PROCEDURE

Cryotherapy for the skin

Skin cryotherapy uses extreme cold to destroy selected abnormal or unwanted skin tissue.

PURPOSE
Destroy selected abnormal or unwanted skin tissue

PROCEDURE TYPE
Therapeutic, bedside freezing of skin lesions

WHERE IT IS DONE
Outpatient clinic

ANAESTHESIA
None; local anaesthetic occasionally for sensitive areas

HOW LONG IT TAKES
A few seconds to several minutes

PREPARATION
Usually none; follow facility instructions about medicines and skin care

RECOVERY
Same day; driving usually allowed without sedation

MAIN RISKS
Pain, blistering, pigment change, scarring

RESULTS
Treatment response assessed as skin heals over several weeks

Overview

Cryotherapy treats a skin lesion by freezing it. A lesion is an area of skin that looks or feels different from the surrounding skin. The treatment is also called cryosurgery, although it does not usually involve cutting.

Liquid nitrogen is the freezing agent used most often. It is extremely cold. Your healthcare professional may spray it onto the lesion or apply it with a cotton-tipped applicator or a small probe. The frozen cells are damaged and gradually replaced as the area heals.

Cryotherapy is usually a quick outpatient treatment. It is commonly used for warts, sun-damaged patches and harmless skin growths. It may also treat selected early skin cancers, but only after careful assessment.

Cryotherapy destroys tissue rather than removing a sample. This means the treated tissue

usually cannot be examined under a microscope afterward.

Why the procedure is performed

Cryotherapy may be offered to remove or control:

The reason for treatment matters. A harmless growth may be treated because it catches on clothing, becomes irritated or is unwanted. An actinic keratosis may be treated because it has a small chance of progressing to skin cancer. Selected cancerous lesions require a treatment plan that considers their type, size, depth and location.

Cryotherapy may need to be repeated. Thick warts and some other lesions are less likely to clear after one session.

- Common, plantar or genital warts
- Actinic keratoses, which are rough patches caused by long-term sun exposure
- Seborrhoeic keratoses, which are harmless waxy or rough growths
- Skin tags and some other benign growths
- Molluscum contagiosum spots
- Selected superficial skin cancers or precancerous changes

Who should and should not have it

Cryotherapy may be suitable when the lesion has been confidently identified and freezing is likely to destroy it without unacceptable damage to nearby skin.

It is not the right treatment for every skin lesion. Cryotherapy is usually avoided when the diagnosis is uncertain, melanoma is possible or a tissue sample is needed. A biopsy or surgical removal may be more appropriate because it preserves tissue for laboratory examination.

Treatment may be avoided, delayed or modified if:

Cryotherapy can leave a lighter or darker patch. This may be more noticeable and more likely to last in darker skin tones. This risk does not automatically rule out treatment, but it should be part of your decision.

Tell the healthcare professional if you have problems with circulation, wound healing, cold exposure or reduced feeling in the treatment area.

- The treatment area has active infection or is not healing normally

- Blood flow or sensation in the area is poor
- You have a condition triggered by cold, such as cold urticaria
- The lesion is close to an important nerve, tendon, eyelid or nail
- Previous treatment has not worked and the diagnosis needs review
- The expected pigment change or scarring would be unacceptable to you

How to prepare

Follow the treating facility's own instructions first, because they take priority over general information.

Most skin cryotherapy needs little preparation. You can usually eat and drink normally. Wash the area and avoid applying makeup, creams or ointments unless your facility tells you otherwise.

Bring an up-to-date list of your medicines. Cryotherapy usually causes little bleeding, so blood-thinning medicine often does not need to be stopped. Do not stop aspirin, warfarin, apixaban or another prescribed blood thinner unless the clinician managing it specifically tells you to do so.

Before treatment, ask what diagnosis is being treated, whether a biopsy is needed and what cosmetic change is expected. Tell the clinician if you have previously developed heavy blistering, marked pigment change or a poor-healing wound after cryotherapy.

What happens during the procedure

The clinician checks the lesion and confirms the treatment area with you. A local anaesthetic is not usually needed. It may be considered for a large lesion, a very sensitive location or a more intensive freezing treatment.

Liquid nitrogen is sprayed or applied directly to the lesion. The skin becomes white and frozen. You may feel cold, stinging, burning or aching. The discomfort usually peaks during freezing and shortly afterward.

The clinician may freeze the lesion once or allow it to thaw before repeating the freeze. The number and length of freeze cycles are chosen according to the lesion's type, thickness, size and location. Protecting nearby healthy skin is especially important around the eyes, fingers, nails and areas close to nerves.

The treated area usually thaws within minutes. It may then become red and swollen.

Recovery and what to expect afterward

Pain is usually mild to moderate and settles within hours, although tenderness can last longer after treatment of a thick or sensitive area. If you can safely take them, simple non-prescription pain medicines may help. Follow the facility's advice.

You can eat and drink normally after skin cryotherapy.

Normal light activity is usually possible straight away. Keep the area clean and follow the wound-care instructions you receive. A blister may form, sometimes containing blood. Do not deliberately break it unless your healthcare team has told you how. If it opens, gently clean the area and use the recommended dressing. A crust or scab may form and should be allowed to come away naturally.

You can usually drive home because sedation is not normally used. Do not drive if treatment affects your vision, your ability to use your hands or feet safely, or if you were given a sedating medicine for another reason.

Most people can return to work the same day. You may prefer time off if your work involves friction, dirt, water exposure or pressure on the treated area.

Healing takes longer after deeper freezing and on areas such as the lower legs. The new skin may look pink before gradually returning toward its usual colour.

Risks and possible complications

Expected short-term effects include stinging, redness, swelling, blistering and crusting. These are part of the skin's response to freezing rather than signs that something has necessarily gone wrong.

Possible complications include:

Deeper freezing may improve the chance of destroying a lesion but can also increase pain, blistering, scarring and pigment change.

- A lighter or darker patch of skin, which may be long-lasting
- Scarring or a change in skin texture
- Infection of the healing area
- Bleeding into a blister

- Temporary or permanent hair loss at the treated site
- Nail damage when treatment is close to a nail
- Numbness, tingling or nerve injury, especially over a superficial nerve
- Delayed healing, particularly where circulation is reduced
- Failure to clear the lesion or later recurrence

Results and follow up

The treated tissue is frozen immediately, but you will not know the full result until the skin has healed. The lesion may swell, blister, crust and then become smaller or fall away over the following days or weeks.

Because cryotherapy does not usually produce a tissue sample, there is often no pathology result. If tissue diagnosis is important, a biopsy should generally be performed instead of, or before, destructive treatment.

Routine follow-up depends on what was treated. A harmless growth may not need review if it clears and heals normally. Warts and actinic keratoses may need another treatment session if part of the lesion remains.

A treated skin cancer or precancerous lesion usually needs planned follow-up. Keep any scheduled skin checks. Contact the healthcare team if the lesion does not clear, returns, grows or changes after healing.

Alternatives

The alternatives depend on why treatment was offered.

For a suspected skin cancer, the important trade-off is often between a destructive treatment and one that provides tissue or confirms clear surgical margins.

- No immediate treatment: Reasonable for some harmless lesions. This avoids a wound and pigment change, but the growth remains and may continue to catch or irritate.
- Medicines applied to the skin: Products for warts or sun-damaged areas can treat lesions at home or cover a wider area. Treatment is usually slower, may irritate the skin and does not provide tissue for testing.
- Curettage or electrosurgery: The lesion is scraped away or treated with electrical heat. Removal may be immediate, but local anaesthetic and wound care are usually needed.

- Biopsy or surgical excision: This provides tissue for examination and can confirm whether a lesion is cancerous. It may require stitches and usually leaves a scar.
- Photodynamic therapy: A light-activated medicine can treat some areas of sun damage. It can cover a wider field but requires specialist appointments and may be painful during treatment.
- Laser treatment: This may help selected warts or benign growths. Access and cost can be limiting, and it usually does not provide a sample for diagnosis.

When to call your healthcare team

Contact your healthcare team during routine hours if the area is not healing as expected, the lesion remains after healing or you are concerned about lasting colour or texture change.

Ask for prompt medical advice if you develop:

Emergency care is rarely needed after skin cryotherapy. Seek emergency help for severe uncontrolled bleeding, fainting, trouble breathing or another rapidly worsening reaction.

- Increasing pain, warmth, swelling or redness after initial improvement
- Pus, an unpleasant smell or fever
- Repeated bleeding that is difficult to control with firm pressure
- Persistent numbness, weakness or loss of movement
- Pale, blue or dark skin beyond the treated area
- A wound that is becoming larger rather than healing

Common questions

Will I be asleep?

No. Skin cryotherapy is usually performed while you are awake and without anaesthetic. A local anaesthetic is occasionally used for larger or sensitive areas.

Can I drive home?

Usually, yes. Sedation is not normally used. Do not drive if the treatment site prevents you from seeing clearly or controlling the vehicle safely.

How painful is it?

Most people feel a sharp cold sting or burning ache during freezing. The area may throb

afterward, but this commonly settles within a few hours.

When will I know if it worked?

The skin usually needs several weeks to heal before the result can be judged. Thick lesions and warts may require more than one session.

Should I pop the blister?

Usually not. An intact blister protects the healing skin. If it breaks by itself, clean it gently and follow your dressing instructions.

Will it leave a scar?

A scar is possible, especially after deep or repeated freezing. A lighter or darker patch is more common than a raised or sunken scar and may be permanent.

Sources

- British Association of Dermatologists. Cryotherapy . Patient information leaflet.
- DermNet New Zealand. Cryotherapy: Uses, cautions and aftercare .
- Clebak KT, Mendez-Miller M, Croad J. Cutaneous cryosurgery for common skin conditions. American Family Physician . 2020;101(7):399-406.
- Royal Australian College of General Practitioners. Optimising cryosurgery technique . Australian Family Physician . 2017;46(5):270-274.
- National Institute for Health and Care Excellence. Photodynamic therapy for non-melanoma skin tumours, including premalignant and primary non-metastatic skin lesions . Interventional procedures guidance.