Anal Cancer Treatment (PDQ®)

Patient Version

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Table of Contents

General Information About Anal Cancer

Stages of Anal Cancer

Recurrent Anal Cancer

Treatment Option Overview

Treatment Options by Stage
  Stage 0 (Carcinoma in Situ)
  Stage I Anal Cancer
  Stage II Anal Cancer
  Stage IIIA Anal Cancer
  Stage IIIB Anal Cancer
  Stage IV Anal Cancer

Treatment Options for Recurrent Anal Cancer

To Learn More About Anal Cancer

Changes to This Summary (02/07/2014)

About This PDQ Summary
  About PDQ
  Purpose of This Summary
  Reviewers and Updates
  Clinical Trial Information
  Permission to Use This Summary
  Disclaimer
Anal cancer is a disease in which malignant (cancer) cells form in the tissues of the anus.

The anus is the end of the large intestine, below the rectum, through which stool (solid waste) leaves the body. The anus is formed partly from the outer skin layers of the body and partly from the intestine. Two ring-like muscles, called sphincter muscles, open and close the anal opening and let stool pass out of the body. The anal canal, the part of the anus between the rectum and the anal opening, is about 1 ½ inches long.

Key Points for This Section

- Anal cancer is a disease in which malignant (cancer) cells form in the tissues of the anus.
- Being infected with the human papillomavirus (HPV) increases the risk of developing anal cancer.
- Signs of anal cancer include bleeding from the anus or rectum or a lump near the anus.
- Tests that examine the rectum and anus are used to detect (find) and diagnose anal cancer.
- Certain factors affect the prognosis (chance of recovery) and treatment options.
Anatomy of the lower digestive system, showing the colon and other organs.

The skin around the outside of the anus is called the perianal area. Tumors in this area are skin tumors, not anal cancer.

**Being infected with the human papillomavirus (HPV) increases the risk of developing anal cancer.**

Risk factors include the following:

- Being infected with human papillomavirus (HPV).
- Having many sexual partners.
- Having receptive anal intercourse (anal sex).
- Being older than 50 years.
- Frequent anal redness, swelling, and soreness.
- Having anal fistulas (abnormal openings).
- Smoking cigarettes.

**Signs of anal cancer include bleeding from the anus or rectum or a lump near the anus.**

These and other signs and symptoms may be caused by anal cancer or by other conditions. Check with
your doctor if you have any of the following:

- Bleeding from the anus or rectum.
- Pain or pressure in the area around the anus.
- Itching or discharge from the anus.
- A lump near the anus.
- A change in bowel habits.

Tests that examine the rectum and anus are used to detect (find) and diagnose anal cancer.

The following tests and procedures may be used:

- **Physical exam and history**: An exam of the body to check general signs of health, including checking for signs of disease, such as lumps or anything else that seems unusual. A history of the patient’s health habits and past illnesses and treatments will also be taken.

- **Digital rectal examination (DRE)**: An exam of the anus and rectum. The doctor or nurse inserts a lubricated, gloved finger into the lower part of the rectum to feel for lumps or anything else that seems unusual.
the rectum and feels the prostate to check for anything abnormal.

- **Anoscopy**: An exam of the anus and lower rectum using a short, lighted tube called an anoscope.
- **Proctoscopy**: An exam of the rectum using a short, lighted tube called a proctoscope.
- **Endo-anal or endorectal ultrasound**: A procedure in which an ultrasound transducer (probe) is inserted into the anus or rectum and used to bounce high-energy sound waves (ultrasound) off internal tissues or organs and make echoes. The echoes form a picture of body tissues called a sonogram.
- **Biopsy**: The removal of cells or tissues so they can be viewed under a microscope by a pathologist to check for signs of cancer. If an abnormal area is seen during the anoscopy, a biopsy may be done at that time.

**Certain factors affect the prognosis (chance of recovery) and treatment options.**

The prognosis (chance of recovery) depends on the following:

- The size of the tumor.
- Where the tumor is in the anus.
- Whether the cancer has spread to the lymph nodes.

The treatment options depend on the following:

- The stage of the cancer.
- Where the tumor is in the anus.
- Whether the patient has human immunodeficiency virus (HIV).
- Whether cancer remains after initial treatment or has recurred.

**Stages of Anal Cancer**

**Key Points for This Section**

- After anal cancer has been diagnosed, tests are done to find out if cancer cells have spread within the anus or to other parts of the body.
- There are three ways that cancer spreads in the body.
- Cancer may spread from where it began to other parts of the body.
- The following stages are used for anal cancer:
  - Stage 0 (Carcinoma in Situ)
  - Stage I
  - Stage II
  - Stage IIIA
  - Stage IIIB
Stage IV

After anal cancer has been diagnosed, tests are done to find out if cancer cells have spread within the anus or to other parts of the body.

The process used to find out if cancer has spread within the anus or to other parts of the body is called staging. The information gathered from the staging process determines the stage of the disease. It is important to know the stage in order to plan treatment. The following tests may be used in the staging process:

- **CT scan (CAT scan):** A procedure that makes a series of detailed pictures of areas inside the body, such as the abdomen or chest, taken from different angles. The pictures are made by a computer linked to an x-ray machine. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly. This procedure is also called computed tomography, computerized tomography, or computerized axial tomography. For anal cancer, a CT scan of the pelvis and abdomen may be done.

- **Chest x-ray:** An x-ray of the organs and bones inside the chest. An x-ray is a type of energy beam that can go through the body and onto film, making a picture of areas inside the body.

- **MRI (magnetic resonance imaging):** A procedure that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the body. This procedure is also called nuclear magnetic resonance imaging (NMRI).

- **PET scan (positron emission tomography scan):** A procedure to find malignant tumor cells in the body. A small amount of radioactive glucose (sugar) is injected into a vein. The PET scanner rotates around the body and makes a picture of where glucose is being used in the body. Malignant tumor cells show up brighter in the picture because they are more active and take up more glucose than normal cells do.

There are three ways that cancer spreads in the body.

Cancer can spread through tissue, the lymph system, and the blood:

- **Tissue.** The cancer spreads from where it began by growing into nearby areas.
- **Lymph system.** The cancer spreads from where it began by getting into the lymph system. The cancer travels through the lymph vessels to other parts of the body.
- **Blood.** The cancer spreads from where it began by getting into the blood. The cancer travels through the blood vessels to other parts of the body.

Cancer may spread from where it began to other parts of the body.

When cancer spreads to another part of the body, it is called metastasis. Cancer cells break away from where they began (the primary tumor) and travel through the lymph system or blood.
• Lymph system. The cancer gets into the lymph system, travels through the lymph vessels, and forms a tumor (metastatic tumor) in another part of the body.

• Blood. The cancer gets into the blood, travels through the blood vessels, and forms a tumor (metastatic tumor) in another part of the body.

The metastatic tumor is the same type of cancer as the primary tumor. For example, if anal cancer spreads to the lung, the cancer cells in the lung are actually anal cancer cells. The disease is metastatic anal cancer, not lung cancer.

**The following stages are used for anal cancer:**

**Stage 0 (Carcinoma in Situ)**

In stage 0, abnormal cells are found in the innermost lining of the anus. These abnormal cells may become cancer and spread into nearby normal tissue. Stage 0 is also called carcinoma in situ.

![Pea, peanut, walnut, and lime show tumor sizes.](image)

**Stage I**

In stage I, cancer has formed and the tumor is 2 centimeters or smaller.

**Stage II**

In stage II, the tumor is larger than 2 centimeters.

**Stage IIIA**

In stage IIIA, the tumor may be any size and has spread to either:

• lymph nodes near the rectum; or
• nearby organs, such as the vagina, urethra, and bladder.

**Stage IIIB**

In stage IIIB, the tumor may be any size and has spread:
• to nearby organs and to lymph nodes near the rectum; or
• to lymph nodes on one side of the pelvis and/or groin, and may have spread to nearby organs; or
• to lymph nodes near the rectum and in the groin, and/or to lymph nodes on both sides of the pelvis and/or groin, and may have spread to nearby organs.

**Stage IV**

In stage IV, the tumor may be any size and cancer may have spread to lymph nodes or nearby organs and has spread to distant parts of the body.

**Recurrent Anal Cancer**

Recurrent anal cancer is cancer that has recurred (come back) after it has been treated. The cancer may come back in the anus or in other parts of the body.

**Treatment Option Overview**

**Key Points for This Section**

• There are different types of treatment for patients with anal cancer.
• Three types of standard treatment are used:
  • Radiation therapy
  • Chemotherapy
  • Surgery
• Having the human immunodeficiency virus can affect treatment of anal cancer.
• New types of treatment are being tested in clinical trials.
  • Radiosensitizers
• Patients may want to think about taking part in a clinical trial.
• Patients can enter clinical trials before, during, or after starting their cancer treatment.
• Follow-up tests may be needed.

**There are different types of treatment for patients with anal cancer.**

Different types of treatments are available for patients with anal cancer. Some treatments are standard (the currently used treatment), and some are being tested in clinical trials. A treatment clinical trial is a research study meant to help improve current treatments or obtain information on new treatments for patients with cancer. When clinical trials show that a new treatment is better than the standard treatment, the new treatment may become the standard treatment. Patients may want to think about taking part in a clinical trial. Some clinical trials are open only to patients who have not started treatment.

**Three types of standard treatment are used:**
Radiation therapy

Radiation therapy is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells. There are two types of radiation therapy. External radiation therapy uses a machine outside the body to send radiation toward the cancer. Internal radiation therapy uses a radioactive substance sealed in needles, seeds, wires, or catheters that are placed directly into or near the cancer. The way the radiation therapy is given depends on the type and stage of the cancer being treated.

Chemotherapy

Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping the cells from dividing. When chemotherapy is taken by mouth or injected into a vein or muscle, the drugs enter the bloodstream and can reach cancer cells throughout the body (systemic chemotherapy). When chemotherapy is placed directly into the cerebrospinal fluid, an organ, or a body cavity such as the abdomen, the drugs mainly affect cancer cells in those areas (regional chemotherapy). The way the chemotherapy is given depends on the type and stage of the cancer being treated.

Surgery

- Local resection: A surgical procedure in which the tumor is cut from the anus along with some of the healthy tissue around it. Local resection may be used if the cancer is small and has not spread. This procedure may save the sphincter muscles so the patient can still control bowel movements. Tumors that form in the lower part of the anus can often be removed with local resection.

- Abdominoperineal resection: A surgical procedure in which the anus, the rectum, and part of the sigmoid colon are removed through an incision made in the abdomen. The doctor sews the end of the intestine to an opening, called a stoma, made in the surface of the abdomen so body waste can be collected in a disposable bag outside of the body. This is called a colostomy. Lymph nodes that contain cancer may also be removed during this operation.
are removed, a stoma is created, and a colostomy bag is attached to the stoma.

Having the human immunodeficiency virus can affect treatment of anal cancer.

Cancer therapy can further damage the already weakened immune systems of patients who have the human immunodeficiency virus (HIV). For this reason, patients who have anal cancer and HIV are usually treated with lower doses of anticancer drugs and radiation than patients who do not have HIV.

New types of treatment are being tested in clinical trials.

This summary section describes treatments that are being studied in clinical trials. It may not mention every new treatment being studied. Information about clinical trials is available from the NCI Web site.

Radiosensitizers

Radiosensitizers are drugs that make tumor cells more sensitive to radiation therapy. Combining radiation therapy with radiosensitizers may kill more tumor cells.

Patients may want to think about taking part in a clinical trial.

For some patients, taking part in a clinical trial may be the best treatment choice. Clinical trials are part of the cancer research process. Clinical trials are done to find out if new cancer treatments are safe and effective or better than the standard treatment.

Many of today's standard treatments for cancer are based on earlier clinical trials. Patients who take part in a clinical trial may receive the standard treatment or be among the first to receive a new treatment.

Patients who take part in clinical trials also help improve the way cancer will be treated in the future. Even when clinical trials do not lead to effective new treatments, they often answer important questions and help move research forward.

Patients can enter clinical trials before, during, or after starting their cancer treatment.

Some clinical trials only include patients who have not yet received treatment. Other trials test treatments for patients whose cancer has not gotten better. There are also clinical trials that test new ways to stop cancer from recurring (coming back) or reduce the side effects of cancer treatment.

Clinical trials are taking place in many parts of the country. See the Treatment Options section that follows for links to current treatment clinical trials. These have been retrieved from NCI's listing of clinical trials.

Follow-up tests may be needed.

Some of the tests that were done to diagnose the cancer or to find out the stage of the cancer may be repeated. Some tests will be repeated in order to see how well the treatment is working. Decisions about whether to continue, change, or stop treatment may be based on the results of these tests. This is sometimes called re-staging.
Some of the tests will continue to be done from time to time after treatment has ended. The results of these tests can show if your condition has changed or if the cancer has recurred (come back). These tests are sometimes called follow-up tests or check-ups.

Treatment Options by Stage

Stage 0 (Carcinoma in Situ)

Treatment of stage 0 is usually local resection.

Check for U.S. clinical trials from NCI’s list of cancer clinical trials that are now accepting patients with stage 0 anal cancer. For more specific results, refine the search by using other search features, such as the location of the trial, the type of treatment, or the name of the drug. Talk with your doctor about clinical trials that may be right for you. General information about clinical trials is available from the NCI Web site.

Stage I Anal Cancer

Treatment of stage I anal cancer may include the following:

- Local resection.
- External-beam radiation therapy with or without chemotherapy. If cancer remains after treatment, more chemotherapy and radiation therapy may be given to avoid the need for a permanent colostomy.
- Internal radiation therapy.
- Abdominoperineal resection, if cancer remains or comes back after treatment with radiation therapy and chemotherapy.
- Internal radiation therapy for cancer that remains after treatment with external-beam radiation therapy.

Patients who have had treatment that saves the sphincter muscles may receive follow-up exams every 3 months for the first 2 years, including rectal exams with endoscopy and biopsy, as needed.

Check for U.S. clinical trials from NCI’s list of cancer clinical trials that are now accepting patients with stage I anal cancer. For more specific results, refine the search by using other search features, such as the location of the trial, the type of treatment, or the name of the drug. Talk with your doctor about clinical trials that may be right for you. General information about clinical trials is available from the NCI Web site.

Stage II Anal Cancer

Treatment of stage II anal cancer may include the following:

- Local resection.
- External-beam radiation therapy with chemotherapy. If cancer remains after treatment, more
chemotherapy and radiation therapy may be given to avoid the need for a permanent colostomy.

- Internal radiation therapy.
- Abdominoperineal resection, if cancer remains or comes back after treatment with radiation therapy and chemotherapy.
- A clinical trial of new treatment options.

Patients who have had treatment that saves the sphincter muscles may receive follow-up exams every 3 months for the first 2 years, including rectal exams with endoscopy and biopsy, as needed.

Check for U.S. clinical trials from NCI's list of cancer clinical trials that are now accepting patients with stage II anal cancer. For more specific results, refine the search by using other search features, such as the location of the trial, the type of treatment, or the name of the drug. Talk with your doctor about clinical trials that may be right for you. General information about clinical trials is available from the NCI Web site.

**Stage IIIA Anal Cancer**

Treatment of stage IIIA anal cancer may include the following:

- External-beam radiation therapy with chemotherapy. If cancer remains after treatment, more chemotherapy and radiation therapy may be given to avoid the need for a permanent colostomy.
- Internal radiation therapy.
- Abdominoperineal resection, if cancer remains or comes back after treatment with chemotherapy and radiation therapy.
- A clinical trial of new treatment options.

Check for U.S. clinical trials from NCI’s list of cancer clinical trials that are now accepting patients with stage IIIA anal cancer. For more specific results, refine the search by using other search features, such as the location of the trial, the type of treatment, or the name of the drug. Talk with your doctor about clinical trials that may be right for you. General information about clinical trials is available from the NCI Web site.

**Stage IIIB Anal Cancer**

Treatment of stage IIIB anal cancer may include the following:

- External-beam radiation therapy with chemotherapy.
- Local resection or abdominoperineal resection, if cancer remains or comes back after treatment with chemotherapy and radiation therapy. Lymph nodes may also be removed.
- A clinical trial of new treatment options.

Check for U.S. clinical trials from NCI’s list of cancer clinical trials that are now accepting patients with stage IIIB anal cancer. For more specific results, refine the search by using other search features, such as the location of the trial, the type of treatment, or the name of the drug. Talk with your doctor about clinical trials that may be right for you. General information about clinical trials is available from the NCI Web site.
Stage IV Anal Cancer

Treatment of stage IV anal cancer may include the following:

- Surgery as palliative therapy to relieve symptoms and improve the quality of life.
- Radiation therapy as palliative therapy.
- Chemotherapy with radiation therapy as palliative therapy.
- A clinical trial of new treatment options.

Check for U.S. clinical trials from NCI’s list of cancer clinical trials that are now accepting patients with stage IV anal cancer. For more specific results, refine the search by using other search features, such as the location of the trial, the type of treatment, or the name of the drug. Talk with your doctor about clinical trials that may be right for you. General information about clinical trials is available from the NCI Web site.

Treatment Options for Recurrent Anal Cancer

Treatment of recurrent anal cancer may include the following:

- Radiation therapy and chemotherapy, for recurrence after surgery.
- Surgery, for recurrence after radiation therapy and/or chemotherapy.
- A clinical trial of radiation therapy with chemotherapy and/or radiosensitizers.

Check for U.S. clinical trials from NCI’s list of cancer clinical trials that are now accepting patients with recurrent anal cancer. For more specific results, refine the search by using other search features, such as the location of the trial, the type of treatment, or the name of the drug. Talk with your doctor about clinical trials that may be right for you. General information about clinical trials is available from the NCI Web site.

To Learn More About Anal Cancer

For more information from the National Cancer Institute about anal cancer, see the following:

- Anal Cancer Home Page
- Smoking Home Page (Includes help with quitting)
- Human Papillomaviruses and Cancer

For general cancer information and other resources from the National Cancer Institute, see the following:

- Cancer Staging
- Chemotherapy and You: Support for People With Cancer
- Radiation Therapy and You: Support for People With Cancer
- Coping with Cancer: Supportive and Palliative Care
- Questions to Ask Your Doctor About Cancer
- Cancer Library
- Information For Survivors/Caregivers/Advocates

Changes to This Summary (02/07/2014)
The PDQ cancer information summaries are reviewed regularly and updated as new information becomes available. This section describes the latest changes made to this summary as of the date above.

Editorial changes were made to this summary.

About This PDQ Summary

About PDQ

Physician Data Query (PDQ) is the National Cancer Institute's (NCI's) comprehensive cancer information database. The PDQ database contains summaries of the latest published information on cancer prevention, detection, genetics, treatment, supportive care, and complementary and alternative medicine. Most summaries come in two versions. The health professional versions have detailed information written in technical language. The patient versions are written in easy-to-understand, nontechnical language. Both versions have cancer information that is accurate and up to date and most versions are also available in Spanish.

PDQ is a service of the NCI. The NCI is part of the National Institutes of Health (NIH). NIH is the federal government’s center of biomedical research. The PDQ summaries are based on an independent review of the medical literature. They are not policy statements of the NCI or the NIH.

Purpose of This Summary

This PDQ cancer information summary has current information about the treatment of anal cancer. It is meant to inform and help patients, families, and caregivers. It does not give formal guidelines or recommendations for making decisions about health care.

Reviewers and Updates

Editorial Boards write the PDQ cancer information summaries and keep them up to date. These Boards are made up of experts in cancer treatment and other specialties related to cancer. The summaries are reviewed regularly and changes are made when there is new information. The date on each summary ("Date Last Modified") is the date of the most recent change.

The information in this patient summary was taken from the health professional version, which is reviewed regularly and updated as needed, by the PDQ Adult Treatment Editorial Board.

Clinical Trial Information

A clinical trial is a study to answer a scientific question, such as whether one treatment is better than another. Trials are based on past studies and what has been learned in the laboratory. Each trial answers certain scientific questions in order to find new and better ways to help cancer patients. During treatment clinical trials, information is collected about the effects of a new treatment and how well it works. If a clinical trial shows that a new treatment is better than one currently being used, the new treatment may become "standard." Patients may want to think about taking part in a clinical trial. Some clinical trials are
open only to patients who have not started treatment.

Clinical trials are listed in PDQ and can be found online at NCI's Web site. Many cancer doctors who take part in clinical trials are also listed in PDQ. For more information, call the Cancer Information Service 1-800-4-CANCER (1-800-422-6237).

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Disclaimer

The information in these summaries should not be used to make decisions about insurance reimbursement. More information on insurance coverage is available on Cancer.gov on the Coping with Cancer: Financial, Insurance, and Legal Information page.

Contact Us

More information about contacting us or receiving help with the Cancer.gov Web site can be found on our Contact Us for Help page. Questions can also be submitted to Cancer.gov through the Web site’s Contact Form.

Get More Information From NCI

Call 1-800-4-CANCER

For more information, U.S. residents may call the National Cancer Institute's (NCI's) Cancer Information Service toll-free at 1-800-4-CANCER (1-800-422-6237) Monday through Friday from 8:00 a.m. to 8:00 p.m., Eastern Time. A trained Cancer Information Specialist is available to answer your questions.

Chat online
The NCI's LiveHelp® online chat service provides Internet users with the ability to chat online with an Information Specialist. The service is available from 8:00 a.m. to 11:00 p.m. Eastern time, Monday through Friday. Information Specialists can help Internet users find information on NCI Web sites and answer questions about cancer.

Write to us

For more information from the NCI, please write to this address:

   NCI Public Inquiries Office
   9609 Medical Center Dr.
   Room 2E532 MSC 9760
   Bethesda, MD 20892-9760

Search the NCI Web site

The NCI Web site provides online access to information on cancer, clinical trials, and other Web sites and organizations that offer support and resources for cancer patients and their families. For a quick search, use the search box in the upper right corner of each Web page. The results for a wide range of search terms will include a list of "Best Bets," editorially chosen Web pages that are most closely related to the search term entered.

There are also many other places to get materials and information about cancer treatment and services. Hospitals in your area may have information about local and regional agencies that have information on finances, getting to and from treatment, receiving care at home, and dealing with problems related to cancer treatment.

Find Publications

The NCI has booklets and other materials for patients, health professionals, and the public. These publications discuss types of cancer, methods of cancer treatment, coping with cancer, and clinical trials. Some publications provide information on tests for cancer, cancer causes and prevention, cancer statistics, and NCI research activities. NCI materials on these and other topics may be ordered online or printed directly from the NCI Publications Locator. These materials can also be ordered by telephone from the Cancer Information Service toll-free at 1-800-4-CANCER (1-800-422-6237).