



UV Radiation and Cancer



Basic description

Ultraviolet (UV) radiation can cause skin cells to age and can damage cellular DNA. When DNA is damaged by UV radiation from sunlight or artificial light sources (such as sun lamps and tanning beds), DNA loses its power to control how and when cells grow and divide. Sometimes, this DNA damage leads to the formation of skin cancer – the most common of all cancers.

UV rays are linked to other health problems, too, such as sunburns, rashes, premature aging of the skin, and signs of sun damage, such as liver spots, actinic keratosis, and solar elastosis. They can cause the cornea to become inflamed or burned, and can also lead to the formation of cataracts.

Cancers affected

There are 2 main types of skin cancer: melanoma and non-melanoma skin cancers. Non-melanoma skin cancers are by far more common – it has been estimated that about 5.4 million cases among 3.3 million people are diagnosed each year. They start in either basal or squamous skin cells. These cells are located at the base of the outer layer of skin.

Melanoma skin cancers are much less common and develop from melanocytes, the cells that produce skin color. Although melanoma accounts for only 1% of skin cancers, it's a far more serious skin cancer, and it causes the majority of skin cancer deaths.

UV radiation is thought to be the major risk factor for most skin cancers. People who live in areas with year-round bright sunlight are at higher risk for developing skin cancer.

The primary source of UV radiation is sunlight, but tanning lamps and booths are also sources of UV radiation. Exposure to light from these sources is linked to greater risk for both melanoma and non-melanoma skin cancers. The degree of risk depends on the amount of UV exposure, the intensity of the light, the length of time the skin was exposed, and whether the skin was protected with clothing and broad-spectrum sunscreen.

Additionally, cancers of the lip are linked to the sun's UV rays. People who have outdoor jobs associated with long-term exposure to sunlight are more likely to develop lip cancer.

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Opportunities for risk reduction

Because people can control their exposure to the sun, the opportunities for risk reduction for skin cancer are effective and easy to understand. Simple guidelines are as follows:

- Don't use tanning booths, beds, or lamps. These devices do not provide a "safer way" to tan.
- When outdoors, stay in the shade whenever possible – particularly between 10 a.m. and 4 p.m., when the sun's rays are most intense.
- Clothing provides protection, so wear a long-sleeved shirt and a hat with a wide brim. A tightly woven fabric protects better than loosely woven clothing.
- Wrap-around sunglasses with a 99% to 100% UV absorption factor provide the best protection for the eyes and surrounding skin.
- Always use a broad-spectrum sunscreen with an SPF of 30 or higher on all skin that's not covered, even on overcast or hazy days, because UV light can penetrate cloud cover. Many sunscreens wear off, especially after swimming, toweling, and perspiring, so they should be reapplied frequently.

The damage caused by sun exposure builds up over the years. Children and teens often receive intensive UV exposure that may not develop into skin cancer until many years later. The skin of babies and young children is particularly sensitive to the sun, so parents and caregivers should be very careful to protect them from excessive sun exposure by using the measures described above.

Bottom line

Reducing unprotected exposure to the sun's UV rays is the single most important action that can be taken to reduce the risk of skin cancers, including melanoma. Everyone, especially fair-skinned people and children, should follow the American Cancer Society's recommendations to avoid the midday sun and seek shade. And when in the sun, slip on a shirt, slop on SPF 30 (or higher) broad-spectrum sunscreen, slap on a hat, and wrap on sunglasses.

