



# Typical Victim of a Cold Weather Injury

- Male
- Approximately 20 years old
- From a warm climate
- Uses tobacco, alcohol or medications
- Neglects proper foot care



# Susceptibility Factors

- Previous cold weather injury
- Inadequate nutrition
- Alcohol, caffeine, nicotine
- Dehydration
- Overactivity
- Underactivity
- Long exposure to the cold
- Sick or injured
- Acclimatization
- Ethnic/geographic origin
- Wind, cold, rain
- Age
- Physical stamina
- Poor clothing and equip

# Types of Cold Injuries

- Hypothermia
- Frostbite
- Chilblains
- Immersion/Trench Foot
- Dehydration
- Constipation
- Sunburn
- Snow Blindness
- Carbon Monoxide Poisoning



# Hypothermia

- **MEDICAL EMERGENCY**; life threatening condition
- Severe body heat loss-body temp falls below 95°F
- Occurs when:
  - **conditions are windy, clothing is wet, and/or the individual is inactive**
  - **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

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

- 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- withdrawn behavior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



# Hypothermia

- 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



# Hypothermia

## ● Prevention

- eat properly and often
- warm liquids (noncaffeinated) and water
- wear clothing properly (layers worn loosely)
- keep active
- stay dry
- warming tents
- get plenty of rest
- buddy watch

BODY TEMP	SYMPTOMS	OBSERVABLE IN OTHERS	FELT BY YOURSELF
(Early Stage) 98.6 ⇒ 95.0	Intense and uncontrollable shivering; ability to perform complex tasks impaired	Slowing of pace. Intense shivering. Poor coordination.	Fatigue. Uncontrollable fits of shivering. Immobile, fumbling hands.
(Moderate Stage) 95.0 ⇒ 91.4	Violent shivering persists, difficulty in speaking, sluggish thinking, amnesia begins to appear.	Stumbling, lurching gait. Thickness of speech. Poor judgment.	Stumbling. Poor articulation. Feeling of deep cold or numbness.
(Severe Stages) 91.4 ⇒ 87.8	Shivering decreases; replaced by muscular rigidity and erratic, jerky movements; thinking not clear but maintains posture.	Irrationality, incoherence. Memory lapses, amnesia. Hallucinations. Loss of contact with environment.	Disorientation. Decrease in shivering. Stiffening of muscles. Exhaustion, inability to get up after a rest.
87.8 ⇒ 85.2	Victim becomes irrational, loses contact with environment, drifts into stupor; muscular rigidity continues; pulse and respiration slowed.	Blueness of skin. Decreased heart and respiratory rate. Dilation of pupils. Weak or irregular pulse. Stupor.	Blueness of skin. Slow, irregular, or weak pulse. Drowsiness.
85.2 ⇒ 78.8	Unconsciousness; does not respond to spoken work; most reflexes cease to function; heartbeat becomes erratic.	Unconsciousness.	
78.8 ↓	Failure of cardiac and respiratory control centers in brain; cardiac fibrillation; probable edema and hemorrhage in lungs; apparent death.		





# 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

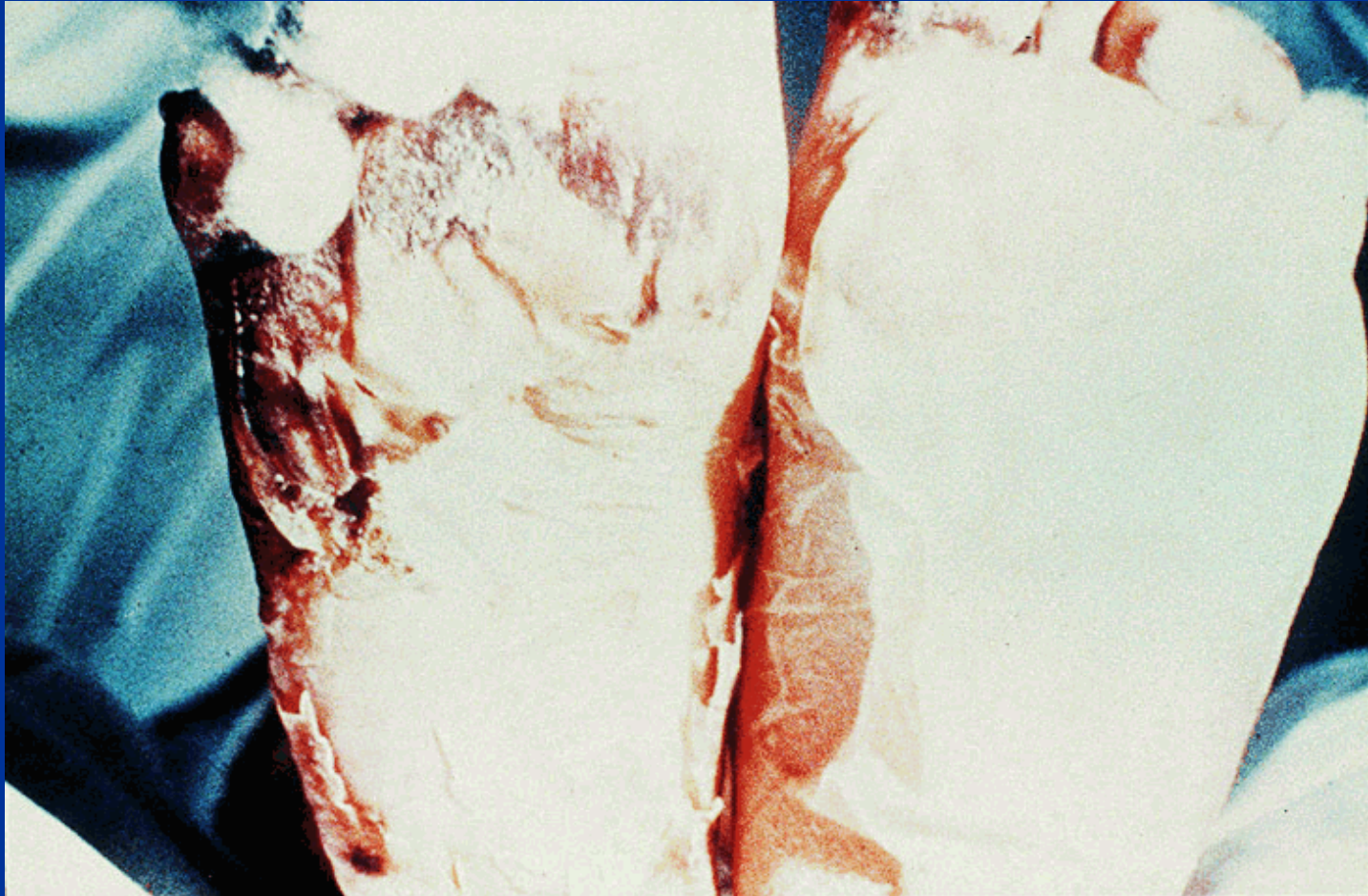


# Frostbite

- 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

# Deep Frostbite





# 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

- 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

- Symptoms:
  - 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
  - use the “Buddy System”



# Trench/Immersion Foot

- Potentially crippling, nonfreezing injury (temps from 50°F-32°F)
- Prolonged exposure of skin to moisture (12 or more hours, days)
- High risk during wet weather, in wet areas, or sweat accumulated in boots or gloves



# Trench/Immersion Foot

- Symptoms

- initially appears wet, soggy, white, shriveled
- sensations of pins and needles, tingling, numbness, and then pain
- skin discoloration-red, bluish, or black
- becomes cold, swollen, and waxy appearance
- may develop blisters, open weeping or bleeding
- in extreme cases, flesh dies



# Trench/Immersion Foot





# Trench/Immersion Foot

- **Treatment**

- prevent further exposure
- dry carefully
- **DO NOT** break blisters, apply lotions, massage, expose to heat, or allow to walk on injury
- rewarm with body heat
- clean and wrap loosely
- elevate feet to reduce swelling
- seek medical treatment



# Trench/Immersion Foot

- Prevention
  - keep feet dry
  - change socks at least every 8 hours or whenever wet and apply foot powder
  - bring extra boots



# 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

- Symptoms

- 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 minimum of 3 quarts of water daily for inactivity and 5-6 quarts for activity
- 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<sup>st</sup> deg)
  - prolonged exposure (2<sup>nd</sup> 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

- Symptoms

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



# Snow Blindness

- Inflammation and sensitivity of the eyes caused by ultraviolet rays of the sun reflected by the snow or ice
- Symptoms
  - 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
- do not wait for discomfort to begin

# Conclusion

- Dress properly
- Drink plenty of fluids
- Eat right
- Keep in shape
- Get plenty of rest
- Minimize periods of inactivity
- Maintain a positive attitude