Avoiding Cold Weather Injuries is Everybody's Business!

All cold weather injuries are preventable!!!
Body heat is produced by:
- metabolism
- exercise
- shivering

Body heat is lost by:
- convection
- conduction
- radiation
- respiration
- evaporation
Susceptibility Factors

- Previous cold weather injury
- Inadequate nutrition
- Alcohol, caffeine, nicotine
- Dehydration
- Overactivity
- Underactivity
- Long exposure to the cold

- Sick or injured
- Acclimatization
- Wind, cold, rain
- Age
- Physical stamina
- Inadequate clothing
Types of Cold Injuries.....

- Hypothermia
- Frostbite
- Chilblains
- Dehydration

- Sunburn
- Snow Blindness
- Carbon Monoxide Poisoning
Hypothermia

This is a **MEDICAL EMERGENCY** and a life threatening condition and severe body heat loss-body when temperature falls below 95F......

- **It can occur when:**
  - conditions are windy, clothing is wet, and/or the individual is inactive, or......
  - extended water exposure or immersion
    - 1 hour or less when water temp is below 45°F
    - prolonged exposure in slightly cool water (e.g. 60°F)
    - thunderstorms, hail, rain and accompanying winds
Hypothermia

- Initial Symptoms
  - shivering
  - dizzy, drowsy
  - withdrawn behavior
  - irritability
  - confusion
  - slowed, slurred speech
  - altered vision
  - stumbling

- Severe Stages
  - stops shivering
  - desire to lie down and sleep
  - heartbeat and breathing is faint or undetectable
  - unconsciousness followed by DEATH

The “umbles”-stumbles, mumbles, fumbles, and grumbles.
Treatment

- prevent further cold exposure
- evacuate immediately if severe hypothermia
- remove wet clothing
- rewarm with body-to-body contact or in a warmed sleeping bag
- warm, sweet liquids if conscious
- give CPR if needed
Prevention

- eat properly and often
- warm liquids (noncaffeinated) and water
- wear proper clothing (layers worn loosely)
- keep active
- stay dry
- get plenty of rest
- buddy watch
<table>
<thead>
<tr>
<th>BODY TEMP</th>
<th>SYMPTOMS</th>
<th>OBSERVABLE IN OTHERS</th>
<th>FELT BY YOURSELF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Stage</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>98.6 ⇒ 95.0</td>
<td>Intense and uncontrollable shivering; ability to perform complex tasks impaired</td>
<td>Slowing of pace. Intense shivering. Poor coordination.</td>
<td>Fatigue. Uncontrollable fits of shivering. Immobile, fumbling hands.</td>
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<tr>
<td>Moderate Stage</td>
<td></td>
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<td>Severe Stages</td>
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<tr>
<td>91.4 ⇒ 87.8</td>
<td>Shivering decreases; replaced by muscular rigidity and erratic, jerky movements; thinking not clear but maintains posture.</td>
<td>Irrationality, incoherence. Memory lapses, amnesia. Hallucinations. Loss of contact with environment.</td>
<td>Disorientation. Decrease in shivering. Stiffening of muscles. Exhaustion, inability to get up after a rest.</td>
</tr>
<tr>
<td>87.8 ⇒ 85.2</td>
<td>Victim becomes irrational, loses contact with environment, drifts into stupor; muscular rigidity continues; pulse and respiration slowed.</td>
<td>Blueness of skin. Decreased heart and respiratory rate. Dilation of pupils. Weak or irregular pulse. Stupor.</td>
<td>Blueness of skin. Slow, irregular, or weak pulse. Drowsiness.</td>
</tr>
<tr>
<td>85.2 ⇒ 78.8</td>
<td>Unconsciousness; does not respond to spoken work; most reflexes cease to function; heartbeat becomes erratic.</td>
<td>Unconsciousness.</td>
<td></td>
</tr>
<tr>
<td>78.8 ↓</td>
<td>Failure of cardiac and respiratory control centers in brain; cardiac fibrillation; probable edema and hemorrhage in lungs; apparent death.</td>
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</tbody>
</table>

Hypothermia
Frostbite

- Air temps below 32°F
  - skin freezes at 28°F
- Superficial frostbite (mild)
  - freezing of skin surface
- Deep frostbite (severe)
  - freezing of skin and flesh, may include bone
- Hands, fingers, feet, toes, ears, chin, nose, groin area
Symptoms

- initially redness in light skin or grayish in dark skin
- tingling, stinging sensation
- turns numb, yellowish, waxy or gray color
- feels cold, stiff, woody
- blisters may develop
Frostbite

- Treatment
  - remove from cold and prevent further heat loss
  - remove constricting clothing and jewelry
  - rewarm affected area evenly with body heat until pain returns
    - when skin thaws it hurts!!
    - do not rewarm a frostbite injury if it could refreeze during evacuation or if victim must walk for medical treatment
  - do not massage affected parts or rub with snow
  - evacuate for medical treatment
Frostbite

- Prevention

- wear uniform properly (layers and loosely)
- keep socks and clothing dry (use poly pro/thermax liner socks and foot powder/change insoles also)
- protect yourself from wind
- drink hot fluids and eat often
- keep active
- “Buddy System”
- warm with body heat
- caution skin contact with super-cooled metals or fuel
- seek medical aid for all suspected cases
Chilblains

- Nonfreezing cold injury
- Cold, wet conditions (between 32-60°F, high humidity)
- Repeated, prolonged exposure of bare skin
- Can develop in only a few hours
- Ears, nose, cheeks, fingers, and toes
Chilblains

- Initially pale and colorless
- Worsens to achy, prickly sensation then numbness
- Red, swollen, hot, itchy, tender skin upon rewarming
- Blistering in severe cases
Chilblains

Treatment:

- prevent further exposure
- wash, dry gently
- rewarm (apply body heat)
- don’t massage or rub
- dry sterile dressing
- seek medical aid
Chilblains......

- Prevention
  - keep dry and warm
  - cover exposed skin
  - wear appropriate clothing
  - use the “Buddy System” (watch out for each other)
Dehydration

- A loss of body fluids to the point of slowing or preventing normal body functions
- Increases chance of becoming a cold weather casualty, esp hypothermia
- Can lead to heat cramps or heat exhaustion
Dehydration

- dark urine
- headache
- dizziness, nausea
- weakness
- dry mouth, tongue, throat, lips
- lack of appetite
- stomach cramps or vomiting
- irritability
- decreased amount of urine being produced
- mental sluggishness
- increased or rapid heartbeat
- lethargic
- unconsciousness
Dehydration.....

- **Treatment**
  - drink WATER or other warm liquids
  - avoid caffeinated liquids (sodas, coffee, tea)
  - do not eat snow
  - rest
Dehydration

- Prevention
  - drink plenty of water
  - monitor urine color
  - do not wait until you are thirsty
  - drink hot liquids for warmth (non-caffeine)
**Sunburn**

- **Burning of the skin** due to overexposure to the sun and UV light

- **Contributing factors**
  - fair skin, light hair
  - exposed skin
  - *reflective qualities of the snow*
  - high altitudes

- **Symptoms**
  - redness of skin, slight swelling (1\textsuperscript{st} deg)
  - prolonged exposure (2\textsuperscript{nd} deg)
    - pain and blistering
    - chills, fever, headache
Sunburn

**Treatment**
- soothing skin creams in mild cases
- in severe cases, seek medical attention
- aspirin for pain

**Prevention**
- cover exposed skin with clothing
- sunscreen, lip balm
- limit exposure of skin to the environment
Carbon Monoxide Poisoning

- **When** oxygen in the body is replaced by carbon monoxide—colorless, odorless, tasteless gas resulting from incomplete combustion
- **Inadequate ventilation** from engines, stoves, heaters
Symptoms

- headache
- dizziness
- weakness
- excessive yawning
- ringing in ears
- confusion
- nausea
- bright red lips, eyelids
- drowsiness
- unconsciousness
- possibly death
Carbon Monoxide Poisoning

Treatment

- move to fresh air immediately
- seek medical aid promptly
- provide mouth-to-mouth resuscitation if victim is not breathing
**Prevention**

- ensure proper ventilation
- don’t use unvented heaters or engines
- ensure heaters are regularly serviced
- turn heaters off when not needed (during sleep)
- never sleep in vehicle with engine running
- never wrap poncho around vehicle exhaust to collect heat
Inflammation and sensitivity of the eyes caused by ultraviolet rays of the sun reflected by the snow or ice

- gritty feeling in eyes
- redness and tearing
- eye movement will cause pain
- headache
Snow Blindness

- Treatment
  - remove from sunlight
  - blindfold both eyes or cover with cool, wet bandages
  - seek medical attention
  - recovery may take 2-3 days

- Prevention
  - eye protection
    - dark, UV protective glasses
    - field expedient-cut narrow slits in MRE cardboard and tie around head
  - do not wait for discomfort to begin
Don't be a victim.....
.....remember!

- **D**ress properly
- **D**rink plenty of fluids
- **E**at right
- **K**eep in shape
- **G**et plenty of rest
- **M**inimize periods of inactivity

*Play it safe...... know the signs and follow the rules!*

Take the test: [http://www.phpl.uark.edu/ehs/tests/ColdEnvironmentTest.htm](http://www.phpl.uark.edu/ehs/tests/ColdEnvironmentTest.htm).