
About Anal Cancer

Get an overview of anal cancer and the latest key statistics in the US.

Overview and Types

If you've been diagnosed with anal cancer or are worried about it, you likely have a lot of questions. Learning some basics is a good place to start.

- [What Is Anal Cancer?](#)

Research and Statistics

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

- [Key Statistics for Anal Cancer](#)
- [What's New in Anal Cancer Research?](#)

What Is Anal Cancer?

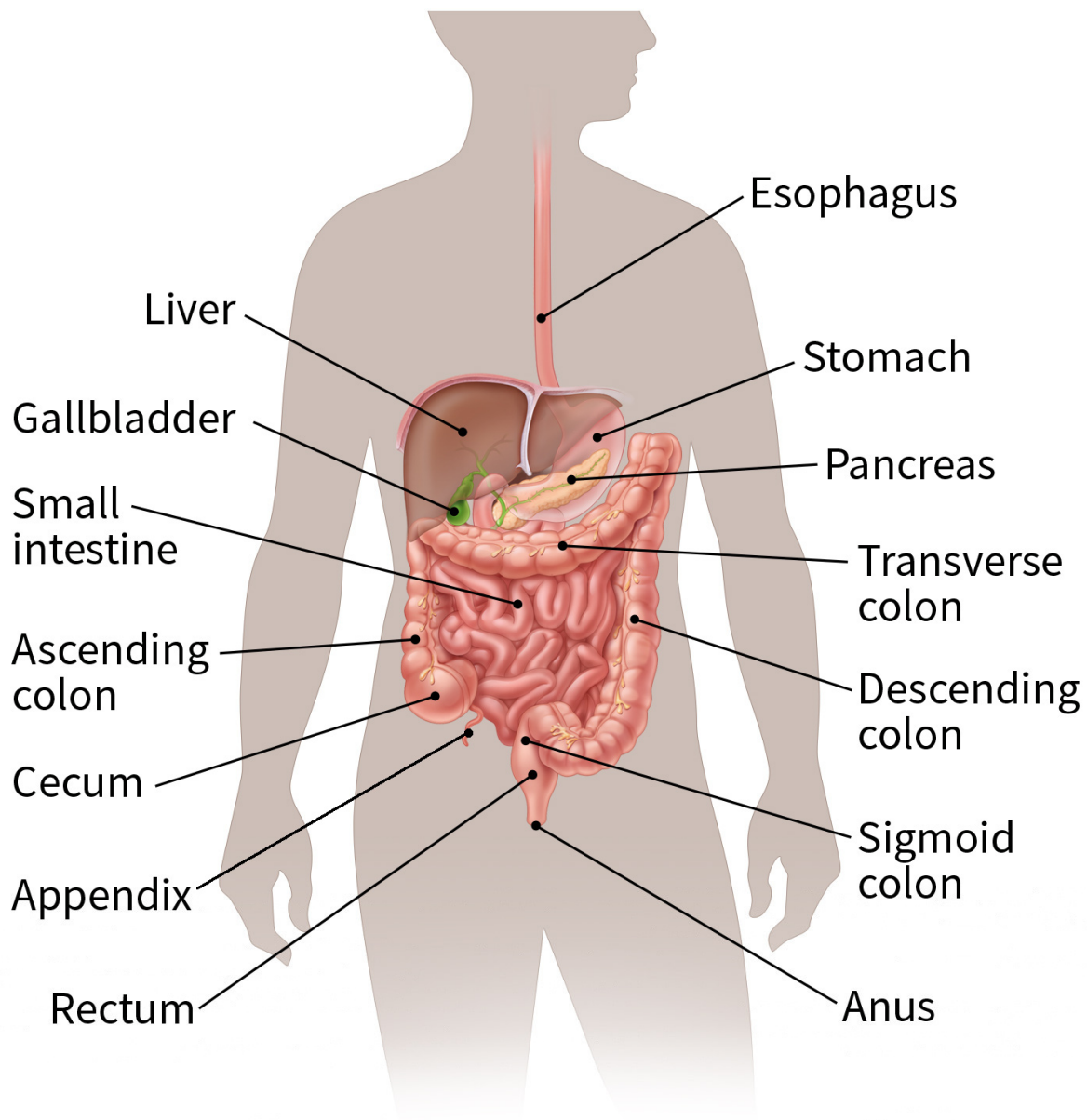
- [Normal structure and function of the anus](#)
- [Types of anal cancer](#)
- [Anal conditions that are pre-cancer](#)
- [Benign anal tumors](#)

Anal cancer is a type of cancer that starts in the anus. Cancer starts when cells in the body begin to grow out of control. To learn more about how cancers start and spread, see [What Is Cancer?](#)¹

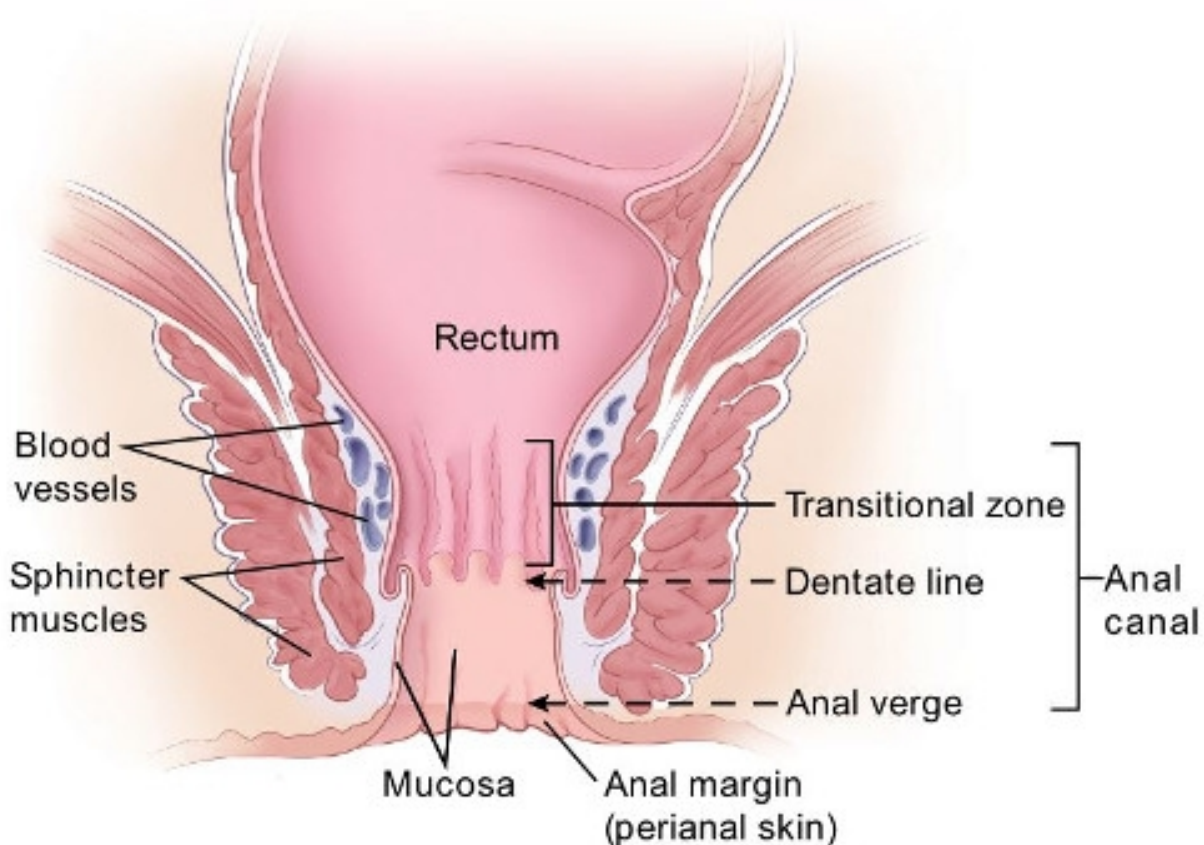
Normal structure and function of the anus

The anus is the opening at the lower end of the intestines. It's where the end of the intestines connect to the outside of the body.

As food is digested, it passes from the stomach to the small intestine. It then moves from the small intestine into the main part of the large intestine (called the *colon*). The colon absorbs water and salt from the digested food. The waste matter that's left after going through the colon is known as *feces* or *stool*. Stool is stored in the last part of the large intestine, called the *rectum*. From there, stool is passed out of the body through the anus as a bowel movement.



Gastrointestinal system (GI system)



Structures of the anus

The anus is connected to the rectum by the *anal canal*. The anal canal has two ring-shaped muscles (called *sphincter muscles*) that keep the anus closed and prevent stool from leaking out. The anal canal is about 1-1/2 to 2 inches (about 3 to 5 cm) long and goes from the rectum to the *anal verge*. The anal verge is where the canal connects to the outside skin at the anus. This skin around the anal verge is called the *perianal skin* (previously called the *anal margin*).

The inner lining of the anal canal is the *mucosa*. Most anal cancers start from cells in the mucosa. Glands and ducts (tubes leading from the glands) are found under the mucosa. The glands make mucus, which acts as a lubricating fluid.

The cells of the anal canal change as they go from the rectum to the anal verge:

- Cells above the anal canal (in the rectum) and in the part of the anal canal close to the rectum are shaped like tiny columns.
- Most cells near the middle of the anal canal are shaped like cubes and are called *transitional cells*. This area is called the *transitional zone*.

- About midway down the anal canal is the *dentate line*, which is where most of the anal glands empty mucus into the anus.
- Below the dentate line are flat (squamous) cells.
- At the anal verge, the squamous cells of the lower anal canal merge with the skin just outside the anus. This skin around the anal verge (called the *perianal skin* or the *anal margin*) is also made up of squamous cells, but it also contains sweat glands and hair follicles, which are not found in the lining of the lower anal canal.

Types of anal cancer

Anal cancers are often divided into 2 groups based on where they start:

- Cancers of the anal canal (above the anal verge)
- Cancers of the perianal skin (below the anal verge) – previously called *cancers of the anal margin*

Sometimes, treatment may be different, depending on where the cancer is located. But anal cancers can sometimes extend from one area into the other, so it's hard to know exactly where they started.

Squamous cell carcinoma

Most (nearly 9 out of 10 cases) anal cancers in the United States are squamous cell cancer. These tumors start in the squamous cells that line most of the anal canal and the anal margin.

Squamous cell cancers in the anal canal have grown beyond the surface and into the deeper layers of the lining.

Squamous cell cancers of the anal margin (perianal skin) can be treated as an anal cancer or like [squamous cell cancer of the skin](#)². It is important to see an expert if you are diagnosed with perianal cancer to determine the best course of treatment.

The anal cancer information here focuses mainly on anal squamous cell carcinoma since it is the most common type of anal cancer.

Rare types of anal cancers

Adenocarcinoma

A small number of anal cancers are *adenocarcinomas*. These cancers start in cells that line the upper part of the anus near the rectum. They can also start in the glands under the anal mucosa that release secretions into the anal canal. Most anal adenocarcinomas are treated the same as rectal carcinomas. For more information, see [Colorectal Cancer](#)³.

Adenocarcinomas can also start in apocrine glands (a type of sweat gland of the perianal skin). *Paget's disease* is a type of apocrine gland carcinoma that spreads through the surface layer of the skin. Paget's disease can affect skin anywhere in the body but most often affects skin of the perianal area, [vulva](#)⁴, or [breast](#)⁵. This should not be confused with Paget's disease of the bone, which is a different disease and is not cancer.

Basal cell carcinoma

Basal cell carcinomas are a type of skin cancer that can develop in the perianal skin. These tumors are much more common in areas of skin exposed to the sun, such as the face and hands. Very few anal cancers are basal cell carcinomas. They are often treated with surgery to remove the cancer. For more information, see [Skin Cancer: Basal and Squamous Cell](#)⁶.

Melanoma

These cancers start in cells in the skin or anal lining that make the brown pigment called *melanin*. Only a very small number of anal cancers are melanomas. Melanomas are far more common on the skin in other parts of the body. If melanomas are found at an early stage (before they have grown deeply into the skin or spread to lymph nodes) they can be removed with surgery, and the outlook for long-term survival is very good. But because anal melanomas are hard to see, most are found at a later stage.

If possible, the entire tumor is removed with surgery. If all of the tumor can be removed, a cure is possible. Sometimes, an abdominoperineal resection (APR) might be recommended. If the melanoma has spread too far to be removed completely, other treatments may be given. For more on this, see [Melanoma Skin Cancer](#)⁷.

Gastrointestinal stromal tumor (GIST)

These cancers are much more common in the stomach or small intestine, and rarely start in the anal region. When these tumors are found at an early stage, they are

removed with surgery. If they have spread beyond the anus, they can be treated with drug therapy. For more information, see [Gastrointestinal Stromal Tumor \(GIST\)](#)⁸.

Anal conditions that are pre-cancer

Some changes in the anal mucosa are harmless at first, but later might turn into cancer. These are called *pre-cancers*. Pre-cancers might also be called *dysplasia*. Some warts, for example, contain areas of dysplasia that can develop into cancer.

Dysplasia in cells of the anus is called *anal intraepithelial neoplasia (AIN)* or *anal squamous intraepithelial lesions (SILs)*. Depending on how the cells look, AIN or anal SIL can be divided into 2 groups:

- **Low-grade SIL (or grade 1 AIN):** The cells in low-grade SIL look like normal cells. Low-grade SIL often goes away without treatment and has a low chance of turning into cancer.
- **High-grade SIL (or grade 2 AIN or grade 3 AIN):** The cells in high-grade SIL look abnormal. High-grade SIL is less likely to go away without treatment and, with time, could become cancer. It needs to be watched closely and some cases of high-grade SIL need to be treated.

Benign anal tumors

Many types of tumors can develop in the anus. Not all of these tumors are cancers – some are *benign* (not cancer).

Polyps

Polyps are small, bumpy, or mushroom-like growths that form in the mucosa or just under it. There are many kinds including inflammatory polyps, lymphoid polyps and fibroepithelial polyps.

Skin tags

Skin tags are benign growths of connective tissue that are covered by squamous cells. Skin tags are often mistaken for hemorrhoids (swollen veins inside the anus or rectum), but they're not the same.

Anal warts

Anal warts (also called *condylomas*) are growths that form just outside the anus and in the lower anal canal below the dentate line. Sometimes they can be found just above the dentate line. They're caused by infection with [human papilloma virus](#)⁹ (HPV). People who have or had anal warts are more likely to get anal cancer. (See “Anal conditions that are pre-cancer” above and [Risk Factors for Anal cancer](#)¹⁰.)

Other benign tumors

In rare cases, benign tumors can grow in other tissues of the anus. These include:

- **Leiomyomas:** Benign tumors that develop from smooth muscle cells
- **Granular cell tumors:** Tumors that develop from nerve cells and are composed of cells that contain lots of tiny spots (granules)
- **Lipomas:** Benign tumors that start from fat cells

Hyperlinks

1. www.cancer.org/cancer/understanding-cancer/what-is-cancer.html
2. www.cancer.org/cancer/types/basal-and-squamous-cell-skin-cancer.html
3. www.cancer.org/cancer/types/colon-rectal-cancer.html
4. www.cancer.org/cancer/types/vulvar-cancer.html
5. www.cancer.org/cancer/types/breast-cancer/about/types-of-breast-cancer/paget-disease-of-the-nipple.html
6. www.cancer.org/cancer/types/basal-and-squamous-cell-skin-cancer.html
7. www.cancer.org/cancer/types/melanoma-skin-cancer.html
8. www.cancer.org/cancer/types/gastrointestinal-stromal-tumor.html
9. www.cancer.org/cancer/risk-prevention/hpv.html
10. www.cancer.org/cancer/types/anal-cancer/causes-risks-prevention/risk-factors.html

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Key Statistics for Anal Cancer

Anal cancer is fairly rare – much less common than cancer of the colon or rectum. The American Cancer Society estimates for anal cancer in the United States for 2024 are:

- About 10,540 new cases (3,360 in men and 7,180 in women)
- About 2,190 deaths (1,000 in men and 1,190 in women)

The number of new anal cancer cases has been rising for many years. Anal cancer is rare in people younger than 35 and is found mainly in older adults, with an average age being in the early 60s. It is also more common in White women and Black men.

The risk of being diagnosed with anal cancer during one's lifetime is about 1 in 500. The

risk is higher in people with certain [risk factors](#)¹ for anal cancer.

The number of people who die from anal cancer each year has been rising, but treatment for anal cancer is often very effective, and many patients with this cancer can be cured. But anal cancer can be a serious condition. For information on survival, see [Survival Rates by Stage of Anal Cancer](#)².

Visit the American Cancer Society's [Cancer Statistics Center](#)³ for more key statistics.

Hyperlinks

1. www.cancer.org/cancer/types/anal-cancer/causes-risks-prevention/risk-factors.html
2. www.cancer.org/cancer/types/anal-cancer/detection-diagnosis-staging/survival-rates.html
3. cancerstatisticscenter.cancer.org/

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American Cancer Society. *Cancer Facts & Figures 2024*. Atlanta: American Cancer Society; 2024.

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What's New in Anal Cancer Research?

- [Looking at changes in anal cancer cells](#)

- [Screening for anal cancer](#)
- [Treatment](#)

Important research into anal cancer is now under way in many hospitals, medical centers, and other institutions around the world. Each year, scientists use [clinical trials](#)¹ to find out more about what causes this disease, how to prevent it, and how to better treat it.

Looking at changes in anal cancer cells

We know that [human papillomavirus](#)² (HPV) is a major [cause of anal cancer](#)³. Researchers are now looking at how HPV affects molecules inside anal cells to cause them to become cancer. Improved understanding of the molecular changes inside anal cancer cells may lead to ways to prevent it and is also expected to help scientists find treatments using drugs that target these changes. Some clinical trials are studying drugs for this.

Screening for anal cancer

Ongoing research is being done on the value of [screening tests](#)⁴ for anal cancer, especially in people with major risk factors, such as [HIV infection](#)⁵. (Screening is checking for a disease in people who don't have symptoms of it.) The test studied most is anal cytology, sometimes called the *anal Pap test*. This test may help find anal cancer when it's small, before it's causing symptoms and when it's easier to treat. Studies are also looking at whether the anal Pap test can help find anal pre-cancer (called *anal intraepithelial neoplasia*, or *AIN*), so it can be treated before cancer even develops.

Treatment

Lasers

Better treatments for anal cancer with fewer side effects and long-term changes in body function are areas of active research. For instance, [photodynamic therapy](#)⁶ is being looked at to see if it can help treat pre-cancer changes.

Immunotherapy

[Immunotherapy](#)⁷ is treatment that boosts the body's immune response against cancer cells. Pembrolizumab (Keytruda) and nivolumab (Opdivo) are immunotherapy drugs

now being used in people with advanced anal cancer that has grown during at least one prior chemotherapy treatment. Different kinds of immunotherapy drugs are also being studied as an option for treating anal cancers that have not spread to distant organs but cannot be removed with surgery or that have not spread but are at high risk of coming back after chemoradiation and surgery. Another area of research is the combination of immunotherapy with chemotherapy.

Radiation therapy

Radiation therapy is a common treatment for anal cancer. Doctors are looking at ways to give external radiation including proton therapy more accurately and effectively to decrease the effects on normal healthy tissues. Other research is being done to learn about the possible benefits of combining chemotherapy with internal radiation therapy (brachytherapy) to treat anal cancer that has come back or gotten worse.

Combining lower doses of chemotherapy with radiation is another area of interest. Giving lower doses of chemo with radiation might help lessen side effects while still shrinking the cancer. Different drug combinations with radiation are being tested in clinical trials.

HPV vaccines

[HPV vaccines](#)⁸ are recommended for children and certain young adults to help prevent HPV infection that can cause some types of cancer, but the vaccines don't treat HPV infections that people already have. Doctors are looking at whether HPV vaccines might be used to help treat high-grade pre-cancers and keep them from becoming cancer especially in people with HIV. These vaccines may help the immune system attack pre-cancers and even cancers that contain HPV.

Hyperlinks

1. www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html
2. www.cancer.org/cancer/risk-prevention/hpv.html
3. www.cancer.org/cancer/types/anal-cancer/causes-risks-prevention/what-causes.html
4. www.cancer.org/cancer/screening.html
5. www.cancer.org/cancer/risk-prevention/infections/hiv-infection-aids.html

6. www.cancer.org/cancer/managing-cancer/treatment-types/radiation/photodynamic-therapy.html
7. www.cancer.org/cancer/managing-cancer/treatment-types/immunotherapy.html
8. www.cancer.org/cancer/risk-prevention/hpv/hpv-vaccines.html

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