



Cold Stress Injuries and Illnesses: Symptoms, and First-aid



While working outdoors during cold conditions or working indoors in artificially cold environments (e.g. refrigerated areas), serious cold-related injuries and illnesses may occur. Cold-related hazards can cause permanent tissue damage or even death. Cold related illnesses that may impact workers include frostnip, frostbite, chilblains, trench foot, eye injuries, and hypothermia. Included below are descriptions of each, and what to do when the condition arises.

- *"Frostnip"* is the early stage of frostbite and involves the freezing of top layers of skin tissue. It typically affects the skin on the face, ears, or fingertips. It is generally reversible and manifests with numbness, white, waxy skin-top layer feels hard, rubbery but deeper tissue is still soft. It occurs typically on cheek, earlobes, fingers and toes. Frostnip is managed by gentle rewarming e.g. by blowing warm air on it or placing the area against a warm body part (partner's stomach or armpit). Avoid rubbing as this can damage the tissue by having ice crystals tear the cells.
- *Frostbite* sets in after frostnip and is more severe. It includes all layers of skin. The skin appears white and has a "wooden" feel all the way through with numbness. Deep frostbite can include freezing of muscle and/or bone. In this case, it is very difficult to rewarm the affected areas without some damage to the tissue.

- Treatment of frostbite begins in the field with first aid or buddy aid. Protect the individual from further harm, keep warm, remove any restricting clothing, and begin rewarming.
- *Chilblains* result in inflamed swollen patches and blistering on the hands and feet. The condition is caused by exposure to damp air that's cold but not freezing. Symptoms may show up a few hours after being in the cold.
 - Chilblains can be prevented by limiting your time in the cold, dressing warmly and covering exposed skin. If you do get chilblains, keeping the skin warm and dry can help ease the symptoms.
- *Trench foot* is caused by prolonged immersion of the feet in cool, wet conditions. Skin tissue begins to die because of lack of oxygen and nutrients and due to buildup of toxic products. The skin is initially reddened with numbness, tingling pain, and itching, then becomes pale and mottled and finally dark purple, grey or blue.
 - Treatment consists of gentle drying, elevation, and exposure of the extremity in normal, indoor temperature, while keeping the rest of the body warm. Since the tissue is not frozen as in severe frostbite, it is more susceptible to damage by walking on it. Bed rest, cleanliness, and pain relief are important in this case.
- *Snow blindness* can occur during a snowstorm if the cloud is thin. The eyes feel dry, irritated and gritty and moving or blinking becomes extremely painful. Prevention by wearing good sunglasses with side shields or goggles. Treatment involves cold compresses and dark environment while avoiding rubbing the eyes.
- *Hypothermia* is characterized by an abnormally low body temperature and occurs when the body loses heat faster than it can make the heat.

Symptoms include:

- Shivering
- Slurred speech or mumbling
- Slow, shallow breathing
- Weak pulse
- Clumsiness or lack of coordination
- Drowsiness or very low energy
- Confusion or memory loss
- Loss of consciousness

Hypothermia is an emergency condition. It can quickly lead to unconsciousness and death if the heat loss isn't stopped. In cases of hypothermia, immediately call 911, stay with the victim and perform these first-aid guidelines until the emergency responders arrive:

- **Be gentle.** When helping someone with hypothermia, handle them gently. Only move the person as much as is necessary. Don't massage or rub the person. Vigorous or jarring movements may trigger cardiac arrest.
- **Move the person out of the cold.** Move the person to a warm, dry location if possible. If moving is not possible, shield the person from the cold and wind as much as possible. The person should be kept in a flat position if possible.

- **Remove wet clothing.** If the person is wearing wet clothing, remove it. Cut away clothing if necessary to avoid too much movement.
- **Cover the person with blankets.** Use layers of dry blankets or coats to warm the person. Cover the person's head, leaving only the face exposed.
- **Insulate the person's body from the cold ground.** If you're outside, lay the person flat on a blanket or other warm surface.
- **Monitor breathing.** A person with severe hypothermia may appear unconscious, with no clear signs of a pulse or breathing. If the person's breathing has stopped or appears dangerously low or shallow, begin CPR right away if you're trained.
- **Supply warm beverages.** If the affected person is alert and able to swallow, give the person a warm, sweet, nonalcoholic, noncaffeinated drink. Warm drinks can help warm the body.
- **Use warm, dry compresses.** Use first-aid warm compresses, which are plastic fluid-filled bags that warm up when squeezed. Other options include a makeshift compress of warm water in a plastic bottle or a dryer-warmed towel. Apply the compresses only to the neck, chest wall or groin. Don't apply them to the arms or legs. Heat applied to the arms and legs forces cold blood back toward the heart, lungs and brain, causing the core body temperature to drop. This can be fatal.
- **Don't apply direct heat.** Don't use hot water, a heating pad or a heating lamp to warm the person. The extreme heat can damage the skin. It also can trigger irregular heartbeats that cause the heart to stop.