Hypothermia, Prevention

Hypothermia is a medical emergency that happens when your body loses heat faster than it can produce heat. This causes a dangerously low body temperature. Normal body temperature is around 98.6°F (or 37°C). Hypothermia occurs when your body temperature falls below 95°F (35°C). When this happens, your heart, nervous system, and other organs cannot work well. If untreated, hypothermia can cause your heart to fail, your breathing to fail, and death. Other effects of hypothermia include:

- **Frostbite**: Freezing of body parts.
- **Gangrene**: Decay and death of tissue, resulting from loss of blood flow.
- **Chilblains**: Damage to nerves and small blood vessels, usually in the hands or feet.
- **Trench foot**: Damage to nerves and small blood vessels, due to prolonged immersion in water.

If you are in direct contact with something very cold, such as cold water or the cold ground, heat is pulled away from your body. Because water is very good at removing heat from your body, your body heat is lost much faster in cold water than in cold air. Being in water that is 65°F (18°C) - a mild air temperature - can quickly lead to hypothermia. Heat loss from your body is much faster if your clothes are wet, for example, from rain.

RISKS FOR HYPOTHERMIA

- Most heat loss happens when heat escapes from the unprotected surfaces of your body. For example, your head has a large surface area. If your head is uncovered, about half of your heat loss will come from your head.
- Hypothermia is most often caused by exposure to cold weather, or by entering a cold body of water.
- Being exposed to any environment where the temperature is lower than your body temperature can cause hypothermia, if you are not dressed warmly enough. This includes air conditioned environments.
- Wind also removes body heat, by carrying away the thin layer of warm air on the surface of your skin. When the wind blows, a wind chill factor causes faster heat loss.

Other risks include:

- Wearing clothes that are not warm enough for cold or cool weather conditions.
- Staying out in the cold too long.
- Being unable to get out of wet clothes or to move to a warm, dry location.
- Entering or falling into water, for example, in a boating accident.
- Inadequate heating in the home (especially for older people and infants).
- Staying in air conditioning that is too cold (especially for the elderly or infants).
- Older age (>65), because the ability to control body temperature and to sense cold may decrease with age.
- Very young age (children lose heat faster than adults do and are less aware of it – see below).
- Mental impairment (if judgment is affected).
- Alcohol use (which makes you feel warm, but actually causes more heat loss).
- Recreational drug use (affecting judgment).
- Certain medical conditions affect your body's ability to control its temperature (underactive thyroid, malnutrition, stroke, severe arthritis, Parkinson's disease, spinal cord injuries, burns, or conditions that affect sensation in your hands and feet, limit activity, or reduce the normal flow of blood).
- Some medicines (antipsychotic drugs, sedatives) can impair the body's ability to control its temperature.

SYMPTOMS

A person with hypothermia usually is not aware of his or her condition. This is because the symptoms often begin gradually, and hypothermia can cause confusion.

- Shivering, especially if it continues (this is the way your body tries to stay warm).
- Clumsiness or lack of coordination.
- Slurred speech or mumbling.
- Stumbling.
- Confusion, memory loss, or difficulty thinking.
- Poor decision making, such as trying to remove warm clothes.
- Drowsiness or very low energy.
- Apathy, or lack of concern about one's condition.

- Loss of consciousness (*passing out*).
- Weak pulse.
- Shallow breathing.
- Nausea or vomiting.
- Signs of hypothermia in an infant include: bright red, cold skin and a very low level of activity or energy.

PREVENTING HYPOTHERMIA

An easy way to remember how to prevent hypothermia is "**COLD**" – **C**over, **O**verexertion, **L**ayers, **D**ry.

- **Cover** - Wear a hat or other covering to prevent loss of body heat from your head, face and neck. Cover your hands with mittens instead of gloves, because keeping your fingers close together keeps them warmer.
- **Overexertion** - Avoid activities that cause you to sweat a lot. The combination of wet clothing and cold weather can cause your body to lose heat more quickly.
- **Layers** - Wear loose fitting, layered, lightweight clothing. Outer clothing made of tightly woven, water-repellent material is best to protect from wind. Wool, silk, or polypropylene inner layers help you keep your body heat better than cotton does. Wool can help you keep your body heat, even when it gets wet.
- **Dry** - Stay as dry as possible. Get out of wet clothing as soon as possible. Be especially careful to keep your hands and feet dry, since snow gets easily into mittens and boots. Remember that sweat also becomes cold and stops you from staying dry.

Other ways to prevent hypothermia include:

- Stay out of the **wind**.
- During cold weather months, keep emergency supplies in your car, in case you get stranded or your car breaks down in a remote place. Supplies may include several blankets, matches, candles, a first-aid kit, dry or canned food, and a can opener. Travel with a cell phone, if possible.
- If you are stranded, put everything you need in the car with you, huddle together, and stay covered. Run the car for 10 minutes each hour to warm it up. Make sure a window is slightly open and the exhaust pipe is not covered with snow while the engine is running.
- **NEVER IGNORE SHIVERING**. Persistent or violent shivering is a clear warning that you are on the edge of getting hypothermia. MAKE CAMP OR GET BACK TO YOUR VEHICLE.
- **Do not drink alcohol** if you are going to be outside in cold weather, boating, or before going to bed on cold nights.
- **Do not underestimate cold**. Most hypothermia cases develop in air temperatures between 30 and 50 degrees. Most outdoor enthusiasts do not believe that such temperatures can be dangerous, but they can!
- Wear a stocking cap or other warm hat. Wear a hat that covers your ears and neck. Remember, most heat loss is through the head. Wear a scarf or ski mask.
- Look for a parka with a hood that extends several inches beyond your face and will form a pocket to protect you from wind and blowing snow.
- Athletic shoes and nylon hiking boots do not provide enough insulation. You should wear mukluks, water-proofed leather hiking boots, rubber overshoes, or rubberized boots. Wear a pair of cotton socks under a pair of wool socks, to increase insulation and to take the sweat away from your feet.
- Pull trouser (*pants*) legs down, over the top of your boots or socks to keep out snow. You may want to wear nylon gaiters (*leg warmers*) on top, or tie or tape them to seal out the snow and cold.
- Paper is a good insulator and can be wrapped around the body (under your clothes) to add insulation. In an emergency, leaves, grass, or pine needles also work well.
- Stay well hydrated (at least 10-12 drinks per day, more if you are exercising hard). Do not skip meals.

PREVENTING HYPOTHERMIA IN CHILDREN

Children lose heat faster than adults do. Remember, accidental hypothermia can occur even with temperatures of 60 to 65 degrees, particularly among kids.

- Infants less than one year of age should never sleep in a cold room. They should be provided with warm clothing and a blanket, to prevent loss of body heat.
- To help prevent hypothermia when children are outside in the winter:
  - Dress infants and young children in one more layer than an adult would wear in the same conditions.
  - Limit the amount of time children spend outside in the cold.
  - Have children come inside often to warm up.

PREVENTING HYPOTHERMIA IN COLD WATER

To be safe **when in cold water**, remember that water does not need to be extremely cold to cause hypothermia. Any water colder than your normal body temperature will cause you to lose heat. If you accidentally fall in:

- Wear a life jacket, if you plan to ride in any watercraft. A life jacket can keep you alive longer in cold water by helping you to float without using energy and by providing insulation to reduce heat loss.
- Get out of the water as much as possible, by climbing onto an overturned boat or by grabbing onto a floating object.
- **Do not** attempt to swim, unless you are close to safety. Unless a boat, another person, or a life jacket is close by, stay where you are. Swimming uses up energy and may shorten survival time.
- Position your body to minimize heat loss, by holding your knees to your chest.
- Huddle with others. If you have fallen into cold water with other people, keep warm by facing each other in a tight circle.
- **Do not** remove your clothing while you are in the water. Buckle, button, and zip up your clothes. Cover your head, if possible. The layer of water between your clothing and your body will help insulate you and keep you warm. Remove clothing only after you are safely out of the water and can get dry and warm.

IF YOU OBSERVE SOMEONE WHO MIGHT HAVE HYPOTHERMIA:

- This can be life threatening. Call your local medical emergency services (911 in the U.S.) if you see someone with signs of hypothermia, or if you suspect a person has had unprotected or long exposure to cold weather or water.
- Get the person inside to a warm, dry location, if possible. If you are unable to move the person out of the cold, shield him/her from the cold and wind as much as possible.
- Remove wet clothing.
- Cover him/her in layers of blankets. Cover the person's head, leaving only the face exposed.
- Handle the person gently. Limit movements to those that are necessary. Do not massage or rub the person. Excessive or jarring movements may cause the heart to seize (*cardiac arrest*) or stop.
- Share body heat to warm the person's body. Remove your clothing and lie next to the person, making skin-to-skin contact. Then cover both of your bodies with blankets.
- Insulate the person's body from the cold ground. If you are outside, lay the person on his or her back on a blanket or other warm surface.
- Monitor breathing. A person with severe hypothermia may appear unconscious, with no signs of a pulse or breathing. If the person has stopped breathing or his/her breathing appears dangerously shallow, begin cardiopulmonary resuscitation (CPR) immediately, if you are trained.
- Provide warm beverages. If the affected person is alert and able to swallow, provide a warm beverage, **without** alcohol or caffeine, to help warm the body.
- Use warm, dry compresses. Use a first-aid warm compress or make a compress of a warmed towel or warm water in a plastic bottle. Apply a compress only to the neck, chest, or groin. **DO NOT** apply a compress to the arms or legs. (This forces cold blood back toward the heart, lungs, and brain, and causes the core temperature to drop.)
- **Do not** apply direct heat or use hot water, a heating pad, or a heating lamp to warm the person. Extreme heat can damage the skin or cause the heart to seize (*cardiac arrest*).

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