CONDITION

Actinic keratosis

Learn how actinic keratoses develop, what they look and feel like, how doctors diagnose and treat them, and when a changing spot needs prompt attention.

WHAT IT IS
Precancerous area of sun-damaged skin

BODY SYSTEM
Skin

MAIN SYMPTOMS
Rough or scaly patch, tenderness, itching, burning

WHAT CAUSES IT
Long-term ultraviolet radiation damage

HOW IT IS DIAGNOSED
Skin examination, skin biopsy

MAIN TREATMENT
Lesion removal and field treatments

CAN IT BE CURED?
Sometimes - lesions clear but may recur

IS IT AN EMERGENCY?
Sometimes - trouble breathing after medicine

LONG-TERM OUTLOOK
Usually manageable with ongoing skin cancer risk

Overview

Actinic keratosis is a rough or scaly area of skin caused by long-term exposure to ultraviolet radiation. Ultraviolet radiation comes mainly from sunlight, but tanning beds and sunlamps can also cause damage. The condition is sometimes called a solar keratosis.

Actinic keratoses usually form on skin that has received years of sun exposure. Common locations include the face, ears, scalp, neck, forearms, and backs of the hands. They may also develop on the lips, where the condition is called actinic cheilitis.

An actinic keratosis is not the same as skin cancer. However, it contains abnormal skin cells and is considered precancerous. A small proportion develop into squamous cell carcinoma, a type of skin cancer. Doctors cannot reliably predict which individual spot will progress, so evaluation and treatment are often recommended.

The number of visible spots does not always show the full extent of sun damage. Skin around an actinic keratosis may contain abnormal cells even when it looks normal. This wider area is sometimes called a field of sun damage.

Actinic keratoses are usually managed in a dermatology clinic or primary care setting. Treatment can remove visible lesions, treat a broader damaged area, or both. Ongoing sun protection helps limit further damage but cannot reverse all changes that have already occurred.

Symptoms

An actinic keratosis may be easier to feel than to see. It often feels like a dry patch or a small area of sandpaper on the skin.

Its appearance can vary. A lesion may be:

Some lesions disappear and later return. Others remain unchanged for months or gradually become thicker. A person may have one spot or many spots across a sun-exposed area.

Actinic cheilitis usually affects the lower lip. The lip may become persistently dry, scaly, cracked, pale, or uneven in color. The border between the lip and nearby skin can become less distinct.

Changes such as rapid growth, increasing thickness, bleeding without a clear injury, an open sore, or ongoing pain may suggest that a lesion needs prompt examination. These findings do not prove that cancer is present, but they should not wait until a distant routine visit.

- Rough, dry, crusted, or scaly
- Flat or slightly raised
- Pink, red, tan, brown, or close to the surrounding skin color
- A few millimeters across or larger
- Tender, itchy, burning, or sensitive
- Covered by a hard, horn-like surface

Causes and risk factors

Actinic keratosis develops when ultraviolet radiation damages DNA in keratinocytes, the main cells in the outer layer of skin. This damage builds over time. A severe sunburn can contribute, but repeated everyday exposure over many years is also important.

People with lighter skin are at higher risk because their skin has less melanin, the pigment that offers some protection from ultraviolet radiation. Actinic keratoses can still occur in people with any skin tone. In darker skin, changes in color may be less obvious, so texture can be an important clue.

Risk is also higher with:

People taking medicines that suppress the immune system can develop more numerous or aggressive lesions. They may need closer skin monitoring. Medicines should not be stopped or changed without guidance from the clinician who prescribed them.

Actinic keratosis is not contagious. It cannot spread from one person to another through touch.

- Older age and a long history of sun exposure
- Outdoor work or frequent outdoor recreation
- Use of tanning beds or sunlamps
- A tendency to burn or freckle rather than tan
- Light-colored eyes, blond or red hair, or significant freckling
- A previous actinic keratosis or skin cancer
- A weakened immune system, especially after an organ transplant
- Certain inherited conditions that make skin unusually sensitive to sunlight

Diagnosis

A clinician often diagnoses actinic keratosis by examining and feeling the skin. The visit may include a review of previous skin cancers, sun exposure, immune-suppressing medicines, and changes in the lesion.

A dermatologist may use a dermatoscope. This handheld device provides magnification and specialized lighting that reveal structures below the skin's surface. It does not cut or damage the skin.

Some actinic keratoses resemble squamous cell carcinoma, basal cell carcinoma, inflamed age-related growths, warts, eczema, or other skin conditions. If the diagnosis is uncertain or a spot has concerning features, the clinician may perform a skin biopsy. During a biopsy, a small sample or the entire lesion is removed after the area is numbed. A laboratory then examines the cells under a microscope.

People with several lesions may receive a full skin examination because sun damage often

affects more than one location. Photographs can help track selected areas, but an image or symptom-checking tool cannot confirm the diagnosis.

Treatment and management

Treatment depends on the number, thickness, size, and location of the lesions. The person's overall health, immune status, previous treatments, and preferences also matter. Some methods treat one lesion at a time, while others treat a larger field of damaged skin.

Cryosurgery is a common treatment for individual actinic keratoses. A clinician applies liquid nitrogen to freeze the abnormal tissue. The area may sting, blister, crust, or swell before it heals. A lighter or darker mark can remain, particularly in skin that pigments easily.

Curettage involves scraping away abnormal tissue with a small instrument. It may be combined with heat or another method to control bleeding and destroy remaining cells. This approach may be used for thick or hard lesions. A removed specimen may be sent for laboratory testing.

Field treatments address visible lesions and nearby abnormal cells. Options include prescription creams or gels containing fluorouracil, imiquimod, diclofenac, or tirbanibulin. These medicines work in different ways, such as interfering with abnormal cell growth or helping the immune system respond to damaged cells.

Redness, scaling, crusting, soreness, and temporary changes in appearance can occur during topical treatment. With some medicines, an inflammatory reaction is an expected part of the treatment rather than an allergy. The degree of reaction and treatment schedule vary by product and body area. Patients should follow the instructions supplied by their clinician instead of adjusting treatment based on another person's experience.

Photodynamic therapy is another field-directed option. A light-sensitive medicine is applied to the skin and later activated with a specific light source. The treated area may burn or sting during the procedure and can remain sensitive to light for a period afterward. The care team provides instructions about light avoidance and skin care.

Laser resurfacing, chemical peels, or other procedures may be considered in selected cases. Availability and suitability vary. No single treatment is best for everyone, and more than one approach may be used over time.

Observation may sometimes be appropriate when treatment burdens outweigh the expected benefit, but this should be a shared decision with a clinician. People with immune suppression generally need particular attention because their risk profile differs.

Daily ultraviolet protection is part of long-term management:

Sunscreen reduces additional ultraviolet exposure, but it does not replace medical assessment of an existing lesion. Anyone who is pregnant, planning pregnancy, or breastfeeding should discuss treatment choices with the prescribing clinician because the safety of topical medicines differs.

- Seek shade, especially when sunlight is strongest.
- Wear protective clothing, a wide-brimmed hat, and sunglasses.
- Apply a broad-spectrum, water-resistant sunscreen to exposed skin and reapply as directed on the label.
- Avoid tanning beds and sunlamps.
- Use a lip balm with sun protection on exposed lips.

Complications

The main medical concern is progression to squamous cell carcinoma. The chance that any one lesion will progress is difficult to predict. A lesion may also remain stable or disappear, but recurrence does not mean it can be safely ignored.

Squamous cell carcinoma is usually treatable, especially when found early. A spot that becomes rapidly thicker, forms a persistent sore, bleeds repeatedly, or becomes increasingly painful should be examined promptly.

Actinic cheilitis deserves careful assessment because it affects the lip and may be difficult to distinguish from early lip cancer.

Treatment can cause temporary pain, redness, crusting, or swelling. Less common outcomes include infection, scarring, and lasting changes in skin color. The risk depends on the treatment, the site, and how the skin heals.

Multiple actinic keratoses also indicate substantial ultraviolet damage. This is associated with a higher chance of developing additional actinic keratoses and other skin cancers in the future.

Follow up

Follow-up plans are individualized. A clinician may recheck the treated area to confirm that it has healed and that the lesion has cleared. People with numerous lesions, previous skin cancer, or a weakened immune system may need more frequent professional skin examinations.

Between visits, it can help to examine the skin regularly in good light. A mirror or help from

another person may be useful for the scalp, ears, back, and other hard-to-see areas. Note any spot that is new, changing, or different from the others.

Arrange a prompt, non-emergency appointment if a lesion:

Contact the treating clinic promptly if a treatment reaction is more severe than expected, pain is difficult to manage, or the area develops spreading redness, warmth, pus, or fever. These may be signs of infection or another problem that needs assessment.

Actinic keratosis itself is rarely an emergency. Seek emergency care for trouble breathing, swelling of the face or throat, fainting, or another sign of a severe allergic reaction after using a medicine.

- Grows quickly or becomes noticeably thicker
- Bleeds repeatedly without being picked or injured
- Develops a sore that does not heal
- Becomes persistently painful or tender
- Returns soon after treatment
- Changes in a way that concerns you

Sources

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