



Preventing Cold-Weather Injuries



It is important to be prepared in the winter time for the cold weather conditions. Exposure to cold temperatures can stress the body and make it more susceptible to cold-related illnesses. The four environmental conditions that cause cold-related stress are:

- low temperatures
- high/cool winds
- dampness
- cold water

Wind chill, a combination of temperature and wind speed, is also a critical factor to consider when spending time outside. A dangerous situation of rapid heat loss may arise for any individual exposed to high winds and cold temperatures.

Thermoregulation

When body temperature drops even a few degrees below its normal temperature of 37°C, the blood vessels constrict, which decreases peripheral blood flow

in order to reduce heat loss from the surface of the skin. Shivering, the rapid contraction of the skeletal muscles, generates heat production that can temporarily increase body temperature.

Who is most at risk for cold-related illnesses?

Infants and the elderly are particularly at risk for cold-related illnesses, but anyone can be affected. Outdoor workers, outdoor athletes, the homeless, people on prescription medication and those with circulatory problems are also at a higher risk.

Cold-Related Illnesses

Frostnip

Frostnip occurs when skin is exposed to cold wind causing the skin to turn white. This usually occurs in extremities further from the heart that are exposed to cold or winds. This is considered the

first stage of frostbite and results when blood vessels close to the skin constrict, reducing blood flow to the area in an attempt to preserve the body's core temperature. Frostnip does not usually damage affected areas permanently, although long-term sensitivity to both heat and cold can sometimes follow. Areas affected by frostnip should be treated by re-warming the area with a warm object or hand, not hot water.

Frostbite

Frostbite occurs when an area of the body actually freezes including skin, muscles tendons, blood vessels and nerves. The affected skin is often hard, waxy feeling, and use of the area is lost temporarily, and in severe cases, permanently. Purplish, blood filled blisters may appear in severe cases and nerve damage may result in the loss of feeling and/or movement. Frostbite may occur without hypothermia (see below) where the affected area does not have sufficient circulation or is not properly clothed. Winds also increase the risk of frostbite as heat loss from the body is more rapid in windy conditions. Treatment should involve warming the body and removing restrictive clothing from the affected area as well as seeking medical treatment. However, it is NOT recommended that the affected area be rubbed, immersed in hot water or that blisters be broken.

Chilblains

Often confused with frostbite or trench-foot, chilblains are ulcers affecting the extremities as a result of prolonged exposure to cold and humidity. This exposure causes damage in the capillary beds which can result in symptoms of redness, itching, blister and inflammation. Chilblains can be



prevented by keeping the feet and hands warm in cold weather.

Hypothermia

Hypothermia occurs when the body's core temperature drops below 35°C /95°F, at which point your body cannot regain the heat being lost. Hypothermia can take a victim by surprise since it can occur above the freezing point. Wind, physical exhaustion and wet clothing all make a person more prone to hypothermia. Symptoms of hypothermia include shivering, exhaustion, confusion, fumbling/uncoordinated movements, memory loss, slurred speech and drowsiness. Infants may also show signs of very low energy and bright red, cold skin. Persons experiencing hypothermia should be treated by getting their body warm again via heated shelter, clothing (removing wet clothing), warm non-alcoholic beverages and medical treatment. CPR is required for those without pulse and mouth-to-mouth resuscitation for those not breathing.

Tips for Preventing Cold-Related Illnesses

Plan Ahead

- Be aware of the weather forecast, dress accordingly and be ready for extreme cold weather events that may result in an emergency.

- Prepare your home and car for extreme cold weather events by stocking emergency supplies such as: food that does not require cooking or refrigeration, drinking water, back-up power supply (e.g. generator), clothing and blankets, etc.

Dress Warmly and Stay Dry

- An outer layer of tightly woven clothing (wind resistant) is preferred to reduce heat loss from wind.
- Wool, silk or polypropylene will hold more body heat than cotton.
- Sweating will increase heat loss, so remove layers whenever you feel too warm.
- Change out of wet clothing as soon as possible.
- Avoid time outdoors when temperatures are extremely low.

Heat Your Home Safely and Adequately

- Ensure your home is adequately insulated, meeting or exceeding the Ontario Building Code requirements.
- Install smoke detectors and carbon monoxide detectors near fireplaces and stoves.
- Generators must be used outdoors, as they produce carbon monoxide.
- Conserve heat by avoiding opening doors and windows as much as possible. Unused areas can also be closed off.

Monitor Body Temperature

- Infants lose body heat more easily than adults and are unable to make enough heat by shivering, so DO NOT leave infants alone in a cold room.
- The elderly produce less body heat due to their slower metabolism and lower physical activity levels and therefore should monitor their body temperature and/or be checked on regularly.
- Persons who are often outdoors (e.g. outdoor workers, athletes) during cold weather should acclimatize their bodies to the temperature.

Drink Plenty of Fluids

- Dehydration can occur through the skin and lungs as a result of dryness in the air. Persons exposed to the cold should drink plenty of fluids to avoid decreased blood flow.
- Avoid drinking liquids that contain alcohol, caffeine or large amounts of sugar- these drinks actually cause you to lose more body fluid.

Pace Yourself

- Your body is already working hard to stay warm, so dress warmly and work slowly when exposed to the cold.
- Persons with heart disease or high blood pressure should avoid overexertion.

Updated November 2011