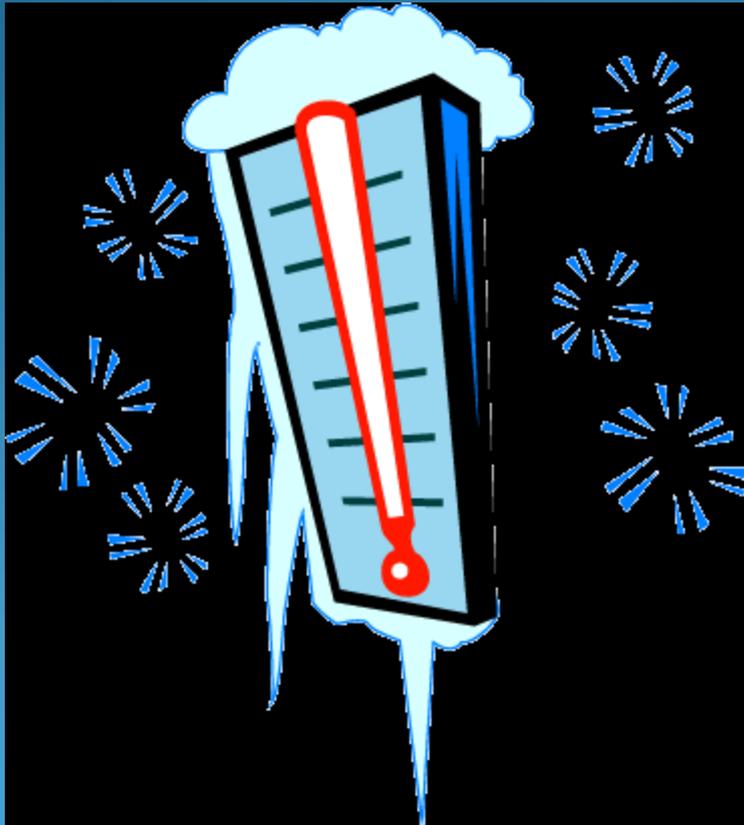


# COLD WEATHER REVIEW



SILVER CROSS EMSS  
JANUARY 2014  
EMD CE

# Localized Cold Emergency

- Can result when exposed parts of the body are exposed to a cold environment
- Body parts most susceptible:
  - Face
  - Ears
  - Fingers
  - Toes
- Depending on the temperature and wind velocity, frostbite can occur quickly.
- The most susceptible people are those weakened by:
  - Old age
  - Medical conditions
  - Exhaustion
  - Hunger

# Frostbite

## Superficial frostbite (frostnip)

- The affected body part becomes numb and then turns a bright red color.
- Eventually the area loses its color and changes to pale white.
- There may be a loss of feeling and sensation.

## Treatment

- Warming the area must be done quickly and carefully.
- Do not warm the area by rubbing it.
- Treat the patient for shock.

# Frostbite

- Deep frostbite
  - The patient's skin will be white and waxy.
  - The skin may be firm or frozen.
  - Swelling and blisters may be present. (will look like a burn)



# Frostbite

- Deep frostbite treatment:
  - Remove any jewelry on the patient and cover the extremity with dry clothing or dressings
  - Do not:
    - Break blisters
    - Rub the injured area
    - Apply heat
    - Allow the patient to walk on an affected lower extremity
  - Provide prompt transport.

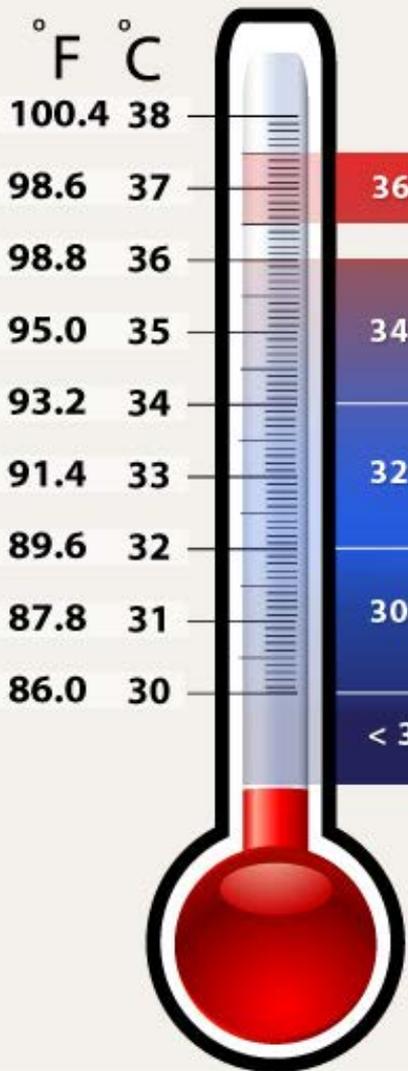
# Loss of Body Heat

- Conduction
  - Transfer of heat from body to colder object
- Convection
  - Transfer of heat through circulating air
- Evaporation
  - Cooling of body through sweating
- Radiation
  - Loss of body heat directly into a colder environment
- Respirations
  - Loss of body heat during breathing

# Hypothermia

- Occurs when a person's body temperature drops to less than 95°F (35°C)
- The person's body is not able to produce enough energy to keep the internal temperature at a satisfactory level.
- People most susceptible include:
  - Those with inadequate or wet clothing
  - Individuals who are weakened by illness
  - Very young and the elderly

## Temperature Basics



36.5-37.5°C Normal Adult Body Temperature

34-36°C Mild Hypothermia

32-34°C Moderate Hypothermia

30-32°C Moderate/Deep Hypothermia

< 30°C Deep Hypothermia

# Hypothermia

- Signs and symptoms
  - Feeling cold and shivering
  - Decreased level of consciousness
  - Sleepiness
  - Lack of coordination
  - Mental confusion
  - Slowed reactions
  - Unconsciousness



# Hypothermia Progression

Core Temperature	93-95 <sup>0</sup> F 34-35 <sup>0</sup> C	89-92 <sup>0</sup> F 32-33 <sup>0</sup> C	80-88 <sup>0</sup> F 27-31 <sup>0</sup> C	< 80 <sup>0</sup> F < 27 <sup>0</sup> C
Signs & Symptoms	Shivering, foot stamping	Loss of coordination, muscle stiffness Shivering stops at ~ 90 <sup>0</sup> F	Coma	Apparent death
Vital Signs	Rapid breathing	Slow respirations and pulse	Weak pulse, very slow respirations, irregular heart rhythms	Cardiac Arrest
Level of Consciousness	Withdrawn	Confusion, sleepy	Unresponsive	Unresponsive

# Hypothermia

- Treatment
  - Move the patient to a warm location.
  - Remove wet clothing.
  - Place warm blankets over and under the patient.
  - If you do not have access to a building, move the patient into a heated vehicle.
  - If transport is delayed, you may need to use your own body heat to warm the patient.
  - Handle the patient gently.
  - Hypothermia patients must be examined by a physician.

# Hypothermia

- Cardiac arrest and hypothermia
  - If the patient's body temperature falls to less than 83°F (28°C), the heart may stop and you will need to begin CPR.
  - Always start CPR and use an AED on hypothermia patients even if you believe they have been "dead" for several hours.
- **THEY ARE NOT DEAD UNTIL THEY ARE WARM AND DEAD!** They must be warmed and resuscitated before they can be declared dead.

# Cold Emergency Protocol

## Key Questions

1. Is the patient still exposed to the cold?
2. How long was the patient exposed?
3. Are any areas of the patient's body discolored?

## Pre-Arrival Instructions

1. Take patient to a warm area
2. Remove all wet clothing
3. Cover patient with warm blankets keeping extremities close the body and head covered
4. Do not apply hot water bottles or heating pads
5. Do not rub affected parts to warm.
6. Do not allow patient to walk on affected parts
7. Do not allow patient to have anything by mouth
8. Call back if the patient's condition worsens prior to the arrival of medical personnel

# Drowning and Submersion

- Each year in the United States, more than 3,000 people die from drowning.
- Drowning is the second leading cause of injury and death among children 1 to 14 years.
- Drowning is defined as suffocation because of submersion in water or in other fluids.
- Submersion injuries result from being beneath the surface of water or another liquid.

# Drowning and Submersion

- Likely locations of drowning
  - Streams
  - Lakes
  - Swimming pools
  - Hot tubs
  - Wading pools
  - Public fountains
  - Storm drain ponds
- Common hazards for drowning in infants and young children
  - Bathtubs and toilets
  - Mop buckets



Beware - thin ice

# Drowning and Submersion

- Stages of drowning
  - Usually the initial stage is panic.
  - In other instances, the person:
    - Becomes fatigued, injured, cold, or entangled in seaweed or kelp
    - Experiences a loss of orientation
    - Becomes ill
  - The feeling of panic produces an inefficient breathing pattern.

# Drowning and Submersion

- Signs and symptoms of submersion injury
  - Coughing
  - Vomiting
  - Difficulty breathing
  - Respiratory arrest
  - Cardiac arrest
  - Broken bones or spinal injuries
  - Hypothermia

# Treatment of Submersion Injuries

- Assess scene safety.
  - If the patient is still in the water, do not exceed the limits of your training in a rescue attempt.
  - Call for additional help if needed.
  - If there is evidence of trauma and you need to move the patient, protect the spine.

Immediately assess and fix A-B-C's. Dry and warm the patient. Treat any other injuries they may have sustained.

# Cold Water Drowning

- Begin CPR on a drowning victim as long as the patient does not exhibit the definitive signs of death.
- When you encounter a person who has been submerged in cold water, start CPR and continue it until the person has been delivered to a medical facility.
- When a person is submerged in cold water, the mammalian diving reflex may be activated.
  - This protective reflex slows the heart rate and metabolic rate and decreases the body's demand for oxygen.

**REMEMBER THEY ARE NOT DEAD UNTIL THEY ARE  
WARM AND DEAD!**

# Drowning Protocol

## KEY QUESTIONS

1. Is the patient out of the water?  
YES? - See Out of Water Pre-Arrival protocol →  
NO? - See In-Water Pre-Arrival protocol →
2. How long was the patient in the water?
3. If patient is NOT conscious and breathing,  
Go to CPR protocol (per age)
4. Are there any obvious injuries?  
YES? - Go to TRAUMATIC INJURIES protocol
5. Are there any additional injuries?  
YES? - Go to PROTOCOL specific to injury

## PRE-ARRIVAL INSTRUCTIONS

### IF THE PATIENT IS OUT OF THE WATER:

1. Keep the patient still
2. Check breathing, if none, go to CPR protocol
3. If breathing and alert, monitor breathing and keep patient calm and warm

### IF THE PATIENT IS IN THE WATER:

1. If safe to do so, enter water to access patient
2. If alert and breathing, support the patient in the water and wait until medical personnel arrive
3. If unconscious and face-down, carefully roll patient over
4. If alert and struggling, throw flotation device/rope

### UNCONSCIOUS:

1. Do not move the spine, if possible
2. Keep patient warm
3. If unconscious and face-down, carefully roll patient over
4. Support in the water and wait for arrival of medical personnel
5. Rescue breaths may be administered at a rate of 1 every 5 seconds by pinching the nose and covering patient's mouth
6. Call back if the patient's condition worsens prior to the arrival of medical personnel

**Ice and Snow  
related  
injuries or  
illness**

Falls

MVCs

Chest Pain



# Falls/Traumatic Back Pain

## Key Questions

1. What caused the fall?
2. How far did they fall
3. Did the patient ever lose consciousness or hit their head?
4. What did they land on?
5. Are there any obvious injuries?

YES? – Go to PROTOCOL specific to injury

6. Is there any uncontrolled bleeding?  
Yes? – Go to BLEEDING protocol

## Pre-Arrival Instructions

1. Do not move the patient, keep head and neck stable
2. Keep the patient calm
3. Call back if the patient's condition worsens prior to the arrival of medical personnel

# Traffic Accident

## Key Questions

1. Is anyone injured?
2. How many people are injured?
3. Is anyone trapped in a vehicle?
4. Is anyone bleeding?
  - YES? – Go to BLEEDING protocol
5. Are there any other injuries?
  - YES? – Go to specific protocol

## Pre-Arrival Instructions

1. Assure patient that help is on the way
2. Do NOT move the patient unless they are in danger
3. Call back if the patient's condition worsens prior to the arrival of medical personnel

# Shoveling Snow

Wet heavy snow is often referred to as “Cardiac Snow”. This can increase the risk of heart attack and injury.



# Chest Pain

## Key Questions

1. Can the patient describe the pain?  
Sharp? Dull?  
Are they having pain anywhere else?
2. Does the patient have a history of heart related problems?
3. Does the patient take any regular medications?  
YES? – What medications and dosages
4. Is the patient's color changing?
5. Is the patient sweating? Clammy?
6. Is there aspirin available? If so,  
Has patient had an allergic reaction to Aspirin in the past?  
Any history of ulcers or intestinal bleeds in the past 24 hours?
  - If NO, proceed to pre-arrival instructions

## Pre-Arrival Instructions

1. Calm and reassure the patient
2. Loosen any tight clothing
3. If pain appears to be cardiac in nature and patient is alert, able to follow commands and there are no contraindications, proceed with Aspirin administration:
  - a. Direct patient to chew one (1) regular aspirin or four (4) low-dose baby aspirin
  - If unable to chew, direct them to put aspirin under their tongue to dissolve aspirin
  - If patient requests water to dissolve, allow only a mouthful of water, no more
4. Call back if the patient's condition worsens prior to the arrival of medical personnel

# Summary

The cold temperatures increase the risk for environmental emergencies, traumatic injuries and cardiac events. Review these protocols to insure that you are comfortable with the flow and pre-arrival instructions.

# Sources

AAOS Emergency Medical Responder,  
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