



[cancer.org](https://www.cancer.org) | 1.800.227.2345

About Basal and Squamous Cell Skin Cancer

Overview

If you have been diagnosed with basal or squamous cell skin cancer or are worried about it, you likely have a lot of questions. Learning some basics is a good place to start.

- [What Are Basal and Squamous Cell Skin Cancers?](#)

Research and Statistics

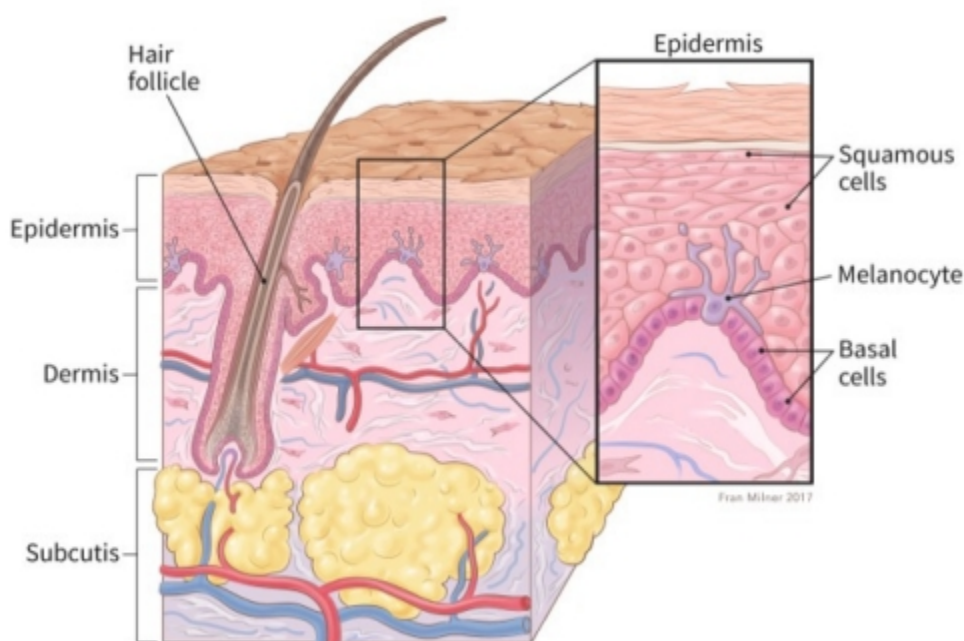
See the latest estimates for new cases of basal and squamous cell skin cancer and deaths in the US and what research is currently being done.

- [Key Statistics for Basal and Squamous Cell Skin Cancers](#)
 - [What's New in Basal and Squamous Cell Skin Cancer Research?](#)
-

What Are Basal and Squamous Cell Skin Cancers?

Basal and squamous cell skin cancers are the most common types of skin cancer. They start in the top layer of skin (the *epidermis*), and are often related to sun exposure.

Cancer starts when cells in the body begin to grow out of control. Cells in nearly any part of the body can become cancer cells. To learn more about cancer and how it starts and spreads, see [What Is Cancer?](#)¹



Where do skin cancers start?

Most skin cancers start in the top layer of skin, called the *epidermis*. There are 3 main types of cells in this layer:

- **Squamous cells:** These are flat cells in the upper (outer) part of the epidermis, which are constantly shed as new ones form. When these cells grow out of control, they can develop into squamous cell skin cancer (also called *squamous cell carcinoma*).
- **Basal cells:** These cells are in the lower part of the epidermis, called the *basal cell layer*. These cells constantly divide to form new cells to replace the squamous cells that wear off the skin's surface. As these cells move up in the epidermis, they get flatter, eventually becoming squamous cells. Skin cancers that start in the basal cell layer are called basal cell skin cancers or *basal cell carcinomas*.
- **Melanocytes:** These cells make the brown pigment called *melanin*, which gives the skin its tan or brown color. Melanin acts as the body's natural sunscreen, protecting the deeper layers of the skin from some of the harmful effects of the sun. Melanoma skin cancer starts in these cells.

The epidermis is separated from the deeper layers of skin by the basement membrane. When a skin cancer becomes more advanced, it generally grows through this barrier and into the deeper layers.

Basal cell carcinoma

Basal cell carcinoma (also called basal cell skin cancer) is most common type of skin cancer. About 8 out of 10 skin cancers are basal cell carcinomas (also called *basal cell cancers*).

These cancers start in the basal cell layer, which is the lower part of the epidermis.

These cancers usually develop on sun-exposed areas, especially the face, head, and neck. They tend to grow slowly. It's very rare for a basal cell cancer to spread to other parts of the body. But if it's left untreated, basal cell cancer can grow into nearby areas and invade the bone or other tissues beneath the skin.

If not removed completely, basal cell carcinoma can come back (recur) in the same place on the skin. People who have had basal cell skin cancers are also more likely to get new ones in other places.

Squamous cell carcinoma

About 2 out of 10 skin cancers are squamous cell carcinomas (also called *squamous cell cancers*). These cancers start in the flat cells in the upper (outer) part of the epidermis.

These cancers commonly appear on sun-exposed areas of the body such as the face, ears, neck, lips, and backs of the hands. They can also develop in scars or chronic skin sores elsewhere. They sometimes start in actinic keratoses (described below). Less often, they form in the skin of the genital area.

Squamous cell cancers can usually be removed completely (or treated in other ways), although they are more likely than basal cell cancers to grow into deeper layers of skin and spread to other parts of the body.

Pre-cancerous and other skin conditions related to squamous cell carcinoma

Actinic keratosis (solar keratosis)

Actinic keratosis (AK), also known as *solar keratosis*, is a pre-cancerous skin condition caused by too much exposure to the sun. AKs are usually small (less than 1/4 inch across), rough or scaly spots that may be pink-red or flesh-colored. Usually they start on the face, ears, backs of the hands, and arms of middle-aged or older people with fair skin, although they can occur on other sun-exposed areas. People who have them usually develop more than one.

AKs tend to grow slowly and usually do not cause any symptoms (although some might be itchy or sore). They sometimes go away on their own, but they may come back.

A small percentage of AKs may turn into squamous cell skin cancers. Most AKs do not become cancer, but it can be hard sometimes to tell them apart from true skin cancers, so doctors often recommend [treating](#)² them. If they are not treated, you and your doctor should check them regularly for changes that might be signs of skin cancer.

Squamous cell carcinoma in situ (Bowen disease)

Squamous cell carcinoma in situ, also called *Bowen disease*, is the earliest form of squamous cell skin cancer. “In situ” means that the cells of these cancers are still only in the epidermis (the upper layer of the skin) and have not invaded into deeper layers.

Bowen disease appears as reddish patches. Compared with AKs, Bowen disease patches tend to be larger, redder, scaliar, and sometimes crusted. Like AK, Bowen disease usually doesn’t cause symptoms, although it might be itchy or sore.

Like most other skin cancers (and AKs), these patches most often appear in sun-exposed areas. Bowen disease can also occur in the skin of the anal and genital areas (where it is known as *erythroplasia of Queyrat* or *Bowenoid papulosis*). This is often related to sexually transmitted infection with human papillomaviruses (HPVs), the viruses that can also cause genital warts.

Bowen disease can sometimes progress to an invasive squamous cell skin cancer, so doctors usually recommend [treating](#)³ it. People who have these are also at higher risk for other skin cancers, so close follow-up with a doctor is important.

Keratoacanthoma

Keratoacanthomas are dome-shaped tumors that are found on sun-exposed skin. They may start out growing quickly, but their growth usually slows down. Many keratoacanthomas shrink or even go away on their own over time without any treatment. But some continue to grow, and a few may even spread to other parts of the

body. They can be hard to tell apart from squamous cell skin cancer, and their growth is often hard to predict, so many skin cancer experts recommend treating them (typically with surgery).

Other types of skin cancer

Melanoma

These cancers develop from melanocytes, the pigment-making cells found in the epidermis. Melanomas are much less common than basal and squamous cell cancers, but they are more likely to grow and spread if left untreated. Melanoma are discussed in [Melanoma Skin Cancer](#)⁴.

Less common types of skin cancer

Other types of skin cancer are much less common and are treated differently. These include:

- [Merkel cell carcinoma](#)⁵
- [Kaposi sarcoma](#)⁶
- [Cutaneous \(skin\) lymphoma](#)⁷
- **Skin adnexal tumors** (tumors that start in hair follicles or skin glands)
- Various types of [sarcomas](#)⁸

Together, these types account for less than 1% of all skin cancers.

Benign skin tumors

Most skin tumors are benign (not cancerous) and rarely if ever turn into cancers. There are many kinds of benign skin tumors, including:

- Most types of **moles** (see [Melanoma Skin Cancer](#)⁹ for more about moles)
- **Seborrheic keratoses**: tan, brown, or black raised spots with a waxy texture or occasionally a slightly rough and crumbly surface when they are on the legs (also known as *stucco keratosis*)
- **Hemangiomas**: benign blood vessel growths, often called *strawberry spots*
- **Lipomas**: soft tumors made up of fat cells
- **Warts**: rough-surfaced growths caused by some types of human papillomavirus

(HPV)

Hyperlinks

1. www.cancer.org/cancer/cancer-basics/what-is-cancer.html
2. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/treating/actinic-keratosis.html
3. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/treating/actinic-keratosis.html
4. www.cancer.org/cancer/melanoma-skin-cancer.html
5. www.cancer.org/cancer/merkel-cell-skin-cancer.html
6. www.cancer.org/cancer/kaposi-sarcoma.html
7. www.cancer.org/cancer/skin-lymphoma.html
8. www.cancer.org/cancer/soft-tissue-sarcoma.html
9. www.cancer.org/cancer/melanoma-skin-cancer.html

References

Christensen SR, Wilson LD, Leffell DJ. Chapter 90: Cancer of the Skin. In: DeVita VT, Lawrence TS, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 11th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2019.

Lim JL, Asgari M. Clinical features and diagnosis of cutaneous squamous cell carcinoma (SCC). UpToDate. 2019. Accessed at <https://www.uptodate.com/contents/clinical-features-and-diagnosis-of-cutaneous-squamous-cell-carcinoma-scc> on May 29, 2019.

Xu YG, Aylward JL, Swanson AM, et al. Chapter 67: Nonmelanoma Skin Cancers. In: Niederhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 6th ed. Philadelphia, Pa: Elsevier; 2020.

Last Revised: July 26, 2019

Key Statistics for Basal and Squamous Cell Skin Cancers

Cancers of the skin (most of which are basal and squamous cell skin cancers) are by far the most common of all types of cancer. According to one estimate, about 5.4 million basal and squamous cell skin cancers are diagnosed each year in the US (occurring in about 3.3 million Americans, as some people have more than one). About 8 out of 10 of these are basal cell cancers. Squamous cell cancers occur less often.

The number of these cancers has been increasing for many years. This is probably from a combination of better skin cancer detection, people getting more sun exposure, and people living longer.

Death from basal and squamous cell skin cancers is uncommon. It's thought that about 2,000 people in the US die each year from these cancers, and that this rate has been dropping in recent years. Most people who die from these cancers are elderly and may not have seen a doctor until the cancer had already grown quite large. Other people more likely to die of these cancers are those whose immune system is suppressed, such as people who have had organ transplants.

The exact number of people who develop or die from basal and squamous cell skin cancers each year isn't known for sure. Statistics of most other cancers are known because they are reported to and tracked by cancer registries, but basal and squamous cell skin cancers are not.

References

American Cancer Society. *Facts & Figures 2021*. American Cancer Society. Atlanta, Ga. 2021.

Christensen SR, Wilson LD, Leffell DJ. Chapter 90: Cancer of the Skin. In: DeVita VT, Lawrence TS, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 11th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2019.

Lewis KG, Weinstock MA. Trends in nonmelanoma skin cancer mortality rates in the United States, 1969 through 2000. *J Invest Dermatol*. 2007;127:2323-2327.

Xu YG, Aylward JL, Swanson AM, et al. Chapter 67: Nonmelanoma Skin Cancers. In: Niederhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 6th ed. Philadelphia, Pa: Elsevier; 2020.

Last Revised: January 12, 2021

What's New in Basal and Squamous Cell Skin Cancer Research?

Research into the causes, prevention, and treatment of basal and squamous cell skin cancer is going on in many medical centers throughout the world.

Basic skin cancer research

Scientists have made a great deal of progress in recent years in learning how ultraviolet (UV) light damages the DNA (genes) inside normal skin cells, and how this might cause them to become cancer cells. Researchers are working to apply this new information to strategies for preventing and treating skin cancers.

Public education

Most skin cancers can be prevented. The best way to lower the number of skin cancers and the pain and loss of life from this disease is to educate people about [skin cancer risk factors, prevention, and detection](#)¹. It's important for health care professionals and skin cancer survivors to remind others about the dangers of too much [UV exposure](#)² (both from the sun and from man-made sources such as tanning beds) and about how easily they can [protect their skin from UV rays](#)³.

Skin cancer can often be [found early](#)⁴, when it is most likely to be cured. Monthly skin self-exams and awareness of the [warning signs of skin cancer](#)⁵ may be helpful in finding most skin cancer when they are at an early, curable stage.

The American Academy of Dermatology (AAD) sponsors annual free skin cancer screenings throughout the country. Many local American Cancer Society offices work closely with AAD to provide volunteers for registration, coordination, and education

efforts related to these free screenings. Look for information in your area about these screenings or contact the [American Academy of Dermatology](#)⁶ for more information.

Along with recommending staying in the shade, the American Cancer Society uses a slogan popularized in Australia as part of its skin cancer prevention message in the United States. “Slip! Slop! Slap!® ... and Wrap” is a catchy way to remember when going outdoors to slip on a shirt, slop on sunscreen, slap on a hat, and wrap on sunglasses to protect your eyes and the sensitive skin around them.

Preventing genital skin cancers

Squamous cell cancers that start in the genital region account for a large proportion of the deaths from this type of skin cancer. Many of these cancers are related to infection with certain types of [human papillomavirus \(HPV\)](#)⁷, which can be spread through sexual contact. Limiting sexual partners and using safer sex practices such as wearing condoms may therefore help lower the risk of some of these cancers.

[Vaccines](#)⁸ are available to help protect against infection from some types of HPV that can cause certain cancers. The main intent of the vaccines has been to reduce the risk of cervical cancer, but they may also lower the risk of 5 other cancers related to HPV, including some squamous cell skin cancers.

Chemoprevention

Chemoprevention is the use of drugs to reduce cancer risk. This is likely to be more useful for people at high risk of skin cancers, such as those with certain congenital conditions (basal cell nevus syndrome, xeroderma pigmentosum, etc.), a history of skin cancer, or those with weakened immune systems (such as people who've had organ transplants), rather than for people at average risk of skin cancer.

Some of the most widely studied drugs so far are the **retinoids**, which are drugs related to vitamin A. They have shown some promise in reducing the risk of squamous cell cancers, but they can have side effects, including possibly causing birth defects. For this reason they are not widely used at this time, except in some people at very high risk. Further studies of retinoids are under way.

Nicotinamide, a form of vitamin B3, has been shown to lower the risk of basal and squamous cell cancers in people at high risk, and with very few side effects, although it hasn't been studied extensively in people with weakened immune systems.

Targeted drugs called **hedgehog pathway inhibitors** may help some people with basal

cell nevus syndrome. For example, the drug vismodegib (Erivedge) has been shown to lower the number of new basal cell cancers and shrink existing tumors in people with this syndrome. The drug can have side effects, including taste loss and muscle cramps, which can make it hard for some people to take every day. Further research on this and similar drugs is under way.

Other drugs are also being looked at to reduce the risk of basal and squamous cell skin cancers in people at high risk.

Diagnosis and testing

Some newer approaches to diagnosing skin cancer don't require the removal of a skin sample. Examples of such "optical biopsies" include **reflectance confocal microscopy (RCM)** and **optical coherence tomography (OCT)**. These techniques are now available in some centers and will likely become more common in the coming years.

While it's not common for basal or squamous cell cancers to spread to other parts of the body, these cancers can be hard to treat once they do. Doctors are now looking for better ways to determine which skin cancers are likely to grow and spread more quickly, and therefore might require more intense treatment. For example, some research has shown that squamous cell skin cancers with lower levels of the **INPP5A** protein seem to be more likely to spread. More research is needed before this type of tumor testing becomes commonly used.

Treatment

Local treatments

Current local treatments such as [surgery](#)⁹ and [radiation therapy](#)¹⁰ work well for most basal and squamous cell skin cancers. Still, even some small cancers can be hard to treat if they're in certain areas. Newer forms of [non-surgical treatment](#)¹¹ such as new topical drugs, photodynamic therapy, and laser surgery may help reduce scarring and other possible side effects of treatment. The best way to use these treatments is now being studied.

Treating advanced disease

Most basal and squamous cell skin cancers are found and treated at an early stage, when they are likely to be cured, but some can grow into other areas or spread to other parts of the body. These cancers can often be hard to treat with current therapies such

as [radiation](#)¹² and [chemotherapy](#)¹³.

Squamous cell cancers: Several studies are testing newer **targeted drugs** for advanced squamous cell cancers. For example, cells from these cancers often have too much of the EGFR protein on their surfaces, which can help them grow. [Drugs that target this protein](#)¹⁴, such as cetuximab (Erbix), are now being tested in clinical trials, both alone and combined with other treatments.

Immunotherapy is another newer approach to treating some advanced squamous cell cancers. Drugs called [immune checkpoint inhibitors](#)¹⁵ are now coming into use as an option to treat some of these cancers.

Basal cell cancers: It's very rare for basal cell cancers to reach an advanced stage, but when they do, these cancers can be hard to treat. Vismodegib and sonidegib, drugs that target the hedgehog signaling pathway in cells, may help some people (see [Targeted Therapy for Basal and Squamous Cell Skin Cancers](#)¹⁶). Other drugs that target this pathway are now being studied as well.

Hyperlinks

1. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/causes-risks-prevention.html
2. www.cancer.org/cancer/cancer-causes/radiation-exposure/uv-radiation.html
3. www.cancer.org/healthy/be-safe-in-sun/uv-protection.html
4. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/detection-diagnosis-staging/detection.html
5. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/detection-diagnosis-staging/signs-and-symptoms.html
6. www.aad.org/
7. www.cancer.org/cancer/cancer-causes/infectious-agents/hpv.html
8. www.cancer.org/cancer/cancer-causes/infectious-agents/hpv/hpv-vaccines.html
9. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/treating/surgery.html
10. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/treating/radiation-therapy.html
11. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/treating/other-than-surgery.html
12. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/treating/radiation-therapy.html
13. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/treating/systemic-

- [chemotherapy.html](#)
14. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/treating/targeted-therapy.html
 15. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/treating/immunotherapy.html
 16. www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/treating/targeted-therapy.html

References

Chen AC, Martin AJ, Choy B, et al. A phase 3 randomized trial of nicotinamide for skin cancer chemoprevention. *N Engl J Med*. 2015;373:1618-1626.

Cumsky HJL, Costello CM, Zhang N, et al. The prognostic value of inositol polyphosphate 5-phosphatase in cutaneous squamous cell carcinoma. *J Am Acad Dermatol*. 2019;80:626-632.

Martins RG. Systemic treatment of advanced cutaneous squamous and basal cell carcinomas. UpToDate. 2019. Accessed at <https://www.uptodate.com/contents/systemic-treatment-of-advanced-cutaneous-squamous-and-basal-cell-carcinomas> on June 4, 2019.

National Comprehensive Cancer Network (NCCN). Practice Guidelines in Oncology: Basal Cell Skin Cancer. Version 1.2019. Accessed at www.nccn.org/professionals/physician_gls/PDF/nmsc.pdf on June 4, 2019.

National Comprehensive Cancer Network (NCCN). Practice Guidelines in Oncology: Squamous Cell Skin Cancer. Version 2.2019. Accessed at www.nccn.org/professionals/physician_gls/pdf/squamous.pdf on June 4, 2019.

Saslow D, Andrews KS, Manassaram-Baptiste D, et al. Human papillomavirus vaccination 2020 guideline update: American Cancer Society guideline adaptation. *CA Cancer J Clin*. 2020; DOI: 10.3322/caac.21616.

Stasko T, Hanlon AM. Prevention and management of skin cancer in solid organ transplant recipients. UpToDate. 2019. Accessed at <https://www.uptodate.com/contents/prevention-and-management-of-skin-cancer-in-solid-organ-transplant-recipients> on June 4, 2019.

Last Revised: July 8, 2020

Written by

The American Cancer Society medical and editorial content team
(www.cancer.org/cancer/acs-medical-content-and-news-staff.html)

Our team is made up of doctors and oncology certified nurses with deep knowledge of cancer care as well as journalists, editors, and translators with extensive experience in medical writing.

American Cancer Society medical information is copyrighted material. For reprint requests, please see our Content Usage Policy (www.cancer.org/about-us/policies/content-usage.html).

cancer.org | 1.800.227.2345