All About Sun Safety

Sun exposure can lead to all types of skin cancers (melanoma, basal cell, and squamous cell cancers), premature (early) aging of the skin, eye damage, and cataracts. Understanding the dangers of the sun can help you prevent these problems.

What is dangerous about sunlight?

Sunlight is made of up two types of ultraviolet light:

- **UVA**: long wave ultraviolet rays, which penetrate deep into the skin.
- **UVB**: short wave ultraviolet rays, which cause damage to the top layer of your skin and are the cause of sunburn.

It was long thought that UVB rays were the only ones that caused cancer. This may be because they cause a burn that is a visible sign of skin damage. We now know that UVA can also cause skin cancer. UVA damages the DNA of skin cells. Besides causing cancer, exposure to both UVA & UVB plays a role in premature aging, wrinkling and eye damage.

Does the sun cause cancer?

The World Health Organization classifies UV radiation – from the sun or a tanning booth - as a proven carcinogen, meaning it causes cancer. If you were told the fumes in a building caused cancer, you probably wouldn’t go in. Despite the warnings about the dangers of sun exposure, many people continue to spend hours in the sun, without proper protection. Think about it another way- you probably wouldn’t stand in a room full of cigarette smoke with a mask on- you’d avoid that room altogether. We need to start thinking about the sun the same way – sunscreen is important, but avoiding sun exposure is better.

What about vitamin D?

Our bodies use UVB from the sun to make vitamin D, so a little bit of sun exposure may actually be helpful. Experts have found that 10-15 minutes of sun exposure, 2-3 times a week is plenty to produce the vitamin D our bodies need for healthy bones and teeth, a healthy immune system, and even to help prevent certain cancers. Studies have also found that using sunscreen doesn’t mean you will end up with low vitamin D levels. Researchers think this is because no matter how much sunscreen you use, UVB is still getting to your skin. You can also get good amounts of vitamin D from food sources, such as fatty fish, fortified juices, and supplements. The key takeaway: you can get your vitamin D and still protect your skin from damage.

Doesn’t my dark skin protect me from skin cancer?

Not so fast! Skin cancer is certainly more common in people with light-colored skin, hair and eyes, but people of color should not think that they are immune. Dark skin has a better ability to protect itself from the sun than light skin, but it too can “tan,” be damaged, and develop skin cancer.

People with African American, Asian, Latino, and Native American backgrounds tend to be more likely to die from melanoma when diagnosed, mainly due to late diagnosis. This likely happens because people – both patients and healthcare providers - are not as aware of what to look for in dark skin. Melanomas in darker-skinned individuals tend to occur in areas that are not exposed to sun, such as the buttocks, genitals, bottom of the feet, and under the fingernails or toenails. Non-melanoma skin cancers can appear like a sore that won’t heal, a red or irritated patch on the skin, shiny bumps, and rough or scaly patches.

Dermatologists advise darker-skinned patients to use sunscreen with an SPF of 15 or greater every day and wear sun-protective clothing and accessories (long-sleeves, wide-brimmed hats, sunglasses). Get to know your skin so you can identify when something new appears – or something old changes. Bring these changes to the attention of your healthcare provider.
Types of skin cancer

There are three types of skin cancers: melanoma, basal cell, and squamous cell cancers. Basal cell carcinoma and squamous cell carcinoma are sometimes lumped together as the “non-melanoma skin cancers.”

Melanoma

The most serious but least common type of skin cancer is melanoma, which arises in the pigmented cells called melanocytes. If melanoma is diagnosed and removed while it is limited to the outermost skin layer, it is almost 100% curable. Once it has metastasized (spread to other areas of the body), it is much more difficult to treat.

Several studies have shown that sunburns early in life are associated with a greater risk of developing melanoma. However, sunburns at any age can increase a person’s risk of developing skin cancer. This includes even “mild” sunburns—when the skin appears pink or red but doesn’t peel or blister. Unlike other skin cancers, melanoma risk can be higher if you have relatives who have had the disease. Any person with a family history of melanoma should be examined regularly by a healthcare provider and should perform his/her own skin checks, because early detection is essential.

Melanoma arises from an existing mole in 20-30% of cases. The large majority of melanomas (70 to 80%) appear on the skin without a mole present. It is important to get to know how your skin normally looks. Examine your skin regularly and report any new moles or lesions, or changes to an existing mole.

In general, a normal mole is solid-colored with well-defined edges, and a round or oval shape. When examining the skin, look for the A-B-C-D-E’s:

- **A** stands for asymmetry: a suspicious mole is one that does not have symmetric and uniform shape, meaning if you were to draw a line through it, it would not look the same on both sides.
- **B** stands for borders: irregular borders may signal an abnormal mole.
- **C** is for color variation: if one mole has blue, brown, tan, pink, or even white patches to it, it should be removed.
- **D** stands for diameter: if a mole is greater that about 6 millimeters in diameter (about the size of a pencil eraser), it should be checked.
- **E** is for elevation: a mole that is raised above the skin and has an uneven surface should be checked.

Not every mole that has one or more of these qualities is cancerous. In addition, not every cancer has these characteristics. Any change in an existing mole, or development of something new or different on your skin, should be examined by a healthcare provider.

Basal Cell Carcinoma

The most common form of skin cancer is called basal cell carcinoma (BCC). BCC accounts for about 90% of skin cancers in the United States. These cancers arise in the basal cells, which are the cells at the bottom-most layer of the outer skin (called the epidermis). This type of cancer tends to spread locally, into surrounding tissue. BCC rarely metastasizes (spreads), although it can invade lymph nodes and blood vessels.

Squamous Cell Carcinoma

Another common type of skin cancer is called squamous cell carcinoma (SCC). These cells are in the outermost layers of the skin. Like BCC, it can spread locally and invade surrounding organs or tissues; and like melanoma, it can metastasize to other parts of the body if left untreated.

Both BCC and SCC occur most often in areas of the body that have heavy, chronic sun exposure, though they can occur elsewhere. People who have had extensive sun exposure in their lifetime should examine their skin regularly for any signs of pre-cancerous or cancerous skin lesions. Remember areas that you don’t see easily—like the tops and backs of earlobes and back of the neck.

When does skin cancer occur?

Most skin cancers develop after the age of 50, however more and more younger people are being diagnosed. Melanoma
actually accounts for 3% of all pediatric cancers. Annually, there will be about 100,350 new cases of melanoma in the United States. Rates in women under 30 have been on the rise, which many believe is due to indoor tanning use. Despite the fact that most skin cancers occur later in life, the damage that leads to these cancers begins in childhood. The best way to prevent skin cancer is to make sun protection a part of your life and to teach our children about sun protection from an early age.

**Sun Protection/Skin Cancer Prevention Tips**

**Protecting yourself** against the sun’s damage is the best prevention for skin cancer. You can check the UV index for your area through the [US Environmental Protection Agency](https://www.epa.gov/sunwise).

- Avoid exposure when the sun’s rays are the strongest, from 10 am to 4 pm.
- Wear protective clothing such as a wide-brimmed hat, long sleeves, and sunglasses. These can block out some of the sun’s harmful rays.
- Seek out shade whenever possible.
- Do not use tanning booths or sun lamps – these are not a safe alternative to the sun. These emit both UVA & UVB light and greatly increase risk for all types of skin cancer.

**Sunscreen**

Sunscreen should be used every day, even in the winter. There are many sunscreens to choose from. Use a sunscreen that protects against UVA and UVB rays. These products are labeled “broad spectrum” or “multi-spectrum.” There are two different ways that sunscreen ingredients work, physical and chemical. Most sunscreens include some combination of these compounds:

- Physical compounds (titanium dioxide and zinc oxide) work by reflecting the UV rays off of the skin. These sunscreens protect from UVA and UVB rays. Some concerns with these products include a white or colored appearance when applied, a tendency to stain clothing, and comedogenesis (obstruction of skin follicles, leading to blackheads & acne).
- Chemical compounds absorb rather than reflect UV radiation, and many only cover UVB rays. These include: Para-aminobenzoic acid (PABA), salicylates, and cinnamates, among others. Newer chemical compounds also protect against UVA rays; these include dioxybenzone, oxybenzone, and sulisobenzone.

Sunscreen cannot offer 100% protection from UV rays. Even with sunscreen, UV radiation can penetrate through the top few layers of skin. Therefore, most dermatologists recommend using sunscreen with other forms of protection such as clothing, hats, and shade. However, keep in mind that clothing cannot protect the skin fully, as the sun’s rays can penetrate it.

**Understanding SPF**

The SPF in sunscreen stands for Sun Protection Factor. This number is a measure of how long it will take for the UVB rays to cause the skin to redden. A person using an SPF of 15 will take 15 times longer to redden than they would without sunscreen.

An SPF of 30 allows an individual to stay out in the sun twice as long as an SPF of 15 with the same protection. Applying one coat of a sunscreen that has 30 SPF on top of another sunscreen that has 15 SPF does NOT result in SPF of 45. In fact, the result of the mixture is a dilution of the stronger SPF, lowering the overall protection offered.

An SPF of 15 will block out 93% of all UVB rays, SPF of 30 blocks 97% of UVB, and an SPF of 50 blocks 98%. No sunscreen can block all UVB rays. You can see that the protection gained with an SPF above 30 is not much, but for people with more sensitive skin, this may be beneficial. SPF has no bearing on the protection from UVA rays – this is not rated and varies greatly across products.

**How to Use Sunscreen**

Sunscreen should be applied (and reapplied) every two hours and after swimming, excessive sweating, and showering. No sunscreen is “waterproof” or “sweatproof,” so the FDA does not allow these terms to be used. Products may be labeled as “water resistant” or “sweat resistant” to either 40 minutes or 80 minutes. That gives you guidance of when to reapply; however,
you should always reapply after 2 hours, as it becomes inactive at that point. A good way to remember to reapply is to set a timer or reminder on your phone.

Sunscreen should be applied 15 to 20 minutes prior to going out into the sun. This allows it to soak into the deeper layers of the outer skin before exposure. On average, an adult should use about two tablespoons (about a shot glass full) of sunscreen for a single application. Studies consistently show that people generally do not use enough sunscreen. Check the expiration date of your sunscreen, since some ingredients can break down over time.

Spray-on sunscreen can be easier to apply, but it can be more difficult to get the same level of protection. There is a lot of concern about the safety of inhaling the spray, particularly in kids. And lastly, spray sunscreens contain alcohol, which is flammable. There have been several reports of burns in people who used spray sunscreen and were near open flames.

All experts agree, however, that limiting sun exposure is by far the best method of sun protection. Self-tanning lotions or sprays are a safe alternative to the sun, but remember that this does not give you protection, so you will still need to use SPF after tanning with these products.

If you are reading this a little too late and already have a sunburn, The Skin Cancer Foundation has tips to manage the sunburn.