# Hypo & Hyperthermia

# Prevention, Signs & Symptoms, Treatment

Jeff Burdison - March 13, 2019



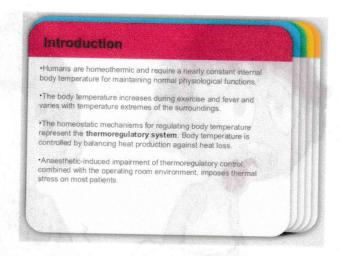
# Introduction

Exposure to both excessive heat and excessive cooling can have serious effects on the human body. The two extreme temperatures of heat and cold are referred to as:

- hyperthermia
- hypothermia

With both hypothermia and hyperthermia **prevention** is key.

Hydration is very important to avoid both conditions.



The body needs hydration to properly thermoregulate itself!!!

Thermoregulation- how the body maintains core temperature.

Hypothalmus- part of the brain that controls the blood flow by either dilating or constricting the blood vessels which either directs more blood to the periphery or maintains it in the core depending on the bodies need for heating or cooling.

# Hypothermia Symptoms for Hypothermia

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Shivering

Dizziness

Hunger



the body cope with this?

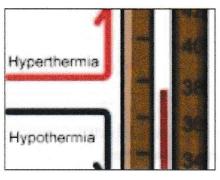
person indoors or somewhere oon as possible. Once the n a warm environment, carefully by wet clothing and dry them. n in warm blankets, towels, or tecting their head and torso first. Faster breathing

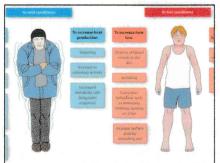
Trouble speaking

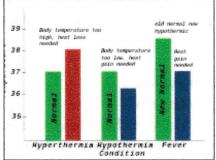
Slight confusion

Increased hear









**Easy Visuals** 

# **Hypothermia**

- Signs and symptoms:

Hunger
Fatigue
Confusion
Slurred speech
Weak pulse

Shallow breathing Clumsiness Pale skin Loss of consciousness Shivering (creates heat)

## Mechanisms of heat loss

Radiation - heat given off to surrounding area

Evaporation - Sweat

Convection - air or water moving past our body removing heat.

- Staying still in the water will limit this.

Conduction - water conducts heat away 25 times faster than air

Respiration - air is warmed then exhaled, resulting in heat loss

# Cold Water Immersion - Dr. Gordon Giesbrecht (Cold Water Bootcamp)

#### 1-10-1 Rule:

1 min to get breathing under control 10 minutes of meaningful movement up to 1 hour before unconscious due to hypothermia.

#### Conclusion

## On capsizing:

- Get your breathing under control aspiration of salt water into lungs is bad!
- Make your rescue attempts meaningful- you have some time so don't panic but try to make the first one successful.

#### Treatment

- If someone has stopped shivering then they have lost the ability to rewarm themselves.
- Remove wet clothes and get them out of the elements.
- Wrap them in a sleeping bag and place hot water bottles in crotch, armpits and neck area.
- Place toque on head and thick socks on feet.
- Using a tarp and rope to make a burrito wrap around them will keep the heat in.
- If victim is conscious then give them warm sweet drink.
- If victim is unresponsive check ABC's and record vitals but never give liquids or food.
- Evacuation necessary for anyone who has been unconscious.

#### Prevention

- dress for the water temperature not the air temperature.
- Remember: even in a dry suit you should be dressed properly underneath.
- Layers are best with a wicking layer next to skin.
- Always wear a hat!!!

# **Hyperthermia**

- heat exhaustion, heat stroke.

### Prevention:

- proper dress, hydration, limit exposure to sun.

Signs and symptoms of hyperthermia:

- Muscle cramps, headache, fever, fainting, elevated heart rate, dizziness, confusion and coma.
- Sweating is a good sign that the body is thermoregulating itself.
- When sweating stops it becomes serious.

At this stage it is imperative to remove subject to a cool area, lay them down, remove clothing, pour cool water on them or spray a mist on them. Fanning to create some convection. If alert provide cool drinks. If unconscious- ABC's and monitor and record vitals. **Evacuation is necessary.** 

Open for discussion. Try to keep the first aid at groups level of expertise. Time for topic 1-1.5 hours. Setting: around campfire after dinner.

Maybe throw in a scenario if time allows.

#### **Current Developments**

Induced hypothermia may protect the nervous systems in newborns whose brains developed in oxygen poor environments and in cardiac arrest patients who suffered



- · Remove the affected individual from the cold into a warmer environment
- · Remove any of the individual's wet clothing.
- Make sure not to apply direct heat (i.e. hot water, heating lamp), as this may harm the individual.
- Medically, an individual's blood may be drawn, warmed, and reinjected into the body for warming.

a medical condition where an individual's rate of body heat loss is greater than the rate of body heat production, causing body temperature to drop < 95°F



#### Breakdown of Prevalence

- The elderly are at a greater risk for hypothermia, as they may lack certain necessary mechanisms of
- Infants are at a greater risk because they lose heat quickly due to their small

prolonged exposure to cold wearing inadequate or wet clothing in the winter



#### Mild

shivering faster breathing increased heart rate



clumsiness confusion poor decision making loss of consciousness

Symptoms



#### Prevention

- Stay well-covered and dry in cold winter environments
- · Do not overexert yourself in the cold - sweating can cause body heat loss



# hypothermia

heat stroke

#### **Treatments**

- Remove the patient from the hot environment into a cool or air-conditioned
- Remove all unnecessary clothing.
- Try to take the individual's internal body temperature,
- Place ice packs on areas such as the groin or arm-





#### **Current Developments**

Many public health efforts during the spring and summer are to bring awareness to the risk of heat stroke by leaving children in cars.

Leaving a child unattended on a hot day may constitute a child endangerment misde-meanor for the driver,

#### Prevention

- Wear light-weight or loose fitting clothing during the day
- Use sunscreen with an SPF of at least 30 SPF
- Increase fluid intake on hot

#### **Breakdown of Prevalence**

- Elderly in homes without the necessary climate
- Young athletes performing high levels of physical activity in the heat
- Any demographic that live in homes without air conditioning/urban centers
- Individuals who do not drink enough water/too much alcohol



severe headaches dry skin confusion/loss of movement control seizures loss of consciousness



prolonged exposure to excessive heat dehydration

fainting

most severe form of hyperthermia (an individual's rate of body heat loss is less than the rate of body heat production) is where an individual's prolonged exposure to heat results in an internal temperature >105°F.

Heat stroke typically occurs as a **progression of heat exhaustion**, a

condition with similar yet less intense symptoms.

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parents to never leave children alone in-cars aspx

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