Sun Protection After a Burn Injury

This factsheet explains the importance of sun protection as you recover and heal from a burn injury. It describes how sun exposure affects your skin, ways to limit sun exposure, and offers resources to learn more about protecting yourself.

The sun has many beneficial properties, but the sun emits three types of ultraviolet (UV) light that can harm skin and has been linked to skin cancers (basal and squamous carcinoma, melanoma) and vision problems (cataracts and macular degeneration). Healed burns, donor sites and skin grafts are more sensitive to sunlight.

Your Burn Injury and Sun Exposure

Burn skin sensitivity. Healed burns or skin grafts may be extremely sensitive to sunlight and may sunburn more severely even after short periods of time in the sun compared to before your injury. Sun sensitivity after a burn injury may last for a year or more. In addition, some medications can cause you to be more sensitive to the sun.

Pigmentation. The color of our skin is related to the amount of melanin that each of us has in our skin. When someone has a second degree or deeper burn injury, the pigment of the skin is affected because melanin is located in the epidermis (the outer most layer of skin). With a burn injury, that pigment is lost. With healing, the pigment may return, but this process is unpredictable. Often, newly healed skin appears pink and unpigmented. As the scar matures, the skin may regain pigment. The deeper the burn wound, the slower the re-pigmentation process. We cannot predict if there will be a color difference once the healed skin has matured. Some people will have lighter skin (called hypo-pigmented) and some, darker (called hyper-pigmented).

Because re-pigmentation can be affected by UV light (sunlight), suntans in newly healed skin may not fade when the rest of the tan goes away. For a burn that needs a skin graft to heal, the grafted area may become darker than the surrounding uninjured skin. The reason for this is not clear, but sun protection is encouraged to prevent pigment changes that may result in permanent, darker skin coloring within the burn wound for at least one year after a burn injury.

People with dark skin. Even if you have never had issues with sun exposure or sunburn in the past, your areas that were burned or skin grafted are now susceptible to sun burn and pigmentation changes.

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Heat stroke/ Dehydration. Your body uses sweat glands as a way to cool itself when overheated. Sweat comes out of your pores and cools your body as it evaporates. In deep second degree burns or burns that required a skin graft, your healed skin may not have sweat glands, and your ability to sweat may be limited. People with large burn injuries who do not sweat normally might have an increased risk for heat exhaustion or heat stroke with exposure high temperatures or physical exertion. Heat exhaustion or stroke happens when your body overheats. Symptoms of heat stroke include: throbbing headache, dizziness, feeling light-headed, nausea/vomiting, lack of sweating despite the heat. You might also become dehydrated. Dehydration happens when your body does not have as much water as it needs. If you feel like you are overheating, move to a cooler temperature or into the shade and drink cool water or a sports drink.

How can you protect your skin from exposure to the sun?

Returning to your normal activities (e.g., walking outside, hiking, swimming, biking, gardening) after a burn injury is important and strongly encouraged. However, if you plan to be outside for long periods of time, using all methods of sun protection is the best way to protect your skin. Dermatologists (skin doctors) recommend using a combination of sun avoidance, protective clothing, and sunscreen/sunblock to limit sun exposure and to combat sun damage.

Sun Avoidance

It is nearly impossible to stay out of the sun and be active. But you can choose when you are outside. The sun is strongest from 10 a.m. to 4 p.m. or when your shadow is shorter than your height. Don't let clouds fool you. Up to 80% of harmful UV sunrays can penetrate clouds. Also, keep in mind that UV rays reflect off sand, water, snow, and ice. Certain types of UV light are stronger at higher altitudes. Thus, limiting peak sun exposure and being aware of your environment are key to preventing sun damage to your skin. Seek shade when you are outside.

What about tanning beds? Tanning beds should be avoided, as they emit the same amount (if not more) cancer-causing UV light. And they will cause pigmentation that might not fade.

Protective Clothing

Protective clothing is a good way to protect yourself and your healed skin from the sun. It is important to know that not all fabrics and clothing are protective. When choosing clothing as a means to provide protection from harmful UV rays, consider the following:

- The tighter the weave of the fabric, the better the protection. For example, fabrics such as denim and wool have a tighter weave and provide better protection than lighter fabrics like linen.
- Loose clothing tends to provide better protection than tight or stretched clothes.
- Wet fabrics provide less protection than dry fabrics.
- Synthetic and semi-synthetic materials tend to provide better protection than bleached or refined cottons.
- Dark clothing provides better protection.
- Specialized, sun-protective clothing made from fabric that has been embedded with chemicals that deter or absorb harmful UV rays is increasingly available at sporting stores and online. An Ultraviolet Protective Factor (UPF) rating system that is listed on the tag describes the degree of protection the clothing provides against UV light. Specialized clothing with ratings of UPF 30 or higher is recommended.

Other Protective Wearable Options

Other types of protective options include wearing sunglasses and wide-brim hats. Recommendations include:

- Sunglasses with 99–100% UV protection that completely cover the eyes and eyelids.
- Hats should have at least a 3-inch brim all the way around to protect the neck, ears, and face. Baseball caps do NOT provide adequate protection for facial and neck burns.
- Hats with a neck flap option have better coverage of the neck.

Sunscreens

Sunscreens are a third line of defense. Keep in mind that sunscreens should be used TOGETHER with protective clothing and sun avoidance. A sunscreen's ability to protect you against a sunburn is measured by a number called SPF or Sunburn Protection Factor. SPF refers to how long it takes for skin with sunscreen to burn compared to skin without sunscreen. Generally speaking, the higher the SPF number, the greater protection against sunburn.

Sunscreens come in multiple forms: gels, sprays, creams, and sticks. Gels tend to work best on hairy areas, while creams work best on the face and dry skin. Sticks work well around the eyes and lips. FDA regulations and standardizations do not apply to spray sunscreens; it is important that the spray covers all exposed skin, is not inhaled or used near a heat source, while smoking or near an open flame. Some sunscreen products contain alcohol, which can be drying to recently healed skin or grafted areas. Sunscreens are also available within face creams and make-up (e.g., foundations). Although convenient, they must be applied frequently to achieve the most sun protection. Some insect repellents also contain sunscreen. The American Academy of Dermatology recommends that insect repellant be applied separately from sunscreen, as the repellent should be applied minimally and sparingly, while sunscreens require generous and frequent applications.

What is the difference between a sunblock and sunscreen? Sunscreens are more common and they filter or screen the sun's ultraviolet rays. They keep most rays out but do let some in. A sunblock reflects the sun's rays and is considered a physical barrier. Most sunblocks use titanium dioxide or zinc oxide, which can make them thicker and somewhat opaque (not transparent) when applied to the skin. Many products commonly referred to as sunscreens combine agents. The American Academy of Dermatology does not recommend one type over the other as long as the product protects your skin from *both* UV-A and UV-B sun rays, has a SPF of 30 or higher, is water-resistant, and is applied according to the directions on the bottle.

Can I use a suntan lotion instead? No. Often the SPF levels in a suntan lotion are only 4 or 5, which is *not* enough to protect your skin from the sun.

Many studies have shown that people apply sunscreen incorrectly, resulting in inadequate protection. The following tips regarding sunscreen use will help you avoid a sunburn and sun damage:

- Apply sunscreen every day, all year, even on overcast or cloudy days.
- Use a sunscreen with SPF 30 or greater.
- Use a broad-spectrum sunscreen to protect you from both UV-A and UV-B light.

- Use water-resistant sunscreens.
- Generally one handful of sunscreen covers all uncovered areas of your skin.
- Keep babies out of direct sunlight. The American Academy of Pediatrics recommends using sunscreen on infants for small areas such as the face and back of the hands where protection from clothes is inadequate. Generally, products with zinc oxide or titanium dioxide are less irritating.
- Apply sunscreen 30 minutes before going outside to allow the sunscreen to absorb into your skin.
- Reapply sunscreen every 2 hours and immediately after swimming/sweating heavily/drying yourself with a towel. This also applies to the use of water-resistant sunscreens.
- Cover your lips with a sunscreen-containing lip balm of SPF 30 or greater and reapply frequently. Avoid petroleum jelly-based products that do not include sun protection.
- Don't forget about your ears, feet, back of your hands, neck, and bald spots when applying the sunscreen.
- Sunscreen designed for the face usually does not clog pores and cause pimples and may be better than other sunscreens.

Frequently Asked Questions About Sunscreen Use

- *Will it ever be safe for me to wear short sleeves again*? We understand that in hot weather long sleeves and pants can be uncomfortable. Short sleeves and bathing suits are OK if you are careful about using sunscreen and limiting how much time you spend in the sun.
- *What should I do if I have a reaction (like a skin rash) to sunscreen?* Stop using the product immediately and try another one with different ingredients. Talk to your doctor or healthcare provider if the reaction persists.
- *How long is my bottle of sunscreen good for?* Based on FDA reports, sunscreens are typically good for 3 years. Many sunscreens will have an expiration date on the bottle. If there is no date, write the purchase date on the bottle and discard after 3 years. If the consistency or texture of the sunscreen changes, discard the bottle.
- *What is a PABA-free sunscreen?* PABA is the abbreviation for para-aminobenzoic acid and related chemicals. PABA-containing sunscreens was an UV-B absorbing type of sunscreen used in the early 1940s. Since then, PABA has been removed from most sunscreens due to reports of allergies and reactions. PABA-free sunscreens do not contain PABA or any related chemicals.
- *Does a higher SPF sunscreen work better than a lower SPF?* No sunscreen blocks 100% of UV sun rays. SPF 30 blocks 97% of UV light when used appropriately. The increased SPF does not imply that you can use a smaller amount or apply it less frequently. All sunscreens should be applied generously every two hours or as directed on the bottle, no matter the SPF number.
- *Can sunscreens cause cancer?* Recent studies have shown no link between sunscreen use and melanoma (a form of skin cancer).
- A*re sunscreens toxic?* Sunscreens undergo extensive testing to ensure that they do not cause harm to humans. The safety of the chemicals used is based on studies with humans but not specifically with people who have experienced a burn injury.

- *Do sunscreens cause Vitamin D deficiency?* Sunscreens theoretically prevent Vitamin D formation because they block the UV-B light rays that are needed to form Vitamin D. However, no studies have shown any physical consequence or difference in Vitamin D levels of people who use sunscreen when compared to people who do not use sunscreen. We encourage a healthy diet that is rich in Vitamin D (fatty fish, cheese, egg yolk, fortified milk and yogurt, beef liver).
- *Am I more susceptible to skin cancer after a burn?* There is no good information about risk of skin cancer with healed burn wounds.
- *When should I be concerned about skin cancer?* From the American Academy of Dermatology, you should "check your birthday suit on your birthday" for skin changes or itchy or bleeding skin. If you have a burn wound that does not heal or breaks open often you should see your doctor or health care provider.

Other resources:

- Phoenix Society Website: http://www.phoenix-society.org/resources/entry/enjoy-sun-care
- American Cancer Society Website: https://www.cancer.org/cancer/skin-cancer/prevention-and-early-detection.html
- Skin Cancer Foundation: http://www.skincancer.org/prevention/sun-protection/clothing/clothing-our-first-line-of-defense
- FDA Fact Sheet: Tips to Stay Safe in the Sun: From Sunscreen to Sunglasses: http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm049090.htm
- American Academy of Dermatology: Sunscreen FAQs: https://www.aad.org/media/stats/prevention-and-care/sunscreen-faqs
- U.S. Environmental Protection Agency: Sunscreen – The Burning Facts: https://www.epa.gov/sites/production/files/documents/sunscreen.pdf

Authorship

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Disclaimer: This information is not meant to replace the advice of a medical professional. You should consult your health care provider regarding specific medical concerns or treatment. The contents of this fact sheet were developed under a grant from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR grant number 90DP0082). NIDILRR is a Center within the Administration for Community Living (ACL), Department of Health and Human Services (HHS). The contents of this fact sheet do not necessarily represent the policy of NIDILRR, ACL, HHS, and you should not assume endorsement by the Federal Government.