

- Remove any jewellery, such as rings on fingers, or other material that could tighten around the area.
- If your hand or a foot is affected by frostbite, wrap it in a blanket for protection.
- If possible, avoid walking on frostbitten feet, as fractures can occur as well as chipping of the affected tissue.
- Protect from any possible re-freezing.
- Try to ensure the person is rehydrated. Rehydration means making sure a person takes in enough water to make up for lack of water in the body (dehydration).
- Treat hypothermia and any other injuries.

## Re-warming treatment

The aim is to start this as soon as possible. However, if there is a chance that the affected area could re-freeze then it is safer to keep it frozen until safe. Most frostbite will slowly thaw without any special measures and it should be allowed to do so. There should be no deliberate attempt to keep areas frozen.

If someone has been in the mountains and has developed frostbite, they may have other life-threatening problems that need to be treated first. Rapid re-warming can be done using heated water which should be kept at 37-39°C. This could take 30 minutes. The affected area should **not** be massaged, as this can cause further injury.

Re-warming is usually repeated twice a day. It is important to keep your skin warm and dry in between treatments.

## Treatment with medicines and in hospital

Painkillers are usually needed to treat pain. Re-warming can be very painful so anti-inflammatory painkillers are also given and stronger medication such as morphine may be needed. Some other medicines are also used in some cases. Sometimes 'clot-busting' medicines (thrombolytics) may be used in cases of deep frostbite to try to improve the blood supply to the affected area.

It is important that you are up to date with your tetanus vaccine. It is often common to be given antibiotic medicines if there is any sign of infection developing in your frostbite.

You may be given fluids via a drip to make sure you have enough fluid in your body (you are completely rehydrated). A surgeon will usually be involved early in care and careful drainage of some clear blisters (not blood-filled) may be needed at first.

## What happens next with frostbite?

When a body part with frostbite is thawed out, the skin turns red, may blister and can be very painful. It can also become swollen. Eventually, dead, blackened tissue that forms scabs can develop.

If frostbite is superficial, over time new pink skin will form underneath the scabs. It can take up to six months for the area to recover. There can be full recovery but some people have permanent problems including pain, numbness and stiffness in the affected area.

However, if frostbite is deep, tissue damage can be permanent and tissue loss can occur. For example, the end of a finger or toe can gradually separate off. Sometimes surgery is needed to remove dead tissue. Surgical removal (amputation) of, for example, fingers or toes may be needed. However, surgery will usually be delayed for as long as possible (usually 6-8 weeks). This gives affected tissues a chance to recover and the full extent of the injury can be seen.

## Can frostbite be prevented?

The most important way of preventing frostbite is to get out of the cold. If you are exposed to the cold, make sure that you wear appropriate warm clothing. Mittens are better than gloves. Your head, neck and face need to be covered if it is windy. Wear waterproof clothing so that your body is kept dry. Multiple layers of clothing are best. Layers act as extra insulation by trapping air that warms to your body's temperature. A warm pair of boots is also needed. You need to increase your fluid and calorie intake in cold weather.

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