State of Minnesota
The Office of Ombudsman for
Mental Health and Developmental Disabilities

# Frostbite Alert

This Medical Alert is based on the work of the Medical Review Subcommittee and should be posted prominently. The Office of Ombudsman for Mental Health and Developmental Disabilities works to improve the services provided to people with disabilities by communicating important information found in the Medical Review Subcommittee's reviews of deaths and serious injuries. Thank you for promptly reporting deaths and serious injuries. You are helping us to meet our mission.

## Prevention

Be aware of the temperature including the wind chill factor. (Refer to the accompanying Wind Chill Chart.)
Wear several layers of warm clothing, as well as protection against dampness and wind.
Cover exposed skin. In cold weather, cover as much of the face as possible, without blocking vision.
Wear a hat and scarf that cover the ears.
Keep hands and feet dry.
Make sure boots and mittens do not restrict circulation.
Although anyone who is exposed to freezing cold for a prolonged period of time can get frostbite, people who are taking beta-blockers, which decrease the flow of blood to the skin, are at greater risk. So are people with peripheral vascular disease (a disorder of the arteries). Other things that may increase the risk of frostbite include: smoking, windy weather (which increases the rate of heat loss from skin), diabetes, peripheral neuropathy, and Raynaud's disease [http://www.nlm.nih.gov/medlineplus/raynaudsdisease.html].

## What To Look For

A person with frostbite on the extremities may also be subject to hypothermia (lowered body temperature). Check for hypothermia and treat those symptoms first. Please see the accompanying Hypothermia Alert and contact the client's health care provider or call 911.

Frostbite is distinguishable by the hard, pale, and cold quality of the skin that has been exposed to the cold for a length of time. The area is likely to lack sensitivity to touch, although there may be an aching pain.

Frostbite is most often seen on cheeks, ears and earlobes, fingers and toes. If only the skin and underlying tissues are damaged, recovery may be complete. However, if blood vessels are affected, the damage is permanent and gangrene can follow which may require amputation of the affected part.

Upon warming, it is common to experience intense pain and tingling or burning in the affected area.

The severity and extent of frostbite are difficult to judge until hours after thawing. Before thawing, frostbite can be classified as superficial or deep.

***Superficial:***

- Affected area is white, waxy, or grayish-yellow.
- Affected area feels very cold and numb. There may be tingling, stinging, or aching sensation.
- Skin surface feels stiff or crusty and underlying tissue is soft when depressed gently and firmly.

***Deep:***

- Affected area is cold with pale, waxy skin.
- Affected area feels cold, hard, solid, and cannot be depressed.
- Blisters may appear after rewarming.
- A painfully cold part suddenly stops hurting.

After a part has thawed, frostbite can be categorized into three categories similar to the classification of burns:

**First-degree**: Affects only the top layer of skin. It causes temporary discomfort but is not a serious injury.

**Second-degree**: Affects the top layer and the next layer of skin. It is characterized by a waxy white color and skin is cold to the touch. Clear blisters form up to 36 hours later. This needs medical attention and is a serious injury.

**Third-degree**: Affects the top layer of skin and the tissue and muscle beneath. The flesh is hard, cold to the touch and bluish-gray in color. There is no pain. As the tissue warms, the person experiences pain and swelling. The appearance of multiple, large, blood-filled blisters indicates severe and deep tissue injury. This is very serious and needs immediate medical attention.

**Please report second and third degree frostbite to the Ombudsman Office as a Serious Injury.**

## What To Do

- Get the victim out of the cold and to a warm place.
- Call 911 for immediate medical attention.
- Remove constricting clothing items that could impair blood circulation.
- If the affected part is partially thawed or the victim is more than two hours from a medical facility, use the wet, rapid rewarming method:
  1. Place the frostbitten part in warm (102 to 106° F) water. Rewarming usually takes 20 to 40 minutes or until tissues are soft. (DO NOT use water hotter than 104° F since burns can result.) Immerse the affected areas in warm (never HOT) water - or repeatedly apply warm cloths to affected ears, nose, or cheeks - for 20 to 30 minutes. Keep circulating the water to aid the warming process. Severe burning pain, swelling, and color changes may occur during warming. Warming is complete when the skin is soft and sensation returns.
  2. Provide aspirin or ibuprofen, if not otherwise contraindicated, to help control severe pain during rewarming.
  3. Slightly elevate the affected part to reduce pain and swelling.

DO NOT break any blisters.
DO NOT rub or massage the part since ice crystals can be pushed into body cells, rupturing them.
DO NOT rub with ice or snow.
DO NOT rewarm the part with a heating pad, hot water bottle, or other external heat source.
DO NOT rewarm if there is any chance of refreezing.
DO NOT allow the victim to smoke since smoking constricts blood vessels impairing circulation.

**Additional information and photos are available at:**
**http://www.nlm.nih.gov/medlineplus/ency/article/000057.htm**

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