

## WHAT IS AN ACTINIC KERATOSIS?

By Charles Camisa, MD

Actinic keratosis (AK), also known as solar keratosis, are commonly referred to as pre-cancerous skin growths. In fact, they are the most common pre-cancerous growth of any organ in the body. Actinic keratoses (plural) are most commonly found on sun exposed areas, namely, the face, lips, bald scalp, and backs of hands and arms.

### **What do AK's look like?**

AK's are usually small red slightly raised bumps with attached dry scaly skin or scab. The scab or crust is usually tightly adherent or concave like a cornflake, such that attempting to remove it yourself might cause pain or bleeding. Some patients report abnormal skin sensations such as pain, itching, burning, or tingling. Some patients only complain about the abnormal feel or texture of their skin such as granular, gritty, or nutmeg-grater-like. AK's are usually multiple, and sometimes they can be felt more easily than seen.

### **What is the cause of AK's?**

Based on their typical locations, the most obvious cause of AK's is chronic excessive sunlight exposure accumulated over a period of years. Less common causes of AK's are X-rays (radiation) and industrial chemicals such as arsenic.

### **What is the risk of AK's?**

AK is the first step in the development of squamous cell carcinoma, a type of skin cancer that has the biologic potential to spread. However, the majority of AK's do not progress to skin cancer. Although it has been estimated that up to 10% of AK's transform into squamous cell carcinoma, it is virtually impossible to predict which ones will progress, regress, or stay the same. Therefore, it is the dermatologist's goal to treat all or as many AK's as possible to prevent cancer.

### **How are AK's treated?**

We are fortunate that there are many effective treatments for AK's. For patients who have several scattered well-defined AK's, liquid nitrogen cryosurgical destruction is usually the treatment of choice. This method is quick, bloodless, and effective. The top layer of skin cells where the precancerous cells reside is killed by the extremely cold temperature of the liquid nitrogen. The only side effects are a temporary burning sensation and some decreased pigmentation of the skin. Healing takes place in about 1-2 weeks, and the local care is straightforward.

There are three different topical creams that have been approved and are marketed for the treatment of AK's. Each one works well by a different mechanism of action. These medicines are more likely to be prescribed when a patient has too many lesions to count, or an entire area or segment of the body shows obvious severe sun damage (such as face, bald scalp, upper chest, backs of arms or hands), if the AK's are not easy to delineate from normal skin, or if the patient simply cannot tolerate the discomfort of

cryosurgery or declines to receive liquid nitrogen. The three topical drugs are 5-fluorouracil (Efudex, Carac), diclofenac (Solaraze), and imiquimod (Aldara).

*The three most commonly prescribed topical creams for actinic keratoses (AK's) are:*

1. **5-Fluorouracil (5-FU)**, “chemotherapy in a cream,” selectively kills the more rapidly dividing skin cells which are generally the precancer and cancer cells. Efudex or Carac cream is applied once or twice daily to the entire affected area of involvement for 2-4 weeks. It can cause quite a bit of redness, swelling, and crusting in the treated areas along with some stinging and burning. The cure rate is high and usually yields an excellent end result.

2. **Imiquimod** stimulates the patient’s own immune system to produce the natural cancer fighting chemical interferon which destroys the abnormal cells. Aldara cream is applied 2-3 times per week to the affected area for up to 16 weeks. It is recommended to treat more limited areas of skin per course of treatment than with Efudex. Aldara may also cause a significant amount of redness, erosions, and pain, but it is generally well-tolerated and gives good results after healing.

3. **Diclofenac (Solaraze gel)**, a non-steroidal anti-inflammatory drug, is combined with hyaluronic acid, a natural substance in the connective tissue of skin. Its mechanism of action in treating AK’s is not known, however, it produces much less inflammation in the skin than 5-FU or imiquimod. It also takes much longer to achieve results because it is applied twice daily for 2-3 months. My impression is that the results are inferior to the first two listed here.

### **What is new?**

The latest innovation for treating multiple AK’s is **Photodynamic Therapy (PDT)**, which patients call the “blue light special.” This treatment combines the application of a light sensitizing chemical called Levulan to the affected skin with a special blue light source. Neither treatment used alone would have any effect. After the chemical incubates on the skin for about an hour, it is selectively taken up by the abnormal skin cells. The skin is then exposed to the blue light for about 16 minutes, and the precancer and cancer cells are targeted for destruction. Patients may experience stinging and burning and eventually redness and swelling in the treated areas for a few days. Sun exposure must be strictly avoided for the first 48 hours after the procedure. Healing is usually complete in one week. Results are comparable to 5-FU with the added bonus of some noticeable rejuvenation of the skin.

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## **Actinic Keratoses: Prognosis and Prevention**

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**The prognosis for treated actinic keratoses (AK’s) is excellent.** However, the patients who have many AK’s have accumulated so much sun damage in their lifetimes that it is very likely they will eventually develop new or recurrent AK’s. Especially if they do not change some habits. The treatments described in the previous blogs may have to be repeated several times and may even fail in some patients. A failure to respond may indicate that the precancerous AK has already progressed into a

squamous cell cancer. Moreover, some patients may develop other skin cancer types such as basal cell carcinoma and melanoma directly from sun-damaged skin without first beginning as AK's. A skin biopsy will help to answer the question and determine the next step in treatment.

**Can AK's and skin cancer be prevented?** It is really never too late to begin practicing sun-safety habits.

1. Seek the shade, especially between 10am and 4pm.
2. Try not to burn.
3. Use a sunscreen with SPF #30 or higher daily.
4. Apply the sunscreen 30 minutes before going out and reapply after swimming or perspiring heavily.
5. Avoid ultraviolet tanning salons.
6. Cover up with clothing, broad-brimmed hat, and ultraviolet blocking glasses (protects the eyes too).
7. Check your own skin head to toe every month in the mirror.
8. Get a professional skin exam every year.