

## CHAPTER 3

# LEADERS PREVENTIVE MEDICINE MEASURES

### Section I. Heat Injuries

#### PLAN FOR THE HEAT

Use your field sanitation team to train individual and their leaders in PMM against heat.

Acclimatize personnel to high temperatures as gradually as the mission will allow.

Obtain weather forecast for time/area of training/mission.

Ensure adequate supplies of potable water are available (up to 4 gallons per day per soldier just for drinking!). Issue a second canteen to soldiers in hot weather operations. In the desert additional canteens may be required.

Know the location of water distribution points.

Ensure trained medical support is available for treatment of possible heat injuries.

Plan the placement of leaders to observe for and react to heat injuries in dispersed training (road marches).

If the mission permits, plan to:

- Train during the cooler morning hours.
- Serve heavy meals in the evening rather than at noon.

## **OBTAIN AND USE HEAT CONDITION**

Obtain heat condition information per your unit SOP. Heat condition may be reported as:

- Category: I, II, III, IV, V.
- Wet bulb globe temperature index (WBGT).

Use heat condition information to determine required water intake and work/rest cycles.

CRITERIA		PMM	
HEAT CONDITION/ CATEGORY	WBGT INDEX °F	WATER INTAKE QUARTS/HOUR	WORK/REST CYCLE-MINUTES
1 *	78 <sup>0</sup> –81.9 <sup>0</sup>	At least 1/2	Continuous
2	82 <sup>0</sup> –84.9 <sup>0</sup>	At least 1/2	50/10
3	85 <sup>0</sup> –87.9 <sup>0</sup>	At least 1	45/15
4	88 <sup>0</sup> –89.9 <sup>0</sup>	At least 1 1/2	30/30
5 **	90 <sup>0</sup> & above	More than 2	20/40

\* MOPP gear or body armor adds at least 10<sup>0</sup>F to the WBGT Index.

\*\* Suspend physical training and strenuous activity. If operational (non-training) mission requires strenuous activity, enforce water intake to minimize expected heat injuries.

### NOTE

“Rest” means minimal physical activity. Rest should be accomplished in the shade if possible. Any activity requiring only minimal physical activity can be performed during “rest” periods. EXAMPLES: Training by lecture or demonstration, minor maintenance procedures on vehicles or weaponns, personal hygiene activities, such as skin and foot care.

## ENFORCE INDIVIDUAL PREVENTIVE MEDICINE MEASURES

Leaders must enforce water intake:

Observe soldiers drinking required amounts. Encourage frequent drinking of water in small amounts.

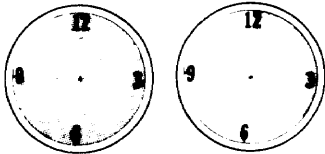
Provide cool water, if desired you can add citrus fruit flavoring after disinfection to enhance consumption.

Enforce water drinking before starting any hard work or mission (in the morning, with/after meals).

Frequently, check soldiers canteens for water.

Reduce heat injuries by—

- Enforcing work/rest cycles when the mission permits. Work/rest in the shade, if possible.
- Encouraging soldiers to eat all meals for needed salt.
- Adjusting work load to size of individuals.



Leaders must be prepared for heat casualties and decreased performance when water and work/rest cycle recommendations cannot be met.

## **RECOGNIZE RISKS OF MOPP/BODY ARMOR/ARMORED VEHICLES**

MOPP and body armor adds  $10^{\circ}$  to the measured WBGT.

EXAMPLE: Soldier training in MOPP. WBGT temperature =  $79^{\circ}$ .

$79^{\circ} + 10^{\circ} = 89^{\circ} =$  Heat category 4.

**ACTION**—Enforce at least 1-1/2 quarts water intake/hour and 30 minute work/30 minute rest cycle.

Armored vehicles. Individuals in armored vehicles can be exposed to increased heat stress.

**ACTION**—Enforce increased water intake.

## **MODIFY WEAR OF THE UNIFORM**

Direct/authorize soldier to—

Keep skin covered in sun.

Keep uniform loose at neck, wrists, and lower legs (unblouse pants).

### **NOTE**

If the medical threat from biting insects is high, keep sleeves rolled down and pants bloused in boots.

## **IDENTIFY SPECIAL CONSIDERATIONS**

Identify and modify training/physical activity for soldiers with high risk conditions of heat injuries such as—

- Diseases/injuries, especially fevers, vomiting/diarrhea, heat rash/sunburn.
- Recent (within 24 hours) use of alcohol.

- Overweight/unfit.
- Over 40 years old.
- Fatigue/lack of sleep.
- Taking medication (especially for high blood pressure, colds, or diarrhea).
- Previous heatstroke/severe heat exhaustion.
- Lack of recent experience in a hot environment.

## **Section II. Cold Injuries**

### **PLAN FOR THE COLD**

Use your field sanitation team to train individuals and their leaders in PMM against cold.

Obtain weather forecast for time/area of training/mission.

Ensure the following are available as the tactical situation permits:

- Covered vehicles for troop transport, if tactical situation permits.
- Cold weather clothing.
- Laundry services.
- Warming tents/areas.
- Hot rations/hot beverages.
- Drinking water.

Inspect soldiers (before starting training/mission):

- While wearing their cold weather gear to ensure availability, proper fit and wear.
- To ensure each soldier has at least five pairs of socks.

Frequently rotate guards or other soldiers performing inactive duties.

Ensure trained medical support is available for treatment of possible cold weather injuries.



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## DETERMINE AND USE WINDCHILL FACTOR

Obtain temperature and wind speed information as directed by your unit SOP (From G-2/G-3, S-2/S-3; weather, aviation, or field artillery unit; or from unit or division surgeon).

Calculate windchill from chart below:

Estimated Wind Speed (in mph)	Actual Temperature Reading (°F)											
	50	40	30	20	10	0	-10	20	30	-40	-50	-60
	Equivalent Chill Temperature (°F)											
calm	50	40	30	20	10	0	-10	20	30	-40	-50	-60
5	48	37	27	16	6	5	-15	26	36	-47	-57	68
10	40	28	16	4	-9	-24	-33	-46	58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	58	-72	-85	-99	-112
20	32	18	4	10	25	-39	-53	67	82	-96	-110	-121
25	30	16	0	-15	29	-44	-59	74	88	-104	-118	-133
30	28	13	-2	-18	33	-48	-63	79	94	-109	-125	-140
35	27	11	4	-20	35	-51	-67	82	98	-113	-129	-145
40	26	10	6	-21	37	-53	-69	85	100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect.)	LITTLE DANGER in less than one hour with dry skin. Maximum danger of false sense of security.			INCREASING DANGER Danger from freezing of exposed flesh within one minute.				GREAT DANGER Flesh may freeze within 30 seconds.				
NOTE: 1. Trench foot and immersion foot may occur at any point on this chart. 2. $F = 9.5 C + 32$												

Then use the following guidance to apply PMM:

WINDCHILL	PREVENTIVE MEDICINE MEASURES
30°F and below	Alert personnel to the potential for cold injuries.
25°F and below	Leaders inspect personnel for wear of cold weather clothing. Provide warm-up tents/areas/hot beverages.
0°F and below	Leaders inspect personnel for cold injuries. Increase the frequency of guards rotation to warming areas. Discourage smoking.
-10°F and below	Initiate the buddy system—have personnel check each other for cold injuries.
-20°F and below	Modify or curtail all but mission essential field operations.

The windchill index gives the equivalent temperature of the cooling power of wind on exposed flesh.

- Any movement of air has the same effect as wind—running, riding in open vehicles, or helicopter downwash.
- Any dry clothing (mittens, scarves, masks) or material which reduces wind exposure will help protect the covered area.

Trench foot injuries can occur at any point on the windchill chart and—

- Are much more likely to occur than frostbite at “LITTLE DANGER” windchill temperatures, especially on extended exercises/missions and/or in wet environments.
- Can lead to permanent disability just like frostbite.

### **IDENTIFY SPECIAL CONSIDERATIONS**

Identify soldiers with conditions that place them at high risk of cold injuries, such as—

- Previous trench foot or frostbite.

- Fatigue.
- Use of alcohol.
- Significant injuries.
- Poor nutrition.
- Use of medications which cause drowsiness.
- Little previous experience in cold weather.
- Immobilized or subject to greatly reduced activity.
- Use of tobacco products.

Identify the special hazards of carbon monoxide poisoning and fire that may affect your cold weather operations.

### **ENFORCE INDIVIDUAL PREVENTIVE MEDICINE MEASURES**

Ensure soldiers wear clean and dry uniforms in loose layers.

Ensure soldiers remove outer layer(s) before starting hard work or when in heated areas (before sweating).

Have soldiers inspect their socks and feet at least daily when operating in cold and/or wet environments.

Ensure soldiers:

- Wash feet daily.
- Wear clean and dry socks.
- Use warming areas when available.
- Eat all meals.
- Drink plenty of water and/or nonalcoholic fluids.
- Exercise their big muscles or at least their toes, feet, fingers, and hands to keep warm.

Ensure water consumption is adequate. Fluid intake is often neglected in cold weather.

Institute the buddy system in cold weather operations. Soldiers taking care of each other decrease cold injuries and combat stress.

### **Section III. Arthropods and Other Animals of Medical Importance**

#### **PLAN FOR THE ARTHROPOD AND OTHER ANIMAL THREAT**

Obtain information on biting and stinging arthropods and other animals (such as snakes, domestic, and wild animals or birds) which could be a threat:

- Through unit medical channels from the command preventive medicine representative or
- From the medical annex to operations plan/order.

Use your field sanitation team to:

- Train your soldiers in preventive medicine measures.
- Control insects and other medically important arthropods in your area of operations.

Ensure the following are available and can be replenished:

- Field sanitation supplies and equipment.



Remind soldiers to avoid handling insects, arthropods, snakes and other animals to prevent bites or other injury.

Do not permit personnel to eat in sleeping/work areas; prevent attracting insects.

Do not permit “pets” in the sleeping/work areas unless cleared by veterinary personnel. Live animal mascots should not be kept or maintained unless cleared by veterinary personnel.

Ensure that:

- Each soldier has a bednet in good repair.
- Immunizations are current.
- Laundry and bathing facilities are available.

Request assistance from a preventive medicine unit (through medical or command channels) when control of biting insects is beyond the capabilities of your unit.

## **ENFORCE INDIVIDUAL PREVENTIVE MEDICINE MEASURES**

Ensure each soldier has insect repellent and uses it. However, cooks must not use repellent on their hands when preparing or serving food.

Direct soldiers to keep:

- Shirts buttoned.
- Sleeves rolled down.
- Pants bloused inside boots.

Ensure soldiers:

- Bathe/shower regularly (field expedients will do).
- Discontinue the use of after-shave lotions and colognes; they attract insects.
- Have clean uniforms.
- Use bednets and aerosol insect spray bombs.

Observe soldiers taking malaria pills (when prescribed by the medics).

Use your field sanitation team to identify suspected lice infestations and refer for medical treatment.

## **MINIMIZE EXPOSURE TO INJURIOUS ANIMALS**

If the mission permits:

- Use your FST to assist you in selecting bivouac sites.
- Occupy areas distant from breeding areas such as bodies of water.
- Avoid areas with high grass or dense vegetation.
- Use field sanitation team recommendations and assistance in applying pesticides for area control around living areas and in permanent standing water areas.
- Drain or fill in temporary standing water sites in occupied area (empty cans, used tires, or wheel ruts after rains).
- Clear vegetation from around occupied area.

Maintain area sanitation:

- Rats and mice carry fleas. Exclude rodents from your area of operation by burying all waste, protecting food supplies, and policing the area regularly.
- Good sanitation practices also reduce filth fly populations.

### **NOTE**

See Appendix A for performance of tasks relating to preventive medicine measures against arthropods.

## **Section IV: Poisonous Plants and Toxic Fruits**

Obtain information on the poisonous plants and toxic fruits which could be a threat:

- Through unit medical channels from the command preventive medicine representative or
- From the medical annex to operations plan/order.

Use your field sanitation team to:

- Train your soldiers in preventive medicine measures.
- Demonstrate the kinds of dangerous plants and fruits in the unit area.

Enforce individual preventive medicine measures:

- Proper wearing of the uniform.
- Avoidance of poisonous plants where possible.
- Avoidance of the consumption of potentially dangerous vegetation and fruits.
- Avoidance of putting grasses and twigs in the mouth.

## **Section V. Food/Waterborne Disease/Illness**

### **PLAN FOR SAFE WATER**

Know the location of approved water distribution points.

Make sure your unit has inadequate supply of:

- Iodine water purification tablets (1 bottle for each individual).
- Chlorination kits.
- Bulk chlorine.

Inspect water containers before use.

Check the chlorine residual of water supplies before drinking, and at least daily thereafter.

### **PLAN FOR SAFE FOOD**

Ensure food service personnel maintain foods at safe temperatures.

Inspect food service personnel daily and refer for medical evaluation those with illness and/or skin infections.

Make sure foods, drinks, and ice purchased from civilian vendors are approved by command medical authority.

Supervise the use of the mess kit laundry.

Ensure food service personnel and soldiers use handwashing devices.

Ensure all food waste is buried or burned daily (at least 30 yards from food preparation area and water source).

## **PLAN FOR THE CONSTRUCTION AND MAINTENANCE OF FIELD SANITATION DEVICES**

Select locations for field latrines:

- As far from food operations as possible (100 yards or more). Downwind and on down slope if possible.
- Down slope from wells, springs, streams and other water sources (30 yards or more).

Construct and maintain latrines (See Task 7, Appendix A, for requirements):

- As soon as the unit moves into a new area, detail soldiers to dig latrines.
- Detail soldiers to clean latrines daily.
- Instruct the field sanitation team to spray the latrines with insecticide as necessary (not the pit contents).
- Always provide handwashing facilities at the latrines.

Make use of handwashing devices at latrines mandatory.

- Cover, burn, or bury waste daily.

Use the Field Sanitation Team to Train Soldiers and Unit Leaders  
in PMM Against Food/Water/Wasteborne Diseases



## **NOTE**

See Appendix A for performance of tasks relating to PMM against food/water/wasteborne diseases.

## **Section VI. Personal Hygiene, Physical, and Mental Fitness**

### **KEEP YOUR UNIT PHYSICALLY FIT**

Ensure that leaders at all levels recognize the benefits of physical fitness.

The leader must be a role model, leading by example.

Take a positive approach to physical fitness with soldiers.

A physically fit soldier is less likely to be a combat loss from disease or injury.

## **NOTE**

See FM 21-20, physical readiness training, for more information.

## **PLAN FOR PERSONAL HYGIENE**

Provide showers/bathing facilities in the field. All personnel must bathe at least once a week and have a clean change of clothing to reduce the health hazard associated with body lice.

Inspect soldiers' personal field equipment to—

- Ensure they have sufficient personal hygiene supplies to include:

Soap, washcloths, towels, toothbrush, dental floss, tooth paste. Additionally, males should have a razor and razor blades; females should have sanitary napkins or tampons.

- Ensure undergarments are cotton (not silk, nylon or polyester).
- Ensure uniforms fit properly (not tight).

Use your field sanitation team to train your soldiers in personal hygiene.

Ensure soldiers receive annual dental examinations. If treatment is required, make sure appointments are kept.

## **ENFORCE SLEEP DISCIPLINE**

The mission, unit readiness, and individual security must come first, but never miss a chance to give someone in the unit time to sleep.

When feasible, set work/rest shifts to give everyone 6-9 hours of sleep per 24 hours.

During “continuous operations,” set shifts and rotate jobs to allow everyone at least 3-4 hours uninterrupted sleep per 24-hour period.

During brief (up to 48 hours) sustained operations when shifts are impossible, rotate jobs so all individuals catnap as safely and comfortably as possible. The loss of sleep will reduce the soldier’s ability to perform his duties and leader’s ability to make decisions.

### **NOTE**

Ensure that sleeping individuals observe safety precautions. Use ground guides for vehicles in bivouac areas.

## **ENFORCE PREVENTIVE MEDICINE MEASURES FOR THE EFFECTS OF SLEEP LOSS**

Those with the more complex mental or decision-making jobs need the most sleep—this means you and your most critical junior leaders and operators!

Cross train individuals to perform the critical tasks and delegate limited authority among leaders to enable all to get necessary rest.

Know, practice, and teach the individual techniques for counteracting the effects of sleep loss on performance.

## **SHOW YOUR PERSONNEL THAT YOU CARE ABOUT THEIR WELFARE, SAFETY, AND HEALTH**

Ensure the best and safest water, food, equipment, shelter, sanitation, and sleep possible are provided under the circumstances of the mission.

Educate the soldiers to maintain themselves, each other, and their equipment as a matter of professional pride and personal caring, not just as discipline.

Know the personal backgrounds, as well as the military skills of your soldiers. Chat with them informally about themselves. Be attentive and understanding while listening to soldiers.

Mobilize group support or counsel on available social service resources for soldiers with "home front" problems.

Assign jobs to maintain a balance between having qualified people at key positions while sharing the load, hardship, and risks fairly.

Share the discomforts and risks with your soldiers. Seek out challenging and difficult environments in training to increase your own and the unit's coping skills and confidence.

## **REDUCE UNCERTAINTY BY KEEPING EVERYONE INFORMED FOR THE UNEXPECTED**

Brief unit personnel on the overall situation, objectives, and conditions which the mission or environment may involve.

Explain reasons for hardships, delays, and changes.

Don't give false reassurances. Prepare your soldiers for the worst and put any unexpected challenges or reversals in a positive perspective.

Deal with rumors firmly and honestly. Prevent the spread of rumors.

Make contingency plans and follow SOPs to reduce the harmful effects of surprise.

## **PROMOTE COHESION WITHIN THE UNIT**

Use equipment drills, physical fitness exercises, team sports, and field "stress training" to stimulate mutual reliance and closeness.

Bring unit members together for meals, award ceremonies, and other special occasions.

Encourage unit-centered social interaction outside duty hours, but supervise to discourage fraternization and alcohol or drug abuse.

Integrate new members by assigning sponsors and ensuring rapid familiarization.

## **IMPART UNIT PRIDE**

Educate soldiers in the history and tradition of the small unit, its parent units, the branch of service and the Army.

Honor the historical examples of initiative, endurance, and resilience, of overcoming heavy odds, and of self-sacrifice.

## **Section VII. Noise**

### **PLAN FOR NOISE**

Identify existing noise in your unit. If necessary, request preventive medicine assistance in identifying sources.

Ensure all soldiers are medically fitted for hearing protectors and are issued multiple sets.

Control noise sources—

- Isolate by distance, that is keep troops away from all noise if possible.

- Isolate by barrier, for example use sandbags.
- Use organic equipment controls, for example keep mufflers and engine covers in good repair.

Train unit to do mission while wearing hearing protectors.

## **ENFORCE INDIVIDUAL MEASURES**

Ensure soldiers–

- Wear earplugs.
- Do not remove inserts from aircraft or tracked vehicle helmets.
- Avoid unnecessary exposure.
- Limit necessary exposure to short, infrequent mission essential times.
- Clean their hearing protectors.



## **PROTECT MISSION**

Be aware of short-term noise effects on the soldier's ability to hear combat significant noise.

Man listening/observation post with troops least affected by noise.

When noise unaffected soldiers are not available, augment LP/OP with night vision devices and/or increase the number of audible alarms around your position.

## **Section VIII. Toxic Chemicals NonNBC**

### **PLAN FOR CHEMICALS**

Identify sources of toxic chemicals in your unit. If necessary, request preventive medicine assistance in identifying sources.

Obtain safer chemicals for unit operations, if available.

## **ENFORCE INDIVIDUAL PREVENTIVE MEDICINE MEASURES**

Ensure that soldiers—

- Tune engines outside or vent engine exhaust to outside.
- Keep their sleeping quarters ventilated.
- Do not use vehicle engines as heaters.
- Use/maintain onboard ventilation systems.
- Are trained and drilled to self-protect themselves around hydrogen chloride.
- Maintain bore/gun gas evacuation systems.
- Use “Safety” Stoddard solvent.
- Have adequate clean gloves, coveralls, and other protective gear.
- Follow label instructions on chemical containers.