

# Skin Reactions

## Side Effects – Symptoms & Solutions

*Includes: Dry Skin, Flushing, Hyperpigmentation, Nail Changes, Photosensitivity, Radiation Recall, Rash.*

### What are skin reactions?

Skin reactions to drug therapy are extremely common. All drugs may induce skin reactions, although if they do occur they are usually mild, however, some skin reactions are serious and potentially life-threatening. Because of this, all drug-associated rashes should be reported to your health care professional for evaluation.

The cause of skin reactions is often unknown although many have an allergic or toxic basis. Skin reactions can be independent of dose and can persist long after the drug causing the allergic reaction has been discontinued. For example, with a hypersensitivity reaction to penicillin, the skin condition may worsen for seven to ten days after the drug has been stopped. It is especially important that allergic skin reactions are correctly identified, since future exposure to the same drug could cause much more severe skin reactions.

Toxic reactions, in contrast, are dose-dependent and skin reactions generally resolve fairly soon after the drug causing the reaction is stopped.

*There are factors that may increase the risk of developing skin reactions which include:*

- Liver disease
- Kidney disease
- Systemic lupus erythematosus (lupus)
- AIDS

Drug allergies are more common in the elderly and may be related to development of an immune response or to an increased exposure to drugs. The way drugs are given can influence drug allergy; in general, topical application (applied directly on the skin) has the greatest likelihood to induce skin reactions, followed by intravenous (IV), then medications given by mouth.

## DRY SKIN

### What is dry skin?

Dry skin is characterized by mild scaling, roughness, feeling of tightness, and possibly itching. With dry skin reactions, the skin cells at the lower layer of the epidermis (top layer of skin) are dry and flat, with no moisture. Factors that contribute to dry skin reactions include:

- Dehydration
- Extreme weather conditions
- Perfumed products
- Allergy

When a moisturizer is used on the surface of the skin, the product penetrates and restores moisture to the skin cells. Creams and lotions are effective ways of restoring moisture following dry skin reactions. Ointments are designed to be a barrier and stay on the surface of the skin for protection against harsh elements.

### Things you can do to manage dry skin reactions:

*Avoid:*

- Perfumed products
- Bubble bath
- Soap, particularly perfumed soaps
- Soap-free cleansing bars, these can be drying and potentially irritating

- Anything that you think you might be allergic to (common allergy-causing agents: detergents, plants, pets, harsh chemicals in household cleaning products, rubber gloves, jewelry, feathers, grass and pollen, artificial fingernails and adhesive)

#### *Personal Hygiene:*

- Dry yourself by patting your skin with a soft towel, rather than rubbing vigorously.
- Use mild, non-perfumed, non deodorant soaps such as Dove, Basis, Aveno or Neutrogena dry skin soaps; or low allergy soap or soap substitute – cream, cleaning gels.
- Take showers or short, cool baths instead of long, hot baths.
- Shaving for men – if dry skin reactions occur on your face, skip a couple of days (over a weekend) to give your face a rest. Do not use perfumed after-shave.
- Shaving for women – if after shaving your legs a rash appears do not shave again until the skin has completely healed.

#### *Clothes:*

- Wear cotton clothes where possible next to the skin, rather than wool, synthetic fibers, or rough clothing.
- Wash clothes in mild detergent.

#### *Weather:*

- Extreme weather conditions can worsen and cause dry skin reactions (hot and sunny, cold and windy.)
- Wear gloves in cold weather.
- Avoid sun exposure. Wear SPF 15 or higher sunblock and protective clothing.

#### *Fluids:*

- Drink plenty of fluids to keep your body well hydrated. You should drink 2-3 quarts of non-alcoholic, non-caffeinated beverages daily, unless you are instructed to restrict your fluid intake.

#### *Lotions and creams:*

- Use moisturizers regularly. Moisturizers prevent water loss by layering an oily substance over the skin to keep water in or by attracting water to the outer skin layer from the inner skin layer. Substances that stop water loss include petroleum, mineral glycerin, propylene glycol, proteins and some vitamins.
- Lanolin-based creams, lotions, ointments, etc., such as Udderly Smooth, Eucerin, Bag Balm
- Bath oils such as baby oil, mineral oil, Herbal Bath Oil, Lubriderm Bath Oil, or Neutrogena Body Oil can be applied to your wet skin after you emerge from the bath or shower.

#### *Protect hands:*

- Always rinse and dry hands carefully, particularly after contact with cleaning products. Wear rubber or vinyl gloves to protect hands, underneath wear thin cotton gloves. Do not wear for long periods of time. (Wash the cotton gloves frequently.)

**Note:** We strongly encourage you to talk with your health care professional about your specific medical condition and treatments. The information contained in this website about skin reactions and other medical conditions is meant to be helpful and educational, but is not a substitute for medical advice.

## **FLUSHING**

### **What is flushing?**

Flushing is a temporary redness of the face and neck caused by dilation of the blood capillaries. Flushing is due to a variety of causes such as certain chemotherapy drugs. Carcinoid tumors can also cause flushing as part of carcinoid syndrome. Other causes are alcohol and other drugs.

- Several chemotherapy drugs are associated with this flushing such as: asparaginase, bleomycin, carboplatin, carmustine, cisplatin, cyclophosphamide, dacarbazine, diethylstilbestrol, docetaxel, doxorubicin, fluorouracil, lomustine, paclitaxel, plicamycin, procarbazine, and teniposide.
- Biologic therapies associated with flushing include interleukin-2.

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## HYPERPIGMENTATION

### What is hyperpigmentation?

Hyperpigmentation is a darkening of the skin. This can occur as an overall darkening of the skin, or it can be localized. This may be connected to phototoxic reaction where the areas exposed to light may have a golden-brown or slate-grey color change. Some drugs will cause changes in the nails, darkening of the tongue, gums, and over finger joints. Most skin reactions occur within two to three weeks of initiation of chemotherapy and resolve 10 to 12 weeks after stopping treatment.

- Hyperpigmentation most commonly accompanies use of alkylating agents and antitumor antibodies.
- Methotrexate may produce a characteristic "flag sign" on the hair-horizontal hyperpigmented bands alternating with normal hair color in light-haired individuals.
- Discoloration can occur in areas of pressure, such as under tape or dressings. This has been reported with busulfan, cyclophosphamide, cisplatin, ifosfamide, thiotepa, docetaxel, and etoposide.
- Serpentine hyperpigmentation: Some chemotherapy drugs (fluorouracil, vinorelbine, and some combination regimens) given intravenously (IV) can cause a darkening of the venous pathways up the arm. This darkening over the veins will eventually fade. The cause of these skin reactions is currently unknown, but may involve direct toxicity, stimulation of melanocytes (cells in skin responsible for skin color,) and post inflammatory changes. Although skin reactions may occasionally be permanent, in most cases, discoloration will gradually resolve after chemotherapy is stopped.

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## NAIL CHANGES

### What are nail changes?

There are several types of nail changes which may occur in patients receiving chemotherapy. The most common of these skin reactions seen, particularly in dark skinned persons, is hyperpigmentation (darkening.) Vertical or horizontal bands, or general darkening. Drugs in which these skin reactions been known to occur include:

- Belomycin, cyclophosphamide, daunorubicin, doxorubicin, fluorouracil, hydroxyurea, aminoglutethimide, busulfan, cisplatin, dacarbazine, docetaxel, idarubicin, ifosfamide, melphalan, Methotrexate, mitomycin, and mitoxantrone.
- This hyperpigmentation generally grows out with the nail.

*Other nail changes include:*

- Beau's lines (horizontal depressions in the nail plate.) these skin reactions can occur a few weeks after a course of chemotherapy
- Mee's lines (white horizontal discoloration of the nail plate involving the entire nail width)
- Leukonychia (white horizontal discoloration involving partial nail width)
- Onycholysis (the separation or loosening of a fingernail or toenail from its nail bed)
- Onychodystrophy (a malformation of the nail)

All of these skin reactions are temporary and eventually resolve once the drug causing the change is stopped and the affected nails grow out (this may take weeks to months.)

*Things you can do to manage nail changes:*

- Nails should be trimmed and kept clean.
- Gloves should be worn for housecleaning and gardening to minimize damage and prevent infection.
- Nail polish and imitation fingernails should not be worn until the nails have grown out and returned to normal.

### Drugs that may be prescribed by your doctor for skin reactions:

- Antibiotics may be necessary to treat infections in the nail beds.

Notify your doctor or health care provider if:

- You suspect an infection of the nails.

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## PHOTOSENSITIVITY

### What is photosensitivity?

Photosensitivity is an enhanced skin response to ultraviolet radiation (sunlight). There are three types of photosensitivity reactions: phototoxic, photoallergic, and UV recall reaction.

- *Phototoxic reactions* are common photosensitivity reactions and can be produced in most individuals given a high enough dose of drug and sufficient light exposure. These photosensitivity reactions are usually evident within 5-20 hours of exposure and resembles an exaggerated sunburn (redness, swelling, blistering, weeping, and peeling). The rash is confined to areas exposed to light. Drugs associated with these photosensitivity reactions are dacarbazine, fluorouracil, methotrexate and vinblastine.
- *Photoallergic reactions* are less common than phototoxic reactions. A photoallergic reaction is similar to a phototoxic reaction but the reaction may spread beyond area's exposed to light. A drug that may have this photosensitivity reaction is flutamide.
- *UV recall reaction* causes a sunburn reactivation if the drugs are administered within 1 week of obtaining a sunburn. This reactivation may actually be more severe than the primary sunburn.

### Things you can do to manage photosensitivity:

#### *Prevention:*

- Use sunscreen or protective clothing when out in the sun, even on cloudy days.
- Sunblock with physical barrier such as zinc oxide, may be needed.
- Avoid tanning booths.
- Being able to tan previously without damaging burns or skin reactions to sunlight does not mean that skin will respond the same way while on chemotherapy or radiation.

#### *Reduce inflammation:*

- Use cool wet dressings.
- Apply lotions.

### Drugs or treatments your doctor may recommend or prescribe for photosensitivity reactions:

- Topical creams containing corticosteroids and/or anti-itching properties.
- If a reaction is severe systemic corticosteroids may be prescribed.

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## RADIATION RECALL

### What is radiation recall?

Radiation recall is a redness that can occur at the site of previous radiation when certain chemotherapy drugs are given. Radiation recall resembles severe sunburn in the area of the previous radiation.

- This effect of radiation recall can occur from 8 days to 15 years after radiation therapy.
- These skin reactions are most commonly associated with antitumor antibiotics such as dactinomycin and doxorubicin.
- Treatment of radiation recall is symptomatic with an effort to avoid or treat secondary infections that may occur. Sometimes corticosteroids may be used in order to allow continuation of offending drug without further radiation recall effects.

### Things you can do to manage radiation recall:

- Stay out of the sun and avoid tanning beds.
- If you must be out in the sun, use protective clothing and sunscreen with SPF 30 or higher over previously radiated skin.

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## RASH

### What is a rash?

A rash is a general term for skin reactions. More specific terms are used to describe what the rash looks like such as:

- Erythematous – redness
- Macular – small, distinct, flat areas
- Papular – small raised lesions

A macular-papular rash is the most common type of drug-induced skin reaction. These skin reactions usually start on the trunk. The arms and legs are often involved but the face may be spared. The rash is usually bright red in color and the skin may feel hot, burning or itchy. This rash can occur with almost any drug at any time up to two to three weeks after the drug has been given, but are most common within the first 10 days.

A severe form of this type of rash would be a wide spread, red rash that blends together. Often associated with peeling of the skin, and desquamation (areas of wet or dry open sores.) There may be other symptoms such as fever, lymph node enlargement, and loss of appetite.

*Hives:* raised, itchy, red blotches or wheals which may be pale in the center and red around the outside. This is also a common drug reaction usually occurring within 36 hours of drug exposure. The lesions rarely last for more than 24 hours. However, on giving the drug again, the skin reactions may develop within minutes.

Management of hives involves stopping the causative agent and treatment with antihistamines.

Swelling or edema may also occur with hives as part of an allergic reaction. It is a vascular reaction resulting in an increased ability for fluid in the cells to “leak” into the layers of the skin causing swelling. These skin reactions happen much less often than hives alone. The tongue, lips, or eyelids are generally affected. Swelling of the airways can result in difficulty breathing, closing off of the airway, and death. If swelling is happening and any sign of breathing difficulty, **seek help immediately.**

*Acne:* Some drugs can cause or make acne worse. The acne like rashes are papular and pus-filled, but blackheads are usually absent. Drugs commonly associated with this type of rash are corticosteroids, androgens (in females), dactinomycin, vinblastine, oral contraceptives.

*Psoriasis:* Typically described as reddish patches covered with large dry silvery scales. Some drugs are associated with psoriasis in persons with no prior history of this skin condition (interferon alfa) or occasionally can worsen pre-existing psoriasis (interferon alfa and interleukin-2.)

*Purpura:* A condition characterized by bleeding under the skin or mucous membranes. This results in the appearance of purplish spots or patches. The main cause of these skin reactions is thrombocytopenia (very low platelet count.)

*Steven-Johnson syndrome (SJS):* A very severe, uncommon skin reaction that includes flu-like symptoms (fever, chills, generalized aches, fatigue) and extensive skin reaction with a variety of patterns. Skin reactions may include skin blistering and erosions. This syndrome is frequently drug induced. A large number of drugs have been implicated as a cause of SJS, most common are penicillins, tetracyclines, sulphonamides and NSAIDs (non-steroidal anti-inflammatory drugs.) Drugs that may be responsible for these skin reactions should be stopped immediately. Patients are usually hospitalized to receive IV corticosteroids, fluid replacement and antibiotics, if needed. Drug rechallenge is never justified.

