HEAT INJURY PREVENTION

CW5 WILLIAMS

‘PLAZ-IK’
REFERENCES

AR 40-5
FM 21-20-1
FM 1-301
FM 21-76
WHY IS HEAT PREVENTION IMPORTANT

- Combat capability is contingent upon the ability to adapt to the environment.
- The body can survive only at a narrow range of core temperatures.
EFFECTS OF HEAT ON THE BODY

BODY TEMPERATURE

MENTAL EFFICIENCY

WORK DONE

ERRORS

98.6

100.2  100.3  101
HOW THE BODY RELEASES HEAT

- Radiation: transfer of heat from a hotter object to a cooler object through space by radiant energy

- Conduction: transfer of heat from molecule to molecule of adjacent objects
HEAT RELEASE CONTINUED

- Convection: transfer of heat in liquids or gases in which molecules are free to move.

- Evaporation: heat loss involves the changing of a substance from its liquid state to its gaseous form.
INFLUENCING FACTORS

- Air temperature
- Temperature of surrounding objects
- Sun’s radiant heat
- Relative humidity
- Air movement
- Amount and type of clothing worn
- Heat produced by the body
TYPES OF HEAT INJURIES

- Heat cramps
- Heat exhaustion
- Heat stroke
HEAT CRAMPS

- Excessive salt lose
- Painful cramps of muscles usually in arms, legs and stomach area
- Heat exhaustion may be present
- Body temperature may be normal
- Avoided by acclamation, proper nutrition and hydration
HEAT EXHAUSTION

- Excessive salt and water loss
- Skin is cool and moist; pulse is rapid and blood pressure may be low
- Other symptoms are profuse sweating, headaches, tingling in hands and feet, paleness, difficulty breathing, irregular heart beat, loss of appetite, nausea and vomiting
- Oral temperature may be lower than normal if the person is hyperventilating
Trembling, weakness, lack of coordination and a slight clouding of senses to momentary loss of consciousness complete the classic picture.

Avoided by proper work/rest cycles and good hydration.
Those that suffered from heat exhaustion are ‘fragile’ and can have another episode easily.
HEAT STROKE

- A medical emergency and death rate is high
- The body’s heat regulatory mechanism stops functioning and the main avenue of heat loss is blocked
- Early signs are headache, dizziness, delirium, weakness, nausea, vomiting and excessive warmth
- Skin is usually hot, red and dry
- Body temperature may be as high as 106°F
HEAT STROKE CONT.

- The casualty may go through heat cramps or heat exhaustion; a sudden collapse and loss of consciousness followed by coma and convulsions may occur.
- Sweating may or may not be present.
- Avoided by proper work/rest cycles and full hydration.
!!!!CAUTION!!!!

Heat stroke casualties are more susceptible to a second attack
FIRST AID FOR HEAT CRAMPS AND EXHAUSTION

- Move soldier to a shady area and loosen clothing if possible
- Slowly give large amounts of cool water
- Pour water on soldier and fan
- Elevate legs for exhaustion
- Watch soldier, if possible release from strenuous activity
- Get medical help if symptoms continue
FIRST AID FOR HEAT STROKE

- Lower casualty’s body temperature ASAP
- Elevate soldier’s legs
- Have soldier drink water if possible
- **GET MEDICAL HELP**
PREDISPOSING FACTORS

Acclimatization; 7-14 days, 2 hours a day
PREDISPOSING FACTORS

Overweight and fatigue
PREDISPOSING FACTORS

Heavy meals and hot food
PREDISPOISING FACTORS

Alcohol and drugs

Drugs that inhibit sweating are atropine, antihistomines, some tranquilizers, cold medicine and some antidiarrheal medicines
PREDISPOISING FACTORS

Fevers

More immunizations produce fevers
PREDISPOSING FACTORS

Tight clothing
PREVENTING HEAT INJURIES

- Replace water loss; by sweating a person can lose more than 1 quart per hour
- Drink small amounts of water frequently regardless of thirst
- Use heat injury prevention chart as a guide
- Provide adequate water at all times
PREVENTING HEAT INJURIES

Maintain acclimatization
- Begin acclimatization with first exposure
- Continue with two 50 minutes periods daily
- Limit intensity and time of exposure for those not acclimatized
- Acclimatization can be lost if remove from the hot enviroment for 1 month
PREVENTING HEAT INJURIES

Maintain good physical condition
PREVENTING HEAT INJURIES

- Establish a good work/rest schedule; must be tailored to fit climate, physical condition of personnel and military situation
  - Work in cooler hours
  - Avoid working in direct sunlight
  - Slowly increase exposure to those becoming acclimatized
  - Use heat injury prevention chart as a guide
!!!CAUTION!!!

Overexertion can cause heat injuries at temperatures lower than 75 degrees F on the WBGT index.
PREVENTING HEAT INJURIES

- Use proper clothing to protect yourself
  - Loose clothing
  - Wear least amount when possible
  - Obtain the WBGT
  - Add 10 degrees to WBGT when wearing body armor or MOPP
REVIEW

- Types of heat injuries
- Factors that influence
- Prevention