actions.

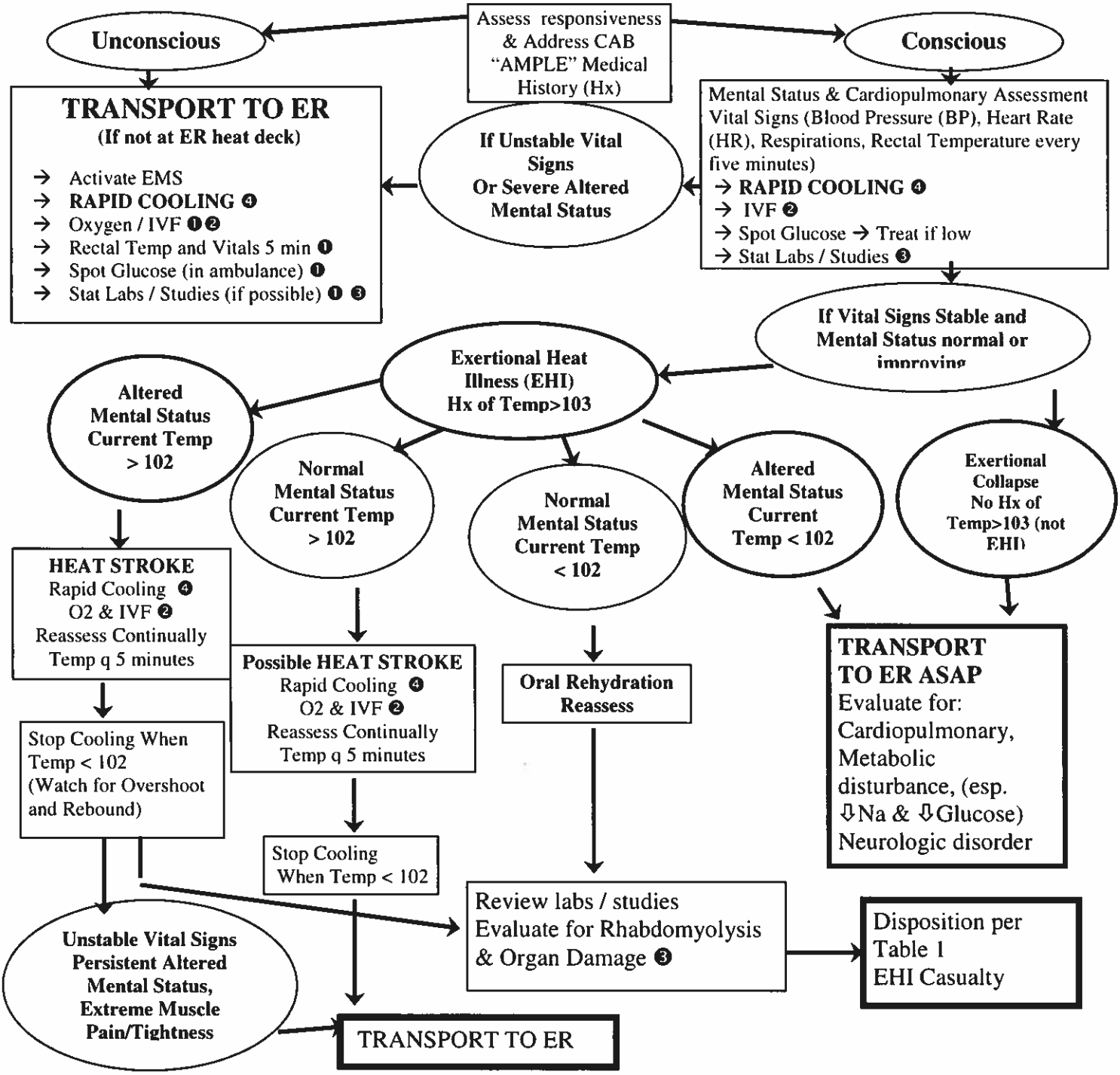
❷ Cooled NS IV Fluid per provider guidance. If mucous membranes dry or "shock" present then bolus one liter, then KVO. If mucous membranes are wet, other signs of overhydrating or congestive heart failure (CHF) or temperature is less than 103 degrees Fahrenheit then NS at KVO; Reassess ongoing intravenous fluids (IVF) need from clinical response, lung exam, urine output, and labs.

❸ Aggressive cooling while preparing transfer and while in route if rectal temperature is greater than 102 degrees Fahrenheit. Do not 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 rectal temperature drops below 102.

❹ Use C-Spine immobilization and back board for trauma.

❺ Elevate legs, minimize clothing, rest in shade, oral rehydration and food or energy drink as indicated, reassess frequently.

Exertional Collapse/Incapacitation Heat Deck Algorithm
For use by Medical Providers at Branch Clinics and Emergency Departments



❶ **DO NOT DELAY COOLING OR TRANSPORT FOR THESE ACTIONS**

❷ 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 overhydrating or CHF or T<103 then NS at KVO; Reassess ongoing IVF need from clinical response, lung exam, urine output, and labs.

❸ **IMMEDIATE** Sodium, glucosamine, potassium if available; STAT **Heat Panel**: creatine phosphokinase, LFTs, Uric Acid, UA + Micro, CBC, with automated differential count; **Consider** potassium, magnesium, platinum, PTT, fragment simulating projectile, arterial blood gas, chest x-ray, and electrocardiogram and myoglobin if severe. CENTER FOR HEALTH CARE STRATEGIES ORDER SET: **"Heat Panel". Studies should be done at a MTF capable of performing studies.**

❹ Rapid Cooling Measures: Ice water/pool, ice sheets, cold IVF, ice packs while pouring water, hose watering, or fan. Stop cooling when temperature drops below 102. NOTE: Seizure, coma, and cardiac arrhythmias often resolve with rapid cooling.

TIME: **SUBJECTIVE:**

AGE:

EVENTS PRIOR: ( ) LOSS OF CONCIOUSNESS ( ) COLLAPSE ( ) CONFUSION ( ) DIZZINESS ( ) VISUAL DISTURBANCE ( ) NAUSEA/VOMITTING ( ) HEADACHE ( ) CRAMPS

HT:_____ WT:_____

FLUID INTAKE IN LAST 12 HOURS _____ LITERS

LAST MEAL TIME/AMOUNT:_____

ALLERGIES: _____ RECENT ILLNESS: _____

HOURS OF SLEEP: _____ OTHER: _____

MEDS: **OBJECTIVE:**

APPEARANCE: ( ) WELL APPEARING ( ) ILL APPEARING ( ) OTHER:_____

MENTAL STATUS: _____

NEURO: _____

SKIN CONDITION: ( ) FLUSHED ( ) HOT ( ) DRY ( ) PALE ( ) COOL ( ) NORMAL

SUPPLEMENTS:

SWEATING: ( ) SLIGHT ( ) MODERATE ( ) DIAPHORETIC ( ) NONE

HEENT: ( ) PERRL ( ) MMM ( )

OTHER:_____

PMH: (I.E., HEAT ILLNESS)

CARDIOVASCULAR: ( ) RRR ( ) PULSE STRONG ( ) PULSE WEAK/THREADY ( ) OTHER: _____

PULMONARY: ( ) CTA-B ( ) OTHER:_____

INITIAL VITALS: ABDOMEN: ( ) SOFT ( ) NON-TENDER ( ) NON-DISTENDED ( ) BOWEL SOUNDS PRESENT

RECTAL TEMP:_____ EVIDENCE OF TRAUMA:_____

P: OTHER EXAMS:_____

RR:

Generic SF600

TREATMENT:

METHOD OF COOLING: _____ TIME STARTED: _____ STOPPED: _____

( ) DEFERRED

BP:

HYDRATION: ( ) ORAL ( ) IV ( ) DEFERRED

#	SOLUTION	RATE	SITE	STARTED	STOPPED	AMT	INITIAL
		( ) BOLUS ( ) CC/HR					
		( ) BOLUS ( ) CC/HR					

WGBT:

( ) MEDS GIVEN: _____ ( ) O2 VIA _____

( ) CARDIAC MONITOR

VITALS ASSESSMENT:

TIME	T ®	P	RR	BP	SPO 2	MENTAL	COMMENTS
				/		( ) AOX3 ( ) OTHER	
				/		( ) AOX3 ( ) OTHER	
				/		( ) AOX3 ( ) OTHER	
				/		( ) AOX3 ( ) OTHER	
				/		( ) AOX3 ( ) OTHER	
				/		( ) AOX3 ( ) OTHER	

LABS: ( ) HEAT PANEL RESULTS ATTACHED ( ) DEFERRED

ASSESSMENT/PLAN: ( ) SUSPECTED HEAT STROKE ( ) EXERTIONAL HEAT EXHAUSTION

( ) DEHYDRATION ( ) OTHER: _____

DISPOSITION: ( ) TRANSPORT

TIME DEPARTED: _____ RECEIVING FACILITY AND MO: _____

Generic SF600—Continued

( ) ADMITTED TO _____ ( ) SIQ X 24 HRS, F/U IN AM AT AD SICKCALL _____ CLINIC

( ) EDUCATION/INSTRUCTIONS GIVEN. PT VERBALIZES UNDERSTANDING ( )Y ( )N
PATIENT INITIALS:_____

MO STAMP/SIGNATURE:_____

PATIENT'S IDENTIFICATION (*Use this space for Mechanical Imprint*)	**RECORDS MAINTAINED AT:** ▶		
	PATIENT'S NAME (*Last, First, Middle Initial*)		SEX
	RELATIONSHIP TO SPONSOR	STATUS	RANK/GRADE
	SPONSOR'S NAME		ACTIVITY/DIVISION

Generic SF600--Continued

Standard Operating Procedure (SOP) for Heat Deck Personnel
At Branch Medical Clinic or Emergency Department

1. This Heat Deck SOP is in effect 1 May through 31 October when the expected temperature exceeds 80 degrees Fahrenheit.

2. Heat Deck teams will be set daily and serve the following roles: Senior medical provider (team leader) at patient's head (cools head and neck and checks CAB), one vitals taker, two cooling personnel, one IV/phlebotomist. Pre-packed IV and lab supply kits in bags ready for use aid IV/phlebotomy efficiency.

3. Establish a standard "alarm" system for assembly of the heat team. All team members shall use universal precautions.

4. A cooler of ice in bags (for heat deck cooling) and one cooler of ice water slurry with two sheets and two towels will be ready daily (cooling in transport if needed). Event coverage corpsman will have the same ice water slurry, sheets, and towels for cooling during transport from the field to definitive cooling.

5. Cooling pools will be filled with cool water. Any body fluid contamination will cause the water to be changed after treatment of the contaminating patient. When a pool is not available, good results can be achieved with ice and water with the casualty on the ground. A sheet under the casualty held up at the sides/corners, "taco" method, keeps the ice around the casualty.

6. A mesh stretcher will be available to hold patients over the cooling pools.

7. Buckets or basins will be ready to dip water from pools and pour water over the patient with loose ice (from broken open ice bags) packed around patient's head, neck, torso, and thighs.

8. Soft rectal probe thermometers will be used when available for continuous temperature monitoring during cooling. Manufacturer's sanitation guidelines will be followed.

9. When treatment condition-one is set, pools will be emptied and moved inside and the wooden pool platform will be turned upside-down on flat ground near the clinic building. The platforms and pools will be made ready when clinic operations return to normal.

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Heat Flag Activity Limitations

GREEN FLAG

WBGTI: 80 degrees Fahrenheit - 84.9 degrees Fahrenheit

Action: Heavy exercise for un-acclimatized personnel should be conducted with caution and under constant, responsible supervision.

YELLOW FLAG

WBGTI: 85 degrees Fahrenheit - 87.9 degrees Fahrenheit

Action: Strenuous exercise such as marching at a standard cadence should be suspended for un-acclimatized troops. Avoid outdoor classes in the sun.

RED FLAG

WBGTI: 88 degrees Fahrenheit - 89.9 degrees Fahrenheit

Action: All physical training should be halted for those troops who have not become thoroughly acclimatized. Those troops who are thoroughly acclimatized may carry on limited activity not to exceed six hours per day. Personnel will not be burdened with body armor, field marching packs or similar equipment during this condition.

BLACK FLAG

WBGTI: 90 degrees Fahrenheit and above

Action: All strenuous outdoor physical activity shall be halted for all units.

Note 1: Essential activities may be conducted outside this guidance with the following considerations: Essential activities are defined as those activities associated with scheduled exercises or other major training evolutions where the disruption would cause undue burden on personnel or resources, be excessively expensive, or significantly reduce a unit's combat readiness. Essential outdoor physical activity will be conducted at a level that is commensurate with work/rest cycles, per enclosure (4), in conjunction with the unit's CO, coordinating with the unit's medical officer, and/or medical personnel, as well as the supporting medical facility to ensure preparation for expected EHIs. All efforts should be made to reschedule these activities during cooler periods of the day. Individual elective outdoor physical fitness training shall also observe the same strict guidance.

Note 2: Most EHIs occur during no flag or green flag conditions. The American College of Sports Medicine Black flag condition starts at WBGTI 82 degrees Fahrenheit, which is well within military green flag condition, WBGTI 80 degrees Fahrenheit to 84.9 degrees Fahrenheit. EHIs occur even in temperatures as low as 60 degrees Fahrenheit. WBGTI guides do not fully prevent EHI.

Work/Rest Ratios and Fluid Replacement Guide

Flag Condition	WBGT °F	Easy Work**		Moderate Work**		Strenuous Work**	
		Work/ Rest (min)	Water per Hr.	Work/ Rest (min)	Water per Hr.	Work/ Rest (min)	Water per Hr.
Green	80-84.9	No Limit	½ Qt.	50/10	¾ Qt.	40/20	1 Qt.
Yellow	85-87.9	No Limit	¾ Qt.	40/20	¾ Qt.	30/30	1 Qt.
Red	88-89.9	No Limit	¾ Qt.	30/30	¾ Qt.	20/40	1 Qt.
Black	90 and Greater	50/10	1 Qt.	20/40	1 Qt.	10/50	1 Qt.

Note 1: Add 10 degrees Fahrenheit to the WBGTI for MOPP gear, personal protective equipment, or body armor. Minimize restrictive clothing/equipment and wear light colored clothing if possible.

Note 2: Work/rest times and fluid replacement volumes shall sustain performance and hydration for at least four hours of work in the specified heat category. Individual water needs will vary. Do not exceed greater than three gallons per day without medical evaluation.

Note 3: Drinking to thirst is adequate during activity with full rehydration accomplished during meals. It is important to eat meals for salt and calories. Pale urine and return to normal body weight indicate full hydration. Drinking too much water and/or rehydration fluids can be deadly.

Note 4: Do not overexert yourself. Beware of the accumulative effects of heat and exertion from previous days. Personnel who feel sick, dizzy, or fatigued must stop exerting. Adjust work/rest ratios based on continuous unit assessment and self/buddy aid evaluations.

Note 5: Actively cool down during rest periods by soaking hands and arms in water (colder is better), showers, shade, fans, or any other means of cooling available. At a minimum, drop loads and relax dress.

Easy Work	Moderate Work	Strenuous Work
-Weapon maintenance -Walking hard surface at 2.5 miles per hour (mph), <30 pound load -Manual of Arms -Marksmanship training -Drill and ceremony	-Walking loose sand at 2.5 mph, no load -Walking hard surface at 3.5 mph, <40 pound load -Calisthenics -Patrolling -Individual movement technique; e.g., low crawl, high crawl -Defensive position	-Walking hard surface at 3.5 mph, ≥40 pound load. -Walking loose sand at 2.5 mph with load. -Running and participating

	Construction -Field assaults	in physical conditioning training.

** Examples of Easy, Moderate, and Strenuous Work.

Physical Conditioning and Acclimatization Program Guides

1. Physical conditioning is important for EHI risk reduction and accelerated acclimatization. Table 1 suggests a six-week in-garrison or pre-deployment physical reconditioning and acclimatization program. Use various exercise routines to condition and rest different muscle groups (e.g., walk, jog, bike, etc.). Aerobic fitness is improved during weeks one through four. Weeks five through six enhances the rise in core temperature to assist in overall acclimatization. When exercising and/or conditioning in heat, do so to the point of perspiring, but do not push beyond comfort in heat. Rest when needed. Ensure individual EHI training and conditioning precedes acclimatization.

Table 1. CONDITIONING AND ACCLIMATIZATION IN GARRISON OR PREDEPLOYMENT

Week	Activity	Intensity (%HRmax)*	Frequency (times per week)	Duration (min)
1	Intermittent exercise	65% - 80%	3	35 - 40
2			4	45 - 55
3			4	60 - 70
4			5	80 - 90
5	Continuous aerobic activity	55% - 65%	5	100
6			7	

Note: Maximum Heart Rate (HRmax) equals 220, minus your age, multiplied by the percent intensity. For example, to calculate the HRmax for a 25 year old Marine or Sailor, subtract 25 from 220, then multiply by 0.65. 220 - 25 x .65 = 127 beats per minute.

2. Table 2 suggests an alternate 21-day acclimatization program that may also augment the program in Table 1 for deployments as an eight-day arrival in-theater acclimatization program. The first day provides critical rehydration, sleep and rest to recover from a flight.

Table 2. ACCLIMATIZATION IN GARRISON/UPON ARRIVAL IN THEATER

Day	Dress	WBGTI (°F)	Duration	Activity (moderate workload)
1	No activity. Rest, eat, drink and sleep (24 hr. after flight)			
2	T-shirt and shorts	79-86	1 x 50 min	Walk 3.5 mph
3	T-shirt and shorts	79-86	2 x 50 min	Walk 3.5 mph; rest 15 min; resume walking.
4	T-shirt and shorts	79-86	100 min	Walk 3.5 mph
5	Utility uniform	79-86	2 x 50 min	Walk 3.5 mph; remove blouse; rest 15 min; resume walking
6	Utility uniform	79-87	100 min	Walk 3.5 mph
7	Utility uniform and 22 lbs. load	79-86	2 x 50 min	Walk 3.5 mph; Remove blouse and load; rest 15 min; resume walking.
8-21	Utility uniform and 22 lbs. load. (add load to 39 lbs as tolerated days 14+)	79-86	100 min	Walk 3.5 mph

Note 1. Allow for continuously available fluids to quench thirst.

3. Acclimatization improves cooling mostly through increased sweating (evaporation) which is less effective in high humidity. Perspiration that rolls off the skin, but does not evaporate, provides little in regards to cooling the body. Acclimatization is important, but it does not fully prevent EHI.

4. Acclimatization occurs by progressive and prolonged elevation of the body's core temperature. Living in a hot environment without exercising in the environment provides little acclimatization. Working and sleeping in an air conditioned environment restricts acclimatization. Conditioned athletes acclimatize after four to seven progressive exercise sessions of one hour to four hours total duration each over a period of seven to 10 days. Studies indicate that military units acclimatize about 40 percent during the first week, 80 percent during the second week, and 100 percent during the third week, but that depends on the individual conditioning levels of each person.

5. For periods exceeding two weeks of not working or exerting in heat (e.g., living and working in air conditioned spaces, temporary additional duty, leave, convalescence, etc.), individuals should regain their conditioning level by following the guidelines in Table 1. Reacclimatize in the area of heat with the eight-day program, per Table 2.

6. Individuals who have not exercised or worked in heat for two to four or more weeks should be reconditioned/acclimatized during a graduated three to six-week program adapted from Table 1 or Table 2. Reconditioning requires reverting to a lower level of exertion and gradually increasing total exertion by about 10 percent per week. A typical guideline for unconditioned/non-acclimated personnel is to start at 50 to 75 percent of the last conditioned exertion level and increase exertion about 10 percent per week for three to six weeks. Written logs documenting exercise duration and intensity improve compliance. Leaders may determine when documentation of conditioning and/or acclimatization program completion is indicated.

7. Units where all Marines and Sailors have a BMI less than 26 and an average run time less than eight minutes per mile on their last PFT may only need 14 days acclimatization. Units with one or more individuals with a BMI equal to or greater than 26, or have an average run time equal to or greater than eight minutes per mile should expect 21 days to fully acclimatize. Days one through eight of Table 2 should be sufficient if the conditioning program, Table 1, immediately precedes acclimatization. For individuals preparing to deploy, the six week conditioning/ acclimatization program in garrison, followed by the eight-day upon-arrival in theater program, would be sufficient. This assumes less than one week travel time to the deployed theater.