

Frostbite

Frostbite is a risk when the weather is cold. Serious damage can develop quickly on any area of the skin, such as the ears, fingers, or toes. Get medical care immediately whenever a firm, white area with stinging or aching develops on skin that has been exposed to cold temperatures.

What is frostbite?

Frostbite occurs when the skin is exposed to below-freezing temperatures. If it's cold enough, frostbite can develop in a very short time—within minutes of exposure. To prevent frostbite, make sure your child's skin is covered when the weather is very cold and limit time spent outdoors.

A stinging or aching feeling in the skin is an important warning sign of frostbite. If the area becomes numb, serious permanent damage may occur. The most serious complication is gangrene (death of the tissue), which may require amputation (surgical removal) of the affected part. Prompt medical care is essential to maximize recovery from frostbite.

What does it look like?

- At first, the exposed area may become hard and pale. This initial stage is sometimes called *frostnip*. At this point, warming the affected area may prevent further damage. The affected skin may blister or peel over the next few days.
- Aching or stinging develops in the exposed area. Numbness develops gradually. If exposure to cold continues, the area eventually becomes hard, white, and without feeling.
- When the area is rewarmed, it may become blotchy, itchy, swollen, and red. Pain may develop during the rewarming process and can be quite severe.
- Frostbite is most likely to occur on the fingers, toes, nose, and ears, but it can occur on any area of exposed skin.
- Some other problems related to cold exposure may occur:
 - *Hypothermia (low body temperature)*. As body temperature drops, the person becomes extremely tired and uncoordinated. Immediate rewarming is essential. Take the child to the emergency room or another medical facility immediately.
 - *Chilblains (pernio)*. These are blisters or ulcers caused by exposure to cold. They occur in many of the same areas affected by frostbite.

What causes frostbite?

Frostbite occurs when the fluids inside body tissues freeze. How bad the freezing is and how long it is present determine the severity of tissue damage.

What are some possible complications of frostbite?

Gangrene is the most serious complication. The tissue of the affected body part dies and becomes infected. Without treatment, the infection will spread. Immediate treatment is needed, including surgery to remove (amputate) the infected part. Toes are most commonly affected.

What puts your child at risk of frostbite?

- Being out in cold weather without adequate protective clothing. On very cold days with a high wind-chill factor, exposed skin areas can become frostbitten within minutes.
- Drinking alcohol or smoking.
- Any medical condition that impairs blood flow, including diabetes.

Can frostbite be prevented?

- Make sure your child is dressed properly for cold weather. Have him or her wear layers of warm clothing, as well as gloves, socks, insulated boots, and a hat.
- On cold days, don't let young children play outside for too long. Have them come inside for a break and to warm up. On very cold days, keep children inside if possible.
- If your child is participating in skiing and winter sports, provide plenty of food and liquids. Putting a layer of petroleum jelly (Vaseline) on your child's nose and ears provides some protection against frostbite.
- Make sure your children know the warning signs of frostbite: cold or numbing of body parts, especially the nose, ears, fingers, and toes.

How is frostbite treated?

Before you get to the doctor:

- *Don't* rub the frostbitten area or rub it with snow! This may cause further skin damage.
- *Do* try to rewarm the area by putting it next to warm skin if possible (for example, in the armpit). However, *don't*

let the area freeze again, as thawing and refreezing may cause worse damage.

- *Don't* walk on frostbitten feet unless it's absolutely necessary to reach shelter.
- *Do* watch for signs of hypothermia (extreme tiredness, confusion). Don't let the person rest or lie down; keep moving until you reach shelter.
- *Do* seek shelter and medical care as soon as possible. If medical care is not immediately available, place the affected area of the body in a warm (*not hot*) bath. Exposure to high temperatures may damage the numbed skin.



If normal skin color and sensation do not return after rewarming, it is essential to get the person to the hospital as soon as possible.

At the hospital:

- Rewarming steps will be carried out, such as a warm water bath or warming blankets.
- Medications may be given to improve blood flow.
- During rewarming, the area may become red and extremely painful. Medications can be given for pain.

- The frostbitten area will be examined. Surgery may be needed to remove severely damaged areas (blisters, broken skin).
- It may take a while to assess the extent of the frostbite damage. If frostbite is not too severe, complete recovery may be possible. Very careful wound care is essential, including frequent dressing changes and close attention to keeping the area clean.
- If permanent tissue death occurs, the area will have to be amputated to prevent or treat gangrene. The area of the amputation will be kept as small as possible while ensuring that all dead tissue is removed.



When should I call your office?

During or after rewarming, call our office if any of the following occur:

- The presence of a hard, numb area.
- Severe pain or burning in the frostbitten area.
- Fever, "feeling ill," or other new symptoms.
- Fluid draining from sores in the frostbitten area.
- A color change in the frostbitten skin.