



## EFUDEX INSTRUCTIONS

### WHAT IS EFUDEX?

1. Efudex is a FDA approved cream to treat Actinic Keratosis (precancerous, scaly, red bumps) and Superficial Basal Cell skin cancer. Efudex is also effective against warts.
2. Efudex cream primarily destroys rapidly dividing cells and precancerous skin cells.
3. Efudex has been safely used by millions of patients for decades.
4. Please inform your healthcare provider if you have a history of cold sores on the lips or oral herpes infection.
5. Please do not use Efudex if you are currently pregnant, are attempting pregnancy, or are breast feeding.

**HELPFUL PRODUCTS:** The following products may help minimize adverse reactions from Efudex.

1. MILD SOAP – *Dove Sensitive, Cetaphil Gentle Cleansing Bar, & Aveeno Moisturizing Bar* are three of the mildest cleansers available. These products are highly recommended during your Efudex experience.
2. SOFT PILLOWCASE – During Efudex treatment, your skin can become eroded and sensitive to regular pillowcases. *Microfiber* or *Satin* pillowcases are extremely soft for maximum comfort and quality sleep during your Efudex treatment.
3. PETROLEUM JELLY – Please purchase additive & fragrance free, 100% Petroleum Jelly. Petroleum Jelly is one of the few topical products that may be safely used with Efudex. It relieves itching, burning, & tenderness.
4. ELECTRIC RAZOR – As facial skin becomes inflamed during Efudex treatment, shaving can become unpleasant with a conventional razor. Some men prefer to lightly shave their facial hair with an electric razor.

### DURING EFUDEX TREATMENT

1. EFUDEX APPLICATION –
  - a. Please cleanse your treatment area with a mild soap.
  - b. Please allow 10 minutes for your skin to completely dry.
  - c. With clean fingers, please apply a thin layer of Efudex to your treatment area **twice daily (some formulations require once a day application)**.
  - d. Wait 1.5 hours before bed to enable complete absorption of Efudex and prevent wiping off on sheets.
  - e. Please apply Efudex twice daily for **2 – 4 weeks** as directed by your provider.
  - f. Please avoid applying Efudex to the following areas: eyes or eyelids.
2. PETROLEUM JELLY – Petroleum Jelly soothes itching, burning, tenderness, scabbing, and eroded skin. This is especially crucial at night to achieve the highest quality of sleep.

**Comment [T1]:** Please discuss the Risks, Benefits, & Alternatives of Efudex with your patient.

If possible, please print the Efudex Instructions™ patient handout on the front and backside of a single sheet of paper for convenience.

Many patients remember only a fraction of your verbal counseling. This patient handout will help the patient complete a 30 day course of treatment, achieve optimal therapeutic results, minimize the risk of complications, improve sunscreen compliance, & strengthen the provider-patient relationship.

I often have patients read this handout as I am writing the encounter note or preparing prescriptions. Therefore, the patient has an opportunity to familiarize themselves with Efudex treatment and ask questions.

### TO PRINT THIS DOCUMENT WITHOUT

**COMMENTS:** Please go to “Review” tab. Next click the “Show Markup” button and deselect “Comments”. Now you may print this handout without the comments.

**Comment [T2]:** Efudex is topical 5-Fluorouracil (5%), an antimetabolite. 5-Fluorouracil inhibits thymidylate synthase. This blocks the conversion of deoxyuridine monophosphate (dUMP) into deoxythymidine monophosphate (dTMP) during DNA synthesis. In addition, 5-Fluorouracil is an abnormal uracil base pair that interrupts RNA synthesis and cell growth. See Perlis C, Pan T, McDonald C. Cytotoxic Agents. In Wolverton S, *Comprehensive Dermatologic Drug Therapy*, 2<sup>nd</sup> edition. Philadelphia: 2007. p 213. Also see Tsai E, Zackheim H, and Kim Y. Topical & Intravesicular Chemotherapeutic Agents. In Wolverton S, *Comprehensive Dermatologic...*

**Comment [T3]:** Please consider prophylactic valacyclovir or acyclovir vs. aggressive follow-up for patients with a history of oral herpes simplex virus. Please be sure to adjust oral antiviral medications for impaired creatinine clearance in the elderly population.

Please avoid initiating Efudex treatment during an active herpes simplex infection, pregnancy, or lactation. Efudex is pregnancy category X.

**Comment [T4]:** Petroleum Jelly is a patient’s greatest tool in relieving pruritis, burning, and other adverse reactions.



- a. Please apply Petroleum Jelly 1.5 hours after applying Efudex to allow complete absorption of Efudex.
- b. Please wash off Petroleum Jelly prior to your next application of Efudex.
  - i. Efudex must be applied to clean skin to absorb correctly.
3. SUN AVOIDANCE – Skin is extremely vulnerable to further sun damage during Efudex treatment. Unfortunately, you may not use a quality Sunscreen on the treatment area. Because your immune system is activated, Sunscreens worn during Efudex treatment can cause lasting skin allergies.
  - a. Therefore, please minimize sun exposure (including driving) from the hours of 8 am to 6 pm.
  - b. Wear Sun Protective Clothing (wide brimmed hats & long sleeve, UV-protective attire with UPF 50+).
    - i. Columbia Sportswear Company and [www.coolibar.com](http://www.coolibar.com) make excellent Sun Protective Clothing.
4. AVOID COSMETICS, MOISTURIZERS, AND OTHER TOPICAL MEDICATIONS – Due to immune activation, these products may cause lasting skin allergies.
  - a. Petroleum Jelly is one of the few topical products that you may safely use.
5. FOLLOWUP – Your provider may want to examine you several weeks after beginning Efudex.
6. ZYRTEC (pills) – Some providers prescribe daytime Zyrtec to relieve itching and burning.
7. ATARAX (pills) – Some providers may prescribe Atarax at night to relieve itching, burning, and insomnia to achieve the highest quality of sleep. Atarax is a cousin of Benadryl, and it can make a person *drowsy*.
  - a. Therefore, please avoid driving within 10 hours of taking Atarax.

**Comment [T5]:** I usually examine patients several weeks after initiating Efudex treatment to monitor for complications and provide encouragement to finish the course.

**Comment [T6]:** Zyrtec & Atarax can increase a patient's quality of life during Efudex treatment.

**Comment [T7]:** Please be sure to check the patient's medication list before prescribing Atarax (hydroxyzine). Atarax should not be prescribed in the setting of other medications that cause sedation or respiratory depression such as Ambien, benzodiazepines, doxepin, benadryl, opiates, etc.

#### WHAT TO EXPECT

1. COMMON SYMPTOMS – You may experience the following symptoms: *itching, burning, swelling, tenderness, redness, and insomnia* during Efudex treatment. You may notice superficial *erosions* (redness with loss of the top layer of skin) and even mild *scabs*. It usually takes 1 week for these symptoms to begin and depends on your extent of actinic damage.
  - a. Petroleum Jelly soothes itching, burning, and tender skin.
    - i. It is very helpful to apply Petroleum Jelly before bed to achieve quality sleep.
  - b. Zyrtec and Atarax can help improve your sleep quality by relieving itching and burning.
  - c. You may take Tylenol 325 mg by mouth every 6 hours as necessary to relieve discomfort.
  - d. Please wear a wide-brimmed hat if treating your face or long sleeve clothing if treating your arms.
  - e. <http://www.sannerud.com/people/efudex/> is an excellent website that an Efudex patient created. This patient photographed himself everyday during



his treatment. He demonstrates the brisk Efudex reaction – red skin and mild scabbing after a full course of Efudex.

2. **ULCERATION** – Rarely, deep craters that bleed can occur. Please do the following:
  - a. Please discontinue applying Efudex on the ulcerated skin.
  - b. Please apply Petroleum Jelly to the ulcerated skin 6 times a day to speed healing.
  - c. Please call your healthcare provider at the following phone number: (970-556-9319).
  - d. Please continue using Efudex on your non-ulcerated treatment area.
3. **INFECTION** – Rarely, infections can appear as pus discharge with or without fever.
  - a. If you suspect you may have an infection, please discontinue Efudex and call your provider.
4. **OTHER SYMPTOMS** – Fatigue, nausea, vomiting, diarrhea, and mouth or throat ulcers have been reported.
  - a. If you experience these symptoms, please call your healthcare provider.

#### AFTER EFUDEX TREATMENT

1. **APPEARANCE** – After Efudex treatment, you may continue to experience itching, burning, swelling, redness, erosions, or scabbing for over a week.
  - a. Scabbing resolves within 10 – 14 days following Efudex treatment.
  - b. Redness disappears over several months.
2. **PETROLEUM JELLY** – A thick coat of Petroleum Jelly should be worn at all times to speed healing.
  - a. Please apply Petroleum Jelly to your treatment area 6 times a day so that your skin is always greasy.
  - b. Please continue Petroleum Jelly for 10 – 14 days until your scabs have resolved.
3. **SUN AVOIDANCE** – Please continue Sun Avoidance for at least 3 weeks after your Efudex treatment.
4. **HEALTHY, SMOOTH SKIN** – With proper sun protection, you may experience months to years of healthy, smooth skin without Actinic Keratosis or skin cancers.

**Comment [T8]:** These symptoms can occur in patients with a Dihydropyrimidine Dehydrogenase (DPD) enzyme deficiency. Approximately 8% of patients are partially affected by this autosomal recessive enzyme deficiency. Normally, DPD reduces thymine and uracil during pyrimidine catabolism.

See Fluorouracil Drug Information at [www.uptodate.com](http://www.uptodate.com). Also see Tsai E, Zackheim H, and Kim Y. Topical & Intravesical Chemotherapeutic Agents. In Wolverton S, *Comprehensive Dermatologic Drug Therapy*, 2<sup>nd</sup> edition. Philadelphia: 2007. p 643-646. In addition, Wikipedia has an easily accessible article on DPD and DPD deficiency.