

Frostbite Symptoms

The easiest to understand, and perhaps the one that gives the best clues to outcome, divides frostbite into two main divisions: superficial and deep.

In superficial frostbite, you may experience burning, numbness, tingling, itching, or cold sensations in the affected areas. The regions appear white and frozen, but if you press on them, they retain some resistance.

In deep frostbite, there is an initial decrease in sensation that is eventually completely lost. Swelling and blood-filled blisters are noted over white or yellowish skin that looks waxy and turns a purplish blue as it rewarms. The area is hard, has no resistance when pressed on, and may even appear blackened and dead.

- The affected person will experience significant pain as the areas are rewarmed and blood flow reestablished. A dull continuous ache transforms into a throbbing sensation in 2 to 3 days. This may last weeks to months until final tissue separation is complete.
- At first the areas may appear deceptively healthy. Most people do not arrive at the doctor with frozen, dead tissue. Only time can reveal the final amount of tissue damage.
- There are milder conditions related to frostbite, including frostnip, chilblains, and trench foot.
- Frostnip refers to the development of paresthesia (tingling sensations) that occur due to cold exposure. They disappear upon rewarming without any tissue damage.
- Chilblain (or pernio) refers to a localized area of tissue inflammation that appears as swollen and reddish or purple. These develop in response to repeated exposure to damp, cold conditions above the freezing point. Chilblains may itch or be painful.
- Trench foot was described in World War I as a result of repeated exposure to dampness and cold and exacerbated by tight boots. The affected feet are reddened, swollen, painful or numb, and may be covered with bleeding blisters. This condition is still observed in some homeless persons today.

Frostbite Treatment

Frostbite Self-Care at Home

- First, call for help.
- Keep the affected body part elevated in order to reduce swelling
- Move to a warm area to prevent further heat loss. Avoid walking on frostbitten feet as this can lead to further damage.
- Note that many people with frostbite may be experiencing hypothermia. Saving their lives is more important than preserving a finger or foot.
- Remove all wet clothing and constrictive jewelry because they may further block blood flow.
- Give the person warm, nonalcoholic, non-caffeinated fluids to drink.
- Apply a dry, sterile bandage, place cotton between any involved fingers or toes (to prevent rubbing), and take the person to a medical facility as soon as possible.
- Never rewarm an affected area if there is any chance it may freeze again. This thaw-refreeze cycle is very harmful and leads to disastrous results.
- Also, avoid a gradual thaw either in the field or in the transport vehicle. The most effective method is to rewarm the area quickly. Therefore, keep the injured part away from sources of heat until you arrive at a treatment facility where proper rewarming can take place.
- Do not rub the frozen area with snow (or anything else). The friction created by this technique will only cause further tissue damage.
- Above all, keep in mind that the final amount of tissue destruction is proportional to the time it remains frozen, not to the absolute temperature to which it was exposed. Therefore, rapid transport to a hospital is very important.

What Is Hypothermia?

Hypothermia is a potentially dangerous drop in body temperature, usually caused by prolonged exposure to cold temperatures. The risk of cold exposure increases as the winter months arrive. But if you're exposed to cold temperatures on a spring hike or capsized on a summer sail, you can also be at risk of hypothermia.

Normal body temperature averages 98.6 degrees. With hypothermia, core temperature drops below 95 degrees. In severe hypothermia, core body temperature drops to 86 degrees or lower.

What Causes Hypothermia?

Cold exposure. When the balance between the body's heat production and heat loss tips toward heat loss for a prolonged period, hypothermia can occur. Accidental hypothermia usually happens after cold temperature exposure without enough warm, dry clothing for protection. Mountain climbers on Mount Everest avoid hypothermia by wearing specialized, high-tech gear designed for that windy, icy environment.

However, much milder environments can also lead to hypothermia, depending on a person's age, body mass, body fat, overall health, and length of time exposed to cold temperatures. A frail, older adult in a 60-degree house after a power outage can develop mild hypothermia overnight. Infants and babies sleeping in cold bedrooms are also at risk.

Other causes. Certain medical conditions such as diabetes and thyroid conditions, some medications, severe trauma, or using drugs or alcohol all increase the risk of hypothermia.

How Does Cold Exposure Cause Hypothermia?

During exposure to cold temperatures, most heat loss -- up to 90% -- escapes through your skin; the rest, you exhale from your lungs. Heat loss through the skin happens primarily through radiation and speeds up when skin is exposed to wind or moisture. If cold exposure is due to being immersed in cold water, the movement of waves and water can increase heat loss up to 50%.

The hypothalamus, the brain's temperature-control center, works to raise body temperature by triggering processes that heat and cool the body. During cold temperature exposure, shivering is a protective response to produce heat through muscle activity. In another heat-preserving response -- called vasoconstriction -- blood vessels temporarily narrow.

Normally, the activity of the heart and liver produce most of your body heat. But as core body temperature cools, these organs produce less heat, in essence causing a protective "shut down" to preserve heat and protect the brain. Low body temperature can slow brain activity, breathing, and heart rate.

Confusion and fatigue can set in, hampering a person's ability to understand what's happening and make intelligent choices to get to safety.

Who is at Risk for Hypothermia?

- People at increased risk for hypothermia include: The elderly, infants, and children without adequate heating, clothing, or food.
- Mentally ill people.
- People who are outdoors for extended periods.
- People in cold weather whose judgment is impaired by alcohol or drugs.

Hypothermia Treatment

**** Call 911 if you suspect hypothermia ****

Symptoms of hypothermia in adults and children include:

- Confusion, memory loss, or slurred speech
- Drop in body temperature below 95 Fahrenheit
- Exhaustion or drowsiness
- Loss of consciousness
- Numb hands or feet
- Shallow breathing
- Shivering

In infants, symptoms include:

- Bright red, cold skin
- Very low energy level

Follow these steps....

1. Call 911

2. Restore Warmth Slowly

- Get the person indoors.
- Remove wet clothing and dry the person off, if needed.
- Warm the person's trunk first, not hands and feet. Warming extremities first can cause shock.
- Warm the person by wrapping him or her in blankets or putting dry clothing on the person.
- Do not immerse the person in warm water. Rapid warming can cause heart arrhythmia.
- If using hot water bottles or chemical hot packs, wrap them in cloth; don't apply them directly to the skin.

3. Begin CPR, if Necessary, While Warming Person

If the person is NOT breathing:

- Start CPR for children or adult.
- Continue CPR until the person begins breathing or emergency help arrives.

4. Give Warm Fluids

Give the person a warm drink, if conscious. Avoid caffeine or alcohol.

5. Keep Body Temperature Up

Once the body temperature begins to rise, keep the person dry and wrapped in a warm blanket. Wrap the person's head and neck, as well.

6. Follow Up

At the hospital, health care providers will continue warming efforts, including providing intravenous fluids and warm, moist oxygen.

Red Cross Mobile Apps – Help is in Your Hand

Download Red Cross apps at redcross.org/mobileapps

The American Red Cross has launched free apps for iPhone and Android platforms.

Available in English or Spanish, based on user language settings.

Download it directly from the iTunes or Google Play app stores.

Volunteer App



Team Red Cross wants you! Join Team Red Cross to help provide care and comfort to your local community when the unthinkable occurs. Everyone has something special to offer...including you.

Team Red Cross is looking for people with various backgrounds, talents, and skill levels. Make a difference, support your community and join Team Red Cross!

Tornado App



Get your family and home ready for a tornado with the official Tornado App from the American Red Cross. The Tornado app puts everything you need to know prepare for a tornado – and all that comes with it – in the palm of your hand.

Hurricane App



Monitor weather conditions in your area or throughout the storm track, prepare your family and home, find help and let others know you are safe even if the power is out – a must have for anyone who lives in an area where a hurricane may strike or has loved ones who do.

Shelter Finder App



The Red Cross Shelter Finder is available in the iTunes store and works on iOS devices. The Shelter Finder displays open Red Cross shelters and their current population on an easy to use map interface

First Aid App



The official American Red Cross First Aid app puts expert advice for everyday emergencies in your hand. Available for iPhone and Android devices, the official American Red Cross First Aid app offers videos, interactive quizzes and simple step-by-step advice it's never been easier to know first aid.

Wildfire App



Be ready for wildfire with Wildfire by the American Red Cross. Get the latest state-by-state Wildfire news and updates, prepare your family, home and pets, let loved ones know that you are safe even if the power is out – a must have for anyone who lives in an area that is susceptible to wildfires or has loved ones that do.

Earthquake App



Be ready for an Earthquake by the American Red Cross. Get notified when an earthquake occurs, prepare your family and home, find help and let others know you are safe even if the power is out – a must have for anyone who lives in an earthquake-prone area or has loved ones who do.

Pet First Aid App



Take care of your furry family member. The American Red Cross Pet First Aid app puts veterinary advice for everyday emergencies in the palm of your hand. With videos, interactive quizzes and simple step-by-step advice it's never been easier to know Pet First Aid.

Be Red Cross Ready

Winter Storm Safety Checklist

Winter storms can range from a moderate snow over a few hours to a blizzard with blinding, wind-driven snow that lasts for several days. Some winter storms are large enough to affect several states, while others affect only a single community. Many winter storms are accompanied by dangerously low temperatures and sometimes by strong winds, icing, sleet and freezing rain.

Know the Difference

Winter Storm Outlook

Winter storm conditions are possible in the next 2 to 5 days.

Winter Weather Advisory

Winter weather conditions are expected to cause significant inconveniences and may be hazardous. When caution is used, these situations should not be life threatening.

Winter Storm Watch

Winter storm conditions are possible within the next 36 to 48 hours. People in a watch area should review their winter storm plans and stay informed about weather conditions.

Winter Storm Warning

Life-threatening, severe winter conditions have begun or will begin within 24 hours. People in a warning area should take precautions immediately.

What should I do?



- ☐ Dress in several layers of lightweight clothing, wear mittens and a hat (preferably one that covers your ears).
- ☐ Wear waterproof, insulated boots to keep your feet warm and dry and to maintain your footing in ice and snow.
- ☐ Minimize travel. If travel is necessary, keep a disaster supplies kit in your vehicle.
- ☐ Listen to a NOAA Weather Radio or other local news channels for critical information from the National Weather Service (NWS).
- ☐ Winterize your vehicle and keep the gas tank full. A full tank will keep the fuel line from freezing.
- ☐ Insulate your home by installing storm windows or covering windows with plastic from the inside to keep cold air out.
- ☐ Maintain heating equipment and chimneys by having them cleaned and inspected every year.
- ☐ Bring pets/companion animals inside during winter weather. Move other animals or livestock to sheltered areas with non-frozen drinking water.
- ☐ Running water, even at a trickle, helps prevent pipes from freezing.
- ☐ All fuel-burning equipment should be vented to the outside and kept clear.

Cold-Related Emergencies

- ☐ **Frostbite** and **hypothermia** are two dangerous and potentially life-threatening emergencies. Learn how to care for these emergencies by taking a first aid class.

What supplies do I need?



- ☐ Water—at least a 3-day supply; one gallon per person per day
- ☐ Food—at least a 3-day supply of non-perishable, easy-to-prepare food
- ☐ Flashlight
- ☐ Battery-powered or hand-crank radio (NOAA Weather Radio, if possible)
- ☐ Extra batteries
- ☐ First aid kit
- ☐ Medications (7-day supply) and medical items (hearing aids with extra batteries, glasses, contact lenses, syringes, cane)
- ☐ Multi-purpose tool
- ☐ Sanitation and personal hygiene items
- ☐ Copies of personal documents (medication list and pertinent medical information, proof of address, deed/lease to home, passports, birth certificates, insurance policies)
- ☐ Cell phone with chargers
- ☐ Family and emergency contact information
- ☐ Extra cash
- ☐ Baby supplies (bottles, formula, baby food, diapers)
- ☐ Pet supplies (collar, leash, ID, food, carrier, bowl)
- ☐ Tools/supplies for securing your home
- ☐ Sand, rock salt or non-clumping kitty litter to make walkways and steps less slippery
- ☐ Warm coats, gloves or mittens, hats, boots and extra blankets and warm clothing for all household members
- ☐ Ample alternate heating methods such as fireplaces or wood- or coal-burning stoves

What do I do after a storm?



- ☐ Go to a designated public shelter if your home loses power or heat during periods of extreme cold.
- ☐ Avoid driving when conditions include sleet, freezing rain or drizzle, snow or dense fog.
- ☐ Before tackling strenuous tasks in cold temperatures, consider your physical condition, the weather factors and the nature of the task.
- ☐ Protect yourself from frostbite and hypothermia by wearing warm, loose-fitting, lightweight clothing in several layers. Stay indoors, if possible.
- ☐ Help people who require special assistance such as elderly people living alone, people with disabilities and children.
- ☐ Check on your animals and make sure that their access to food and water is not blocked by snow drifts, ice or other obstacles. If possible, bring them indoors.

Caution: Carbon Monoxide Kills

- ☐ Never use a generator, grill, camp stove or other gasoline, propane, natural gas or charcoal-burning devices inside a home, garage, basement, crawlspace or any partially enclosed area. Locate unit away from doors, windows and vents that could allow carbon monoxide to come indoors.
- ☐ The primary hazards to avoid when using alternate sources for electricity, heating or cooking are carbon monoxide poisoning, electric shock and fire.
- ☐ Install carbon monoxide alarms in central locations on every level of your home and outside sleeping areas to provide early warning of accumulating carbon monoxide.
- ☐ If the carbon monoxide alarm sounds, move quickly to a fresh air location outdoors or by an open window or door.
- ☐ Call for help from the fresh air location and remain there until emergency personnel arrive to assist you.

Let Your Family Know You're Safe

If your community experiences a severe winter storm, or any disaster, register on the American Red Cross Safe and Well Web site available through RedCross.org to let your family and friends know about your welfare. If you don't have Internet access, call **1-866-GET-INFO** to register yourself and your family.



For more information on disaster and emergency preparedness, visit RedCross.org.

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Be Red Cross Ready

Power Outage Checklist

Sudden power outages can be frustrating and troublesome, especially when they last a long time. If a power outage is 2 hours or less, you need not be concerned about losing your perishable foods. For prolonged power outages, though, there are steps you can take to minimize food loss and to keep all members of your household as comfortable as possible.

Energy Conservation Recommendations

- ☐ Turn off lights and computers when not in use.
- ☐ Wash clothes in cold water if possible; wash only full loads and clean the dryer's lint trap after each use.
- ☐ When using a dishwasher, wash full loads and use the light cycle. If possible, use the rinse only cycle and turn off the high temperature rinse option. When the regular wash cycle is done, just open the dishwasher door to allow the dishes to air dry.
- ☐ Replace incandescent light bulbs with energy-efficient compact fluorescent lights.

How do I prepare for a power outage?



To help preserve your food, keep the following supplies in your home:

- ☐ One or more coolers—Inexpensive Styrofoam coolers work well.
- ☐ Ice—Surrounding your food with ice in a cooler or in the refrigerator will keep food colder for a longer period of time during a prolonged power outage.
- ☐ A digital quick-response thermometer—With these thermometers you can quickly check the internal temperatures of food to ensure they are cold enough to use safely.

Put together an emergency preparedness kit with these supplies in case of a prolonged or widespread power outage:

- Water—one gallon per person, per day (3-day supply for evacuation, 2-week supply for home)
 - Food—non-perishable, easy-to-prepare items (3-day supply for evacuation, 2-week supply for home)
 - Flashlight (NOTE: Do not use candles during a power outage due to the extreme risk of fire.)
 - Battery-powered or hand-crank radio (NOAA Weather Radio, if possible)
 - Extra batteries
 - First aid kit
 - Medications (7-day supply) and medical items
 - Multi-purpose tool
 - Sanitation and personal hygiene items
 - Copies of personal documents (medication list and pertinent medical information, deed/lease to home, birth certificates, insurance policies)
 - Cell phone with chargers
 - Family and emergency contact information
 - Extra cash
- ☐ If someone in your home is dependent on electric-powered, life-sustaining equipment, remember to include backup power in your evacuation plan.
 - ☐ Keep a non-cordless telephone in your home. It is likely to work even when the power is out.
 - ☐ Keep your car's gas tank full.

What should I do during a power outage?



Keep food as safe as possible.

- ☐ Keep refrigerator and freezer doors closed as much as possible. First use perishable food from the refrigerator. An unopened refrigerator will keep foods cold for about 4 hours.
- ☐ Then use food from the freezer. A full freezer will keep the temperature for about 48 hours (24 hours if it is half full) if the door remains closed.
- ☐ Use your non-perishable foods and staples after using food from the refrigerator and freezer.
- ☐ If it looks like the power outage will continue beyond a day, prepare a cooler with ice for your freezer items.
- ☐ Keep food in a dry, cool spot and keep it covered at all times.

Electrical equipment

- ☐ Turn off and unplug all unnecessary electrical equipment, including sensitive electronics.
- ☐ Turn off or disconnect any appliances (like stoves), equipment or electronics you were using when the power went out. When power comes back on, surges or spikes can damage equipment.
- ☐ Leave one light turned on so you'll know when the power comes back on.
- ☐ Eliminate unnecessary travel, especially by car. Traffic lights will be out and roads will be congested.

Using generators safely

- ☐ When using a portable generator, connect the equipment you want to power directly to the outlets on the generator. Do not connect a portable generator to a home's electrical system.
- ☐ If you are considering getting a generator, get advice from a professional, such as an electrician. Make sure that the generator you purchase is rated for the power that you think you will need.

What should I do when the power comes back on?



- ☐ Do not touch any electrical power lines and keep your family away from them. Report downed power lines to the appropriate officials in your area.

Throw out unsafe food.

- ☐ Throw away any food that has been exposed to temperatures 40° F (4° C) for 2 hours or more or that has an unusual odor, color or texture. When in doubt, throw it out!
- ☐ Never taste food or rely on appearance or odor to determine its safety. Some foods may look and smell fine, but if they have been at room temperature too long, bacteria causing food-borne illnesses can start growing quickly. Some types of bacteria produce toxins that cannot be destroyed by cooking.
- ☐ If food in the freezer is colder than 40° F and has ice crystals on it, you can refreeze it.
- ☐ If you are not sure food is cold enough, take its temperature with the food thermometer. Throw out any foods (meat, poultry, fish, eggs and leftovers) that have been exposed to temperatures higher than 40° F (4° C) for 2 hours or more, and any food that has an unusual odor, color or texture, or feels warm to touch.

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- ☐ Never use a generator, grill, camp stove or other gasoline, propane, natural gas or charcoal-burning devices inside a home, garage, basement, crawlspace or any partially enclosed area. Locate unit away from doors, windows and vents that could allow carbon monoxide to come indoors.
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