

Frostbite

Frostbite is an injury to the skin and tissue under the skin caused by exposure to cold. This *Health Facts for You* will review frostbite symptoms, treatment, and prevention.

Frostbite

How it Occurs

Frostbite often occurs during the winter months in windy weather, snowy conditions, and at high elevations. Frostbite can also occur when you touch ice, freezing metals, and cold liquids.

Risks

Exposed skin is at higher risk for frostbite though, covered skin is still at risk. Common areas that are injured include the face, nose, ears, fingers, and feet/toes.

- Health conditions that make it harder to feel or respond to cold, such as:
 - Poor blood flow
 - Dehydration
 - Exhaustion
 - Drug and alcohol use
- Previous cold injury/frostbite
- Smoking
- Being very young or very old
- Homelessness

Symptoms

Some symptoms of frostbite include:

- Skin that feels cold, stings or feels like “pins and needles”
- Numbness
- Trouble using affected body parts
- Skin changes color: red, white, gray, white/pale, purple, and/or brown
- Pain
- Shiny, leathery, and/or hard looking skin
- Blistering

Diagnosing Frostbite

There is no one test to diagnose frostbite. Your provider will perform an exam, talk to you about your cold exposure and monitor your symptoms over time.

Stages of Frostbite

Frostnip

This is a "mild" form of frostbite that may not cause permanent damage to the skin. The area will feel cold to the touch and you may have some swelling. Your skin may be red, purple or pale. You may also have increased pain, numbness or tingling. .

Superficial Frostbite

Your skin may look red or dusky and pale. The skin will feel warm due to tissue injury. You may have swelling. You will notice increased pain, numbness, tingling, and/or a prickling feeling. You may also have fluid-filled blisters within the first 48 hours after rewarming the skin.

Deep (Severe) Frostbite

This injury affects all layers of the skin. It can cause a loss of feeling which may mean you feel no pain or have temperature sensation. The skin may turn white to blue/grey in color. Joints and muscles may also stop working. Large blisters will start to form within 48 hours after rewarming. As the tissue begins to die, it will begin to turn black and dry out. This type of frostbite will likely require surgery, which may include amputation.

Treatment

Address frostbite as soon as you can to prevent further damage. Your treatment depends on how severe the frostbite is.

Treating Frostnip

When you notice frostnip symptoms such as pain, “pins and needles” or skin color changes:

1. Find shelter and get inside.
2. Remove all wet clothing.
3. Gently begin to rewarm affected areas.
4. Elevate injured area if able.

Tips for rewarming: Rewarm your skin in warm (not hot) water. **Do not burn area** while rewarming. Due to decreased feeling, you may not notice if the water is too hot. **Do not rub** the area as this can cause tissue damage.

Treating Superficial/Severe Frostbite

If you have symptoms of superficial or severe frost bite, **get medical help right away!**

Severe injury may require a hospital stay. At the hospital, staff will:

- Remove any wet clothing and apply warm blankets, a Bair hugger (a type of warming blanket), or place you in a rewarming bath.
- Test blood flow in the area. To lower your risk of amputation they may give you clot-busting medicine like Alteplase (t-PA).
- Give you pain medicines.
- Give you a tetanus booster if needed.
- Give you IV fluids.
- Give you oxygen therapy.

Wound Care

Perform daily dressing changes. You should:

1. Wash area daily with antimicrobial soap (e.g. Dial) and water.
2. Dry well.
3. Applying bacitracin to open areas followed by cuticerin and gauze.

Surgery

Not all frostbite will require surgery. Severe frostbite will keep changing over the course of days to months, and the tissue will die. If tissue has died, that is when a surgeon may need to remove, or amputate, the affected area, such as fingers or toes. It is very important to make regular follow-ups with your burn/wound team and primary care provider.

Recovery

Your recovery depends on how severe the frostbite is.

Recovery After Frostnip

Symptoms will often gradually go away after frostnip.

Recovery After Superficial or Severe Frostbite

These types of frostbite can cause permanent damage. Damage may include sensitivity to hot and cold temperatures, deformed skin and/or nails, weakness or loss of feeling, tissue death, and amputation.

Prevention

There are many steps you can take to prevent frostbite.

1. **Avoid going outside when its cold.** Check your local weather each time you plan to leave your house. Stay inside when its cold outside. Frostbite can occur in a matter of minutes in certain conditions.

- 2. Dress for the weather.** If you do have to go outside when it's cold, it is important to wear proper layers. The colder the temperature outside, the faster frostbite can occur. Wear hats, scarves, and face masks to cover ears, nose, and face when outside as these areas are at higher risk for frostbite.

Wear layers. Wear two pairs of socks. Wear mittens rather than gloves as they help keep your fingers warmer together. Wear windproof and waterproof clothing. If you notice that your clothing is wet, change out of the wet clothing as soon as you can.

- 3. Be aware of frostbite symptoms.** The first symptoms you notice may include change in sensation or a tingling feeling. If you have these symptoms, find shelter as soon as you can.

- 4. Avoid alcohol and drugs.** These may alter your mental state. Drinking alcohol will cause you to lose body heat and will decrease your ability to notice temperature changes and/or symptoms of frostbite.
- 5. Be prepared.** When traveling in cold winter weather, always bring your phone with you. Keep an emergency kit in your car which includes extra clothing such as socks, gloves, boots, and blankets, shovel, first aid kit, food, and water.

Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person's health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 1/2024 University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing HF#8324.