



Treatment of Actinic Keratosis

Actinic keratosis or 'AK' is a form of precancerous sun damage. An AK 'lesion' is a red patch of skin with some rough gritty scale on its surface. AK usually occurs in areas with the highest sun exposure such as the face, scalp, and arms. Two complimentary techniques are used to treat it.

Spot therapy

This approach is directed towards individual lesions that can be easily seen and felt. Cryosurgery (deep freezing of tissue) is the most common type of spot treatment.

Field therapy

This approach relies on a cream or gel that is applied to the entire skin surface, such as the whole face or scalp. Many obvious and closely spaced lesions in a patch of skin indicate that the entire area has accumulated extensive sun damage. Field therapy will clear obvious lesions, but also works on the surrounding milder damage that can't yet be seen or felt.

Which approach is right for you?

If you have a small number of lesions with normal skin around them, spot therapy on its own is usually sufficient.

When used appropriately cryosurgery can clear a lesion about 75% of the time after a single treatment. There can be mild discomfort during treatment, and some blistering and redness in treated areas afterwards. Complete healing takes about 2 months, although redness sometimes takes longer to fade. The major potential side effects to consider are scarring and loss of pigmentation in treated areas (they may appear whiter than surrounding skin). Lesions that do not clear can be retreated, but risk of side effects increases.

Actikerall (5-FU 0.5% with salicylic acid 10%) is an alternative for those who prefer to treat lesions themselves. It is a prescription product that comes with a brush applicator and is painted onto a lesion daily for 6-12 weeks. Multiple lesions can be treated at the same time. It is about as effective as a single treatment with liquid nitrogen. Cost is approximately \$70.

If you have multiple closely spaced lesions in a patch of skin, it is often best to combine spot and field therapy.

Using spot therapy alone in an area with extensive sun damage can require repeated or ongoing treatment. The eventual cosmetic outcome may be suboptimal, especially for mild but extensive actinic keratosis, due to potential scarring or pigment changes. In more severe actinic keratosis, use of spot therapy alone is associated with a higher probability of going on to develop a skin cancer. A better approach is to use a field therapy, and then to spot treat areas that do not clear. If those areas still don't clear, and especially if any lesion is increasing rapidly in size and/or becoming painful, it's time for a biopsy.

Choosing an Appropriate Field Therapy

The goal of field therapies for actinic keratosis is to remove as many sun damaged skin cells as possible, so that normal skin can replace them during the healing and recovery phase. Field therapy has been shown to decrease the risk of developing skin cancer.

- All of the available options will cause some degree of skin redness, irritation, and scaliness. These are expected outcomes of treatment, not side effects.
- Generally, the intensity of the reaction will increase as the degree of damage being treated increases.
- Skin between obvious lesions may show significant changes, confirming that damage was present but not visible.
- The appearance of the skin can be quite poor during or immediately after treatment, but long-term cosmetic outcome is good to excellent. Most patients find that there is an improvement in the appearance of their skin, regardless of which option they choose.
- Patients with more severe damage may require more than one round of treatment for optimal effect.
- All treatments may eventually need to be repeated as new areas of damage appear over time. Patients with the most severe damage may need to routinely repeat treatment every year or two.
- Rigorous sun protection has been shown to decrease the appearance of new AK lesions. It is the best way of reducing the need for further treatment in the future.

There are a number of field therapy options to choose from, each with advantages and disadvantages. They are all about equally effective, but they have significant differences in terms of treatment duration, 'down-time' afterwards, long term cosmetic outcome, convenience and cost.

- Some individuals may require several different options depending on the areas being treated.
- Using several different treatment approaches on the same area may have benefit in individuals with severe disease.
- Some options may not be effective for certain individuals due to genetic factors, allergy, or intolerance of side effects. You may need to try several approaches before finding the one that works for you.

None of the available field therapy options is covered by MSP, but they are covered by many private health plans.

- The treatment of actinic keratosis is aimed at preventing progression to squamous cell cancer, which has significant potential health implications. The risk of progression in a single lesion surrounded by normal skin is very low (about 0.5%). The risk is higher when there are multiple closely spaced lesions in a patch of skin, since that is a sign of more advanced sun damage.

Treatment	Duration	Down time	Side Effects	Cosmetic Outcome	Cost	Comment
5-Fluorouracil (5FU or Efudex)	Twice a day 2 weeks (face) 3 weeks (scalp) 4 weeks (extremities)	1-2 months	Most vigorous inflammatory reaction -Itch, pain, ulceration -Scarring (rare)	Moderate	\$60 (40g)	-Longest history of use (50+ years) -Least expensive -Multiple protocols -Can be used as spot therapy
5-Fluorouracil +Calcipotriol (50:50 5FUC)	Twice a day 4 days (face) 6 days (scalp) 7-10 days (extremities)	2-4 weeks	Less vigorous inflammatory reaction then regular 5FU -Itch, pain -Ulceration (uncommon) -Scarring (rare)	Good	\$65 (10g) \$80 (20g) \$95 (30g) \$110 (40g)	-Not available as a commercial product -Similar effect as regular 5FU, but in a shorter time -Response more variable, length of treatment often needs adjustment -Can be used as spot therapy
Imiquimod 5% (Aldara)	3 times per week 4 weeks Consider repeat	2-4 weeks	Very vigorous inflammatory reaction Flu-like symptoms (rare)	Excellent	\$225/5g (Compounded) \$400/7.5g (Generic) \$490/7.5g (Aldara pump)	-Immunomodulator (20 years of use) -Range of reactivity based on genetics, protocol may need adjustment -Highly targeted, optimal cosmetic outcomes -Possible immune memory effect
Imiquimod 3.75% (Zyclara)	Daily for 2 weeks Stop 2 weeks Repeat	2-4 weeks	Less vigorous inflammatory reaction then 5% protocol Flu-like symptoms (rare)	Excellent	\$195/7.5g Compounded \$390/7.5g Zyclara pump	-Milder reaction during 2nd round of treatment (one round of treatment often sufficient) -Shorter duration of application -Simple application protocol
Diclofenac 3% in hyaluronate	Twice a day 60-90 days	None	Less irritation and inflammation then other topical agents	Good	\$70/50g -versabase gel \$140/50g -hyaluronate	-Very well tolerated -Can be used on extensive areas -Not effective for thicker lesions
Photodynamic Therapy (Metvix)	Single day treatment Daylight (dPDT) -Outdoor light exposure Conventional (cPDT) -In clinic light exposure	7-10 days	Less vigorous inflammatory reaction -Very well tolerated but highly weather and protocol dependent (dPDT) -Painful for some patients without anesthesia (cPDT)	Excellent	\$495 -dPDT \$595 -cPDT -dual exposure -with nitrous oxide anesthesia	-Physician applied in clinic -Highly targeted, optimal cosmetic outcomes -Shortest treatment duration and downtime -Potential to treat extensive areas in one session

- 1) Efficacy is difficult to compare between treatment options because of variability in how it has been measured when studied. How effective a treatment will be is dependent on how it is applied, which can vary significantly from one individual to the next. On average, when treating low grade actinic keratosis, 70-80% of the lesions in a treated area will clear, and 30-50% of treated areas will clear completely, across all options.
- 2) Pricing is current spring 2021