

Skin Cancer

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Skin cancer, or malignant [melanoma](#), is a type of skin tumor that is characterized by the cancerous growth of melanocytes, which are cells that produce a dark pigment called melanin.

According to the American Cancer Society (ACS), as of 2013, cancer of the skin is the most common type of cancer found in the United States, and continues to grow in incidence. Skin cancer starts in the top layer of skin (the epidermis) but can grow down into the lower layers, the dermis and the subcutaneous layer. There are three main types of cells located in the epidermis, each of which can become cancerous. Melanocytes are the pigmented cells that are scattered throughout the skin, providing protection from ultraviolet (UV) [light](#). Basal cells rest near the bottom of the epidermis and constitute the layer of cells that grow continually to replace the skin. Squamous cells are the third type of epidermal cell; these make up most of the cells in human skin.

Malignant melanoma is the most serious type of skin cancer. It develops from the melanocytes. Although melanoma is the least common skin cancer, it is the most aggressive. It spreads (metastasizes) to other parts of the body--especially the lungs and liver--as well as invading surrounding tissues. Melanomas in their early stages resemble moles.

In Caucasians, melanomas appear most often on the trunk, head, and neck in men and on the arms and legs in women. Melanomas in African Americans, however, occur primarily on the palms of the hand, soles of the feet, and under the nails. Melanomas appear only rarely in the eyes, mouth, vagina, or digestive tract. Although melanomas are associated with exposure to the Sun, the greatest risk factor for developing melanoma may be genetic. People who have a first-degree relative with melanoma have an increased risk up to eight times greater of developing the disease.

Basal cell cancer is the most common type of skin cancer, accounting for about 80 percent of all skin cancers, according to ACS data as of 2013. It occurs primarily on the parts of the skin exposed to the Sun and is most common in people living in equatorial regions or areas of high [ozone](#) depletion. Light-skinned people are more at risk of developing basal cell cancer than are dark-skinned people. This form of skin cancer is primarily a disease of adults; it appears most often after age thirty years, peaking around age seventy years. Basal cell cancer grows very slowly; if it is not treated, however, it can invade deeper skin layers and cause disfigurement. This type of cancer can appear as a shiny, translucent nodule on the skin or as a red, wrinkled, and scaly area.

Squamous cell cancer is the second most frequent type of skin cancer, accounting for about 20 percent of all skin cancers, according to ACS data as of 2006. Squamous cell cancer arises from the outer keratinizing layer of skin, so named because it contains a tough protein called keratin. Squamous cell cancer grows faster than basal cell cancer; it is more likely to metastasize to the lymph nodes as well as to distant sites. Squamous cell cancer most often appears on the arms, head, and neck. Fair-skinned people of Celtic descent are at high risk for developing squamous cell cancer. This type of cancer is rarely life threatening but may cause serious problems if it spreads and may also

cause disfigurement. Squamous cell cancer usually appears as a scaly, slightly elevated area of damaged skin.

Besides the three major types of skin cancer, there are a few other relatively rare forms. The most serious of these is Kaposi's sarcoma (KS), which occurs primarily in acquired immune deficiency syndrome (AIDS) patients or older males of Mediterranean descent. When KS occurs with AIDS it is usually more aggressive. Other types of skin tumors are usually nonmalignant and grow slowly. These include:

- Bowen's disease. This is a type of skin inflammation (dermatitis) that sometimes looks like squamous cell cancer;
- Solar keratosis. This is a sunlight-damaged area of skin that sometimes develops into cancer; and
- Keratoacanthoma. A keratoacanthoma is a dome-shaped tumor that can grow quickly and appear like squamous cell cancer. Although it is usually benign, it should be removed.

Most skin cancers are associated with the amount of time that a person spends in the Sun and the number of sunburns received, especially if they occurred at an early age. Skin cancer typically does not appear for ten-to-twenty years after the Sun damage has occurred. Because of this time lag, skin cancer rarely occurs before puberty and occurs more frequently with age.

The number of moles (nevi) on a person's skin is related to the likelihood of developing melanoma. There are three types of nevi: not cancerous (benign); atypical (dysplastic); or birthmark (congenital). All three types of nevi have been associated with a higher risk of developing melanoma. Sometimes the moles themselves can become cancerous; usually, however, the cancer is a new growth that occurs on normal skin.

The tendency to develop skin cancer also tends to run in families. As has already been mentioned, there appears to be a significant genetic factor in the development of melanoma.

Skin cancer begins to develop when a change or mutation occurs in one of the cells of the skin, causing it to grow without control. This mutation can be caused by ultraviolet (UV) light; most skin cancers are thought to be caused by overexposure to UV light from the Sun. The incidence of severe, blistering sunburns is particularly closely related to skin cancer, more so when these burns occur during childhood. Exposure to ionizing radiation, arsenic, or polycyclic [hydrocarbons](#) in the workplace also appears to stimulate the development of skin cancers. The use of psoralen for treatment of psoriasis may be associated with the development of squamous cell cancer. Skin cancers are also more common in immunocompromised patients, such as AIDS patients or those who have undergone organ transplants.

The first sign of skin cancer is usually a change in an existing mole, the presence of a new mole, or a change in a specific area of skin. Any change in a mole or skin lesion, including changes in color, size, or shape, tenderness, scaliness, or itching should be suspected of being skin cancer. Areas that bleed or are ulcerated may be signs of more advanced skin cancer. By doing a monthly self-examination, a person can identify abnormal moles or areas of skin and seek evaluation from a qualified health professional. The ABCD rule provides an easy way to remember the important characteristics of moles

when one is examining the skin:

- A for Asymmetry. A normal mole is round, whereas a suspicious mole is unevenly shaped;
- B for Border. A normal mole has a clear-cut border with the surrounding skin, whereas the edges of a suspect mole are often irregular;
- C for Color. Normal moles are uniformly tan or brown, but cancerous moles may appear as mixtures of red, white, blue, brown, purple, or black;and
- D for Diameter. Normal moles are usually less than 0.20 inch (5 millimeters) in diameter. A skin lesion greater than 0.25 inch (6.4 millimeters) across may be suspected as cancerous.

A person who has a suspicious-looking mole or area of skin should consult a doctor. In many cases, the patient's primary care physician will refer him or her to a doctor who specializes in skin diseases (a dermatologist). The dermatologist will carefully examine the lesion for the characteristic features of skin cancer. If further testing seems necessary, the doctor will perform a skin biopsy by removing the lesion under local anesthesia. Because melanomas tend to grow in diameter, as well as downwards into the epidermis and fatty layers of skin, a biopsy sample that is larger than the mole will be taken. This tissue is then analyzed under a microscope by a specialist in diseased organs and tissues (a pathologist). The pathologist makes the diagnosis of cancer and determines how far the tumor has grown into the skin.

The evaluation of the progression of the cancer is called staging. Staging refers to how advanced the cancer is and is determined by the thickness and size of the tumor. Additional tests will also be done to determine if the cancer has moved into the lymph nodes or other areas of the body. These tests might include chest x ray, computed tomography (CT) scan, magnetic resonance imaging (MRI) scan, and blood tests.

As of 2006, the American Cancer Society (ACS) recommends many different courses of treatment depending upon the stage of cancer. These treatments include: surgery, chemotherapy, immunotherapy, radiation therapy and may include participation in clinical trial that introduce promising new or experimental treatment.

The primary treatment for skin cancer is to cut out (excise) the tumor or diseased area of skin. Surgery usually involves a simple excision using a scalpel to remove the lesion and a small amount of normal surrounding tissue. A procedure known as microscopically controlled excision can be used to examine each layer of skin as it is removed to ensure that the proper amount is taken. Depending on the amount of skin removed, the cut is either closed with stitches or covered with a skin graft. When surgical excision is performed on visible areas, such as the face, cosmetic surgery may also be performed to minimize the scar. Other techniques for removing skin tumors include burning, freezing with dry ice (cryosurgery), or laser surgery. For skin cancer that is localized and has not spread to other areas of the body, excision may be the only treatment needed.

Although chemotherapy is the normal course of therapy for most other types of advanced cancer, it is not usually effective and not usually used for advanced skin cancer. For advanced melanoma that has moved beyond the original tumor site, the local lymph nodes may be surgically removed. Immunotherapy in the form of interferon or interleukin is being used more often with success for advanced melanoma. There is growing evidence that radiation therapy may be useful for advanced melanoma. Other treatments under investigation for melanoma include gene therapy and vaccination.

Some studies have shown that the use of a vaccine prepared from the patient's own cancer cells may be useful in treating advanced melanoma. For people previously diagnosed with skin cancers, the chances of getting additional skin cancers are high. Therefore, regular monthly self-examination, as well as frequent examinations by a dermatologist, are essential.

The prognosis for skin cancer depends on several factors, the most important of which are the invasiveness of the tumor and its location. The prognosis is good for localized skin cancers that are diagnosed and treated early. For basal cell cancer and squamous cell cancer, the cure rate is close to 100 percent, although most of these patients will have recurrent skin cancer. For localized melanoma, the cure rate is approximately 97 percent, according to the ACS as of 2013. The prognosis worsens with larger tumors. Melanoma that has spread to the lymph nodes has a five-year survival rate of 60 percent; advanced melanoma has a five-year survival rate of only 15 to 20 percent, according to ACS estimates for 2013. When melanoma has spread to other parts of the body, it is generally considered incurable; the median length of survival is six months.

Prevention is the best way to deal with skin cancer. Avoiding unnecessary Sun exposure--including sun lamps and tanning salons--is relatively simple. People should protect themselves against the risk of [sunburn](#) and skin cancer by:

- Applying a sunscreen with a sun protection factor (SPF) of 15 or higher to their skin;
- Making sure they wear a wide-brimmed hat;
- Protecting their skin with clothing whenever they are outdoors; and
- Avoiding high Sun, when the rays of the Sun are most intense (between 11 A.M. and 1 P.M.).

In addition, persons living at high elevations need to take extra precautions because the intensity of UV radiation increases by 4 percent with every 1,000-foot (305 meter) rise above sea level.

There is presently some debate about the ability of sunscreen to protect against skin cancer. Consumers should make sure to minimize their exposure to the Sun's rays whenever they are outdoors. Skin cancer has also been related to diets that are high in fat. Some scientists have shown that decreasing the amount of fat consumed may help to decrease the risk of skin cancer.

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