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QUICK GUIDE

Actinic Keratosis: A guide for General Practitioners

Actinic keratosis (AK), also known as solar keratosis, is a common skin condition caused by chronic ultraviolet (UV) exposure, that has the potential to become malignant.

GPs are often the first to encounter patients with AK so it is critical that they understand how to diagnose it, assess progression risk and support appropriate management. This guide provides a comprehensive overview for GPs, covering clinical presentation, diagnosis and treatment options in line with UK guidelines and referral criteria.

Understanding actinic keratosis

AK presents as rough or scaly erythematous lesions on sun-exposed skin (Fitzpatrick Type 1 and 2), typically in older adults with fair skin. Prevalence in the UK for individuals with at least one AK has been estimated at 19-24% in those over 60,[1] with men more affected than women.[2]

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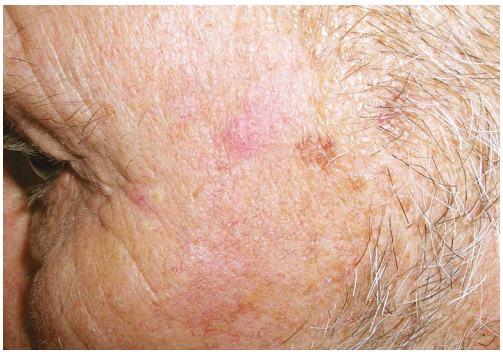

RICHARD USATINE MD / SCIENCE PHOTO LIBRARY

Image 1. Grade I AK lesion on face of male patient.

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Image 3. Grade III AK lesion on hand of 83-year-old male.

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Image 2. Grade II AK lesion on forehead of male patient.

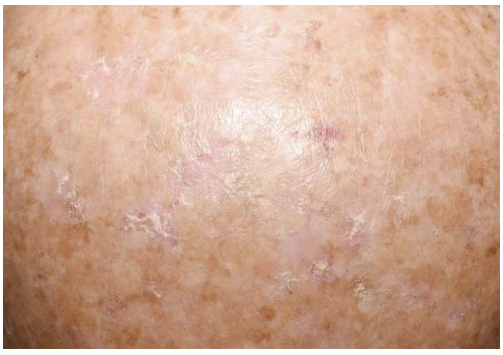

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Image 4. Field change involving AK Grade I and II lesions on scalp of 78-year-old male.

Although the risk of an AK transforming into squamous cell carcinoma (SCC) is very low, this risk increases over time and with larger numbers of lesions. One study reported a 0.025–16% annual progression risk per lesion.[3]

Risk factors[1,4]

- **Chronic and excessive sun exposure:** Cumulative long-term exposure (occupational or recreational) and tanning bed use.
- **Skin type:** Fair-skinned individuals are at increased risk (Fitzpatrick skin phototypes 1 and 2).
- **Age:** Incidence increases with age due to cumulative UV damage.
- **Immunosuppression:** High prevalence in those on immunosuppressive therapy, especially organ transplant recipients.
- **Male gender:** Men are more affected than women.

Clinical presentation

AK lesions vary in appearance and are classified as follows:[1,5]

- **Grade I (mild):** Slightly palpable, often felt more than seen, with minimal scaling or erythema. Lesions are small (<1 cm) and may be pink or skin-coloured. See image 1.
- **Grade II (moderate):** Easily palpable, scaly or warty lesions with visible erythema or hyperkeratosis. See image 2.
- **Grade III (severe):** Thick, hyperkeratotic or verrucous lesions, often with crusting or ulceration, raising suspicion of progression to SCC. See image 3.
- **Field change:** Confluent areas of several centimetres or more which may include a range of grades of AK. See image 4.

Common sites include the face, scalp (especially in balding men), ears, neck, forearms and hands. Patients may report itching, burning or tenderness, though many lesions are asymptomatic.

Diagnosis in primary care

Diagnosis is primarily clinical, based on history and physical examination. Key steps include:

- **History taking:** Assess UV exposure (e.g., outdoor work, sunbathing history), skin type, and symptoms like tenderness or rapid growth.

Ask about immunosuppression or previous skin cancers.

- **Physical examination:** Inspect sun-exposed areas using good lighting and magnification (e.g., dermoscopy, if available). Lesions often appear on a background of significant sun-damaged skin with pigment irregularity including telangiectasia, erythema.[4] Compare with unaffected skin to identify subtle lesions. Dermoscopy may reveal:
  – Pink-reddish scale.
  – Red pseudonetwork on erythematous background giving a 'strawberry-like' appearance.
  – Occasionally 'rosette-like' structures with a four-leaf clover pattern, best seen under polarised light.
  – Structures may not be visible if there is a lot of scale.[4]
- **Differential diagnosis:** Rule out basal cell carcinoma (BCC; see image 5), SCC (see image 6), seborrheic keratosis or Bowen's disease. BCC may present with a pearly edge, while SCC often presents as a firm, ulcerated nodule, with atypical appearance and rapid growth.
- **Red flags:** Atypical appearance, recent growth, bleeding, pain, elevation, ulceration, induration or failure to respond to treatment suggest possible SCC transformation, warranting urgent referral.[1,4,5] Be particularly cautious with lesions on lips where SCC features more subtle.[4]

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Image 5. Basal cell carcinoma on cheek of 73-year-old male.

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Image 6. Squamous cell carcinoma on leg of 66-year-old male.

Biopsy may be performed by dermatologists if SCC is suspected. GPs should document lesion size, location and grade to monitor progression.

The Primary Care Dermatology Society (PDCS) advises that GPs should consider referral to an accredited GPwER or dermatologist where there is diagnostic uncertainty, widespread or severe actinic damage, or extensive UV damage, and in immunosuppressed patients and the young (age <40).[4,5] Referral should be classed as urgent (two week wait). Lesions on lips have a low threshold for referral in immunosuppressed patients who are at high risk of developing SCC.

Management strategies

Management depends on lesion number, grade, patient factors and local guidelines. The goal is to treat AK to prevent SCC progression while minimising morbidity.

Prevention and patient education

- **Sun protection:** Advise broad-spectrum SPF 30+ sunscreen, protective clothing including hat, and avoidance of midday sun. Annual skin checks are recommended for high-risk patients.
- **Self-monitoring:** Educate patients to report changes in lesion size, colour and symptoms.

Conservative management

Treatment may not be necessary in some low-risk patients, e.g., those with reduced life expectancy and few lesions.[4] While many AK lesions regress, any decision not to treat should be based on whole-patient assessment, risks, comorbidities and preferences.[1]

Treatment options

Treatments are divided into lesion-directed (for isolated lesions) and field-directed (for multiple lesions or field cancerisation, where surrounding skin shows subclinical damage).

Lesion-directed therapies

The following topical therapies are options for lesion-specific treatment (a few lesions or larger numbers or lesions widely distributed).[4,5]

- **5-Fluorouracil (5-FU) 4-5% cream:** 5-FU 4% cream should be applied once daily as indicated to the whole affected area of the face, ears and/or scalp for 4 weeks; 5-FU 5% cream is applied once or twice daily to the affected area for 4 weeks.[6,7] Advise patients they may expect redness, crusting and some discomfort during treatment. 5-FU 4% formulation has comparable efficacy to 5-FU 5%.[8]
- **Tirbanibulin 1% ointment:** Applied once a day for 5 days. May cause redness, crusting and some discomfort during treatment.

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- **Combination of 5-FU 0.5% with salicylic acid 10%:** Applied once a day for 6-12 weeks; tends to leave film on skin which should be washed or peeled off before next application. Suitable for treating moderately thick (hyperkeratotic) AK.

Other lesion-specific treatments include:

- **Cryotherapy:** Liquid nitrogen applied directly to AK lesion. Effective for single Grade I–III lesions, with cure rates of 75% or higher.[1] Side effects include pain, blistering and hypopigmentation, which may concern patients with darker skin.
- **Curettage and cautery:** Suitable for Grade III AK lesions, in particular where resistant to topical treatment and where there is suspicion of early SCC.[1] Histology confirms diagnosis if SCC is suspected.

Field-directed therapies

The following are options for treatment of small areas (e.g., size of palm or forehead) with field change:[4]

- **5-FU 4-5% cream:** 5-FU 4% cream should be applied once daily as indicated to the whole affected area of the face, ears and/or scalp for 4 weeks; 5-FU 5% cream is applied once or twice daily to the affected area for 4 weeks.[6,7] As above, causes erythema and crusting; consider use of mild topical steroid, e.g., 1% hydrocortisone, after 4-week treatment period for 2-4 weeks to settle any inflammation.
- **Imiquimod 5% cream:** Applied 3 times a week (at night) for 4 weeks, with assessment of response after 4-week treatment-free interval; repeat 4-week course if lesions persist. Maximum two courses. Side effects include marked erythema and crusting (as for 5-FU, consider use of mild topical steroid after treatment period), and flu-like symptoms in some patients.
- **Tirbanibulin 1% ointment:** Applied daily for 5 days. Side effects include mild erythema and crusting.
- **Combination of 5-FU 0.5% with salicylic acid 10%:** As for lesion-directed therapy – used once a day for 6-12 weeks. Tends to leave film on the skin, which should be washed/peeled off before the next application.
- **Photodynamic therapy (PDT):** Combines a photosensitizer (e.g., methyl aminolevulinate) with red light or daylight.[1] Usually specialist-delivered though may be available in GPwER clinics.[4]

For larger areas with field change:

- **Diclofenac 3% gel:** Applied twice daily for 8-12 weeks. Less irritating than other topical treatments but with lower efficacy; more suitable for thin AK.[4]
- **Imiquimod 3.75% cream:** Applied once daily for 2 weeks, followed by 2-week treatment-free interval and then further daily application for 2 weeks (i.e., 6 weeks in total, but 4 weeks of treatment). Reduced adverse effects compared with imiquimod 5%.[4]

Response to treatment should be assessed 3 months after the end of treatment;[9] options if treatment fails include increased duration or switching of treatment, or referral and biopsy.[1,9]

Referral criteria – summary

Refer to dermatology (urgent if SCC suspected) for:

- Lesions with red flags (eg, ulceration, bleeding).
- Multiple or recurrent AK in high-risk patients (e.g., immunosuppressed, those <40).
- Poor response to primary care treatments after 3–6 months.
- Lesions in cosmetically sensitive areas (e.g., face) requiring PDT or laser therapy.

Special considerations

- **Immunosuppressed patients:** Higher risk of SCC. Consider early referral and field-directed therapies.
- **Older patients:** Balance treatment benefits against comorbidities and skin fragility.
- **Cosmetic concerns:** Discuss scarring risks with cryotherapy or PDT, especially for facial lesions.

Monitoring and follow-up

Patients and carers should be educated regarding changes that suggest malignancy. Those at high risk of malignant transformation, such as organ transplant recipients and those with at least 10 AK lesions, may warrant follow-up.[1]

Key points

1. **Diagnose accurately:** Use history, examination and dermoscopy (if available) to confirm AK and rule out SCC/BCC.
2. **Educate patients:** Emphasise sun protection of at least SPF 30 and self-monitoring.
3. **Treat appropriately:** Use topical treatments or cryotherapy for single lesions, topical therapies for multiple lesions or refer for PDT/specialist care.
4. **Monitor and refer:** Schedule follow-up and refer promptly for red flags or treatment failure.

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