



Prostate Cancer

SANFORD[®]
CANCER CENTER

General Information About Prostate Cancer

Key Points

- Prostate cancer is a disease in which malignant (cancer) cells form in the tissues of the prostate.
- Signs of prostate cancer include a weak flow of urine (pee) or frequent urination (need to go).
- Bloodwork and tests that examine the prostate are used to find or diagnose prostate cancer.
- Certain factors affect prognosis (chance of recovery) and treatment options.

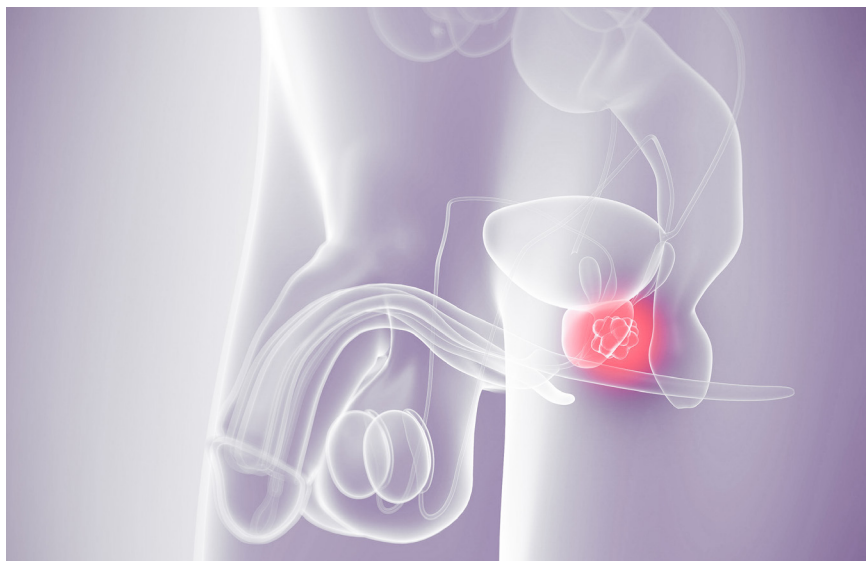
Prostate Cancer Is a Disease in Which Malignant (Cancer) Cells Form In the Tissues of the Prostate.

The prostate is a gland in the male reproductive system. It lies just below the bladder (the organ that collects and empties urine) and in front of the rectum (the lower part of the intestine). It is about the size of a walnut and surrounds part of the urethra (the tube that empties urine from the bladder). The prostate gland makes fluid that is part of the semen.

About 1 man in 8 will be diagnosed with prostate cancer during his lifetime. Prostate cancer is more likely to develop in older men and in non-Hispanic Black men. About 6 cases in 10 are diagnosed in men who are 65 or older, and it is rare in men under 40. The average age of men at diagnosis is about 66.

Sometimes there can be a hereditary component to prostate cancer. Other cancers can have a hereditary link to prostate cancer. Your doctor may advise you to see a genetics provider.

Most men diagnosed with prostate cancer do not die of it.



Signs of Prostate Cancer Include a Weak Flow of Urine or Frequent Urination.

Signs and symptoms may be caused by prostate cancer or other conditions:

- Weak or interrupted (stop-and-go) flow of urine
- Sudden urge to urinate
- Frequent urination (especially at night)
- Trouble starting the flow of urine
- Trouble emptying the bladder completely
- Pain or burning while urinating
- Blood in the urine or semen
- A pain in the back, hips, or pelvis that does not go away
- Shortness of breath, feeling very tired, fast heartbeat, dizziness, or pale skin caused by anemia

Other conditions, such as benign prostatic hypertrophy (BPH or large prostate) may cause the same symptoms. As men age, the prostate may get bigger and block the urethra or bladder.

Tests That Examine the Prostate and Blood Are Used to Detect (Find) and Diagnose Prostate 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. Your health habits and past illnesses and treatments will also be reviewed.

Digital rectal exam (DRE): An exam of the rectum. The doctor inserts a lubricated, gloved finger into the rectum and feels the prostate through the rectal wall for lumps or abnormal areas.

Prostate-specific antigen (PSA) test: A test that measures the level of PSA in the blood. PSA is a substance made by the prostate that may be found in an increased amount in the blood of men who have prostate cancer. PSA levels may also be high in men who have an infection or inflammation of the prostate or BPH (an enlarged, but noncancerous, prostate).

Transrectal ultrasound: A probe about the size of a finger is inserted into the rectum to check the prostate. The probe bounces high-energy sound waves (ultrasound) off internal tissues or organs and make echoes. The echoes form a picture called a sonogram. Transrectal ultrasound may be used during a biopsy procedure.

Magnetic resonance imaging (MRI): The use of a strong magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the body. An MRI checks for cancer spread outside the prostate into nearby tissues.

Biopsy: The removal of cells or tissues to be viewed under a microscope by a pathologist. A transrectal biopsy is the removal of tissue from the prostate by inserting a thin needle through the rectum and into the prostate. The biopsy is often guided by transrectal ultrasound.

- If abnormal cells are present, the Gleason score provides a range from 2 to 10 that predicts how likely it is that a tumor will spread. The lower the number, the less likely the tumor is to spread. Gleason score $3+4=7$ tumors still have a good prognosis (outlook), although not as good as a Gleason score 6 tumor.
- A Gleason score $4+3=7$ tumor is more likely to grow and spread than a $3+4=7$ tumor, yet not as likely as a Gleason score 8 tumor.
- The biopsy may also be reported as a Grade:
 - Grade Group 1 = Gleason score 2, 3, 4, 5, or 6
 - Grade Group 2 = Gleason score $3+4=7$ (still a good outlook)
 - Grade Group 3 = Gleason score $4+3=7$ (more likely to grow and spread)
 - Grade Group 4 = Gleason score 8
 - Grade Group 5 = Gleason score 9-10

Certain Factors Affect Prognosis (Chance of Recovery) and Treatment Options.

Your chance of recovery and treatment options depend on the following:

- The stage of the cancer (level of PSA, Gleason score, grade of the tumor, how much of the prostate is affected by the cancer, and whether the cancer has spread to other places in the body)
- Your age
- Whether the cancer has just been diagnosed or has recurred (come back)

Treatment options also may depend on the following:

- Presence of other health problems
- The expected side effects of treatment
- Past treatment for prostate cancer
- Your wishes

Stages of Prostate Cancer

Key Points

- After prostate cancer has been diagnosed, tests are done to find out if cancer cells have spread within the prostate 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 prostate cancer:
 - Stage I (1)
 - Stage II (2)
 - Stage III (3)
 - Stage IV (4)

After Prostate Cancer Has Been Diagnosed, Tests Are Done to Find Out if Cancer Cells Have Spread Within the Prostate or to Other Parts of the Body.

The process used to find out if cancer has spread within the prostate or to other parts of the body is called staging. Tests used to diagnose prostate cancer are often the same used to stage the disease. It is important to know the stage in order to plan treatment. In prostate cancer, staging tests may not be needed unless the patient has symptoms or signs that the cancer has spread, such as bone pain, a high PSA level, or a high Gleason score.

The stage of the cancer is based on results of testing, including the prostate-specific antigen (PSA) and the Gleason score.

The following tests and procedures may also be used in the staging process:

Bone scan: A procedure to check if there are rapidly dividing cells, such as cancer cells, in the bone. A very small amount of radioactive material is injected into a vein. The radioactive material collects in the bones with cancer and is detected by a scanner.

MRI (magnetic resonance imaging): The use of 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).

CT scan (CAT scan): A series of detailed pictures of areas inside the body, 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.

Pelvic lymphadenectomy: Removal of the lymph nodes in the pelvis. A pathologist views the tissue under a microscope to look for cancer cells.

Seminal vesicle biopsy: Removal of fluid from the seminal vesicles (glands that make semen) using a needle. A pathologist views the fluid under a microscope to look for cancer cells.

ProstaScint scan: A procedure to check for cancer that has spread from the prostate to other parts of the body, such as the lymph nodes. A very small amount of radioactive material is injected into a vein. The radioactive material attaches to prostate cancer cells and is detected by a scanner. The radioactive material shows up as a bright spot on the picture in areas where there are a lot of prostate cancer cells.

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.

- **Tissue:** The cancer spreads from where it began by growing into nearby areas.
- **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.

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

The Following Stages Are Used for Prostate Cancer

Stage I

Stage I cancer is found in the prostate only. A stage I cancer is usually made up of cells that look similar to healthy cells and is likely to grow slowly. It is not felt during a rectal exam or seen on imaging tests.

Stage II (2)

Stage II cancer is more advanced than in stage I, but has not spread outside the prostate. Stage II is divided into stages IIA and IIB.

Stage III (3)

In stage III, cancer has spread beyond the outer layer of the prostate and may have spread to the glands that help make semen (seminal vesicles).

Stage IV (4)

Stage IV (also called Metastatic) cancer has spread to other parts of the body, such as the bladder, rectum, bone, liver, lungs, or lymph nodes. Prostate cancer often spreads to the bones.

Recurrent Prostate Cancer

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

Treatment Option Overview

Key Points

- There are different types of treatment for patients with prostate cancer.
- Several types of standard treatment are used:
 - Watchful waiting or active surveillance
 - Surgery
 - Radiation therapy
 - Hormone therapy
 - Chemotherapy
 - Biologic or Immunotherapy
 - Bisphosphonate therapy
 - Radiopharmaceutical therapy
- You may want to think about taking part in a clinical trial.
- You can enter clinical trials before, during, or after starting their cancer treatment.
- Follow-up tests may be needed.

Different types of treatment are available for patients with prostate cancer. Some treatments are standard (the currently used treatment), and some are being tested in clinical trials. Shared decision making means you and your doctor work together to decide your treatment plan.

Watchful waiting is closely monitoring your condition without giving any treatment until signs or symptoms appear or change. Treatment is given to relieve symptoms and improve quality of life.

Active surveillance is closely following your condition without giving any treatment unless there are changes in test results. It is used to find early signs that the condition is getting worse.

In active surveillance, you would be given certain exams and tests, including digital rectal exam, PSA test, ultrasound, MRI, or biopsy, to check if the cancer is growing. When the cancer begins to grow, treatment is given to cure the cancer.

Other terms that are used to describe not giving treatment to cure prostate cancer right after diagnosis are observation, watch and wait, and expectant management.

Surgery

Patients in good health whose tumor is in the prostate gland only may be treated with surgery to remove the tumor. The following types of surgery are used:

- **Radical prostatectomy:** A surgical procedure to remove the prostate, surrounding tissue, and seminal vesicles. Lymph nodes in the pelvic area may also be removed.
- **Robotic or laparoscopic prostatectomy:** Robotic surgery is a method for surgery that is done with mechanical arms and a computer. It uses a viewing screen and special tools. This is also called robot-assisted laparoscopy. Robotic surgery does not mean that a machine does surgery instead of a person. It means that a surgeon uses the robotic tools to do surgery. This type of surgery is less invasive and may shorten recovery time.
- **Pelvic lymphadenectomy:** A surgical procedure to remove the lymph nodes in the pelvis. A pathologist views the tissue under a microscope to look for cancer cells. If the lymph nodes contain cancer, the doctor will not remove the prostate and may recommend other treatment.

In some cases, nerve-sparing surgery can be done. This type of surgery may save the nerves that control erection. However, men with large tumors or tumors that are very close to the nerves may not be able to have this surgery.

Possible side effects after prostate cancer surgery include the following:

- Impotence (loss of erection), which can be short-term or permanent
- Leakage of urine from the bladder or stool from the rectum. This may be temporary or permanent
- Infertility (Not able to father a child)
- Hormonal changes

Radiation Therapy

Radiation therapy is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells or keep them from growing. There are different types of radiation therapy:

- **External radiation therapy** uses a machine outside the body to send radiation toward the cancer.
 - Intensity-modulated radiation therapy (IMRT) is a type of external beam radiation therapy that uses CT scans to form 3D images. High doses of radiation can be directed at the prostate without increasing risk to other nearby organs.
- **Internal radiation therapy (Brachytherapy)** uses a radioactive substance sealed in needles, seeds, wires, or catheters that are placed directly into or near the cancer.
- **Proton therapy** is a type of external-beam radiation therapy that uses protons rather than x-rays to destroy cancer cells. This type of therapy is more expensive and less available to patients. Proton therapy for prostate cancer may not have more benefits than traditional radiation therapy.

The way the radiation therapy is given depends on the type and stage of the cancer being treated. Radiation therapy side effects may be temporary and/or permanent and include:

- Impotence
- Diarrhea
- Hormonal changes
- Incontinence (leakage) of urine

Hormone Therapy

Hormone therapy is a cancer treatment that removes hormones or blocks their action and stops cancer cells from growing. Hormones are substances made by glands in the body and circulated in the bloodstream. In prostate cancer, male sex hormones can cause prostate cancer to grow.

Drugs, surgical removal of the testicles (orchiectomy), or other hormones are used to reduce the amount of male hormones or block them from working. Hot flashes, impaired sexual function, loss of desire for sex, and weakened bones may occur in men treated with hormone therapy. Other side effects include diarrhea, nausea, and itching.

Chemotherapy

Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them 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.

Biologic or Immunotherapy

Biologic therapy is a treatment that uses your immune system to fight cancer. Substances made by the body or made in a laboratory are used to boost, direct, or restore the body's natural defenses against cancer.

Bisphosphonate Therapy

Bisphosphonate drugs reduce bone disease when cancer has spread to the bone. Men who are treated with antiandrogen therapy or orchiectomy (removal of testes) are at an increased risk of bone loss. Bisphosphonate drugs lessen the risk of bone fracture (breaks).

Radiopharmaceutical Therapy

Radiopharmaceutical therapy uses a radioactive substance to treat cancer that has spread outside the prostate.

Clinical Trials

Clinical trials are done to find out if new cancer treatments are safe and effective or better than the standard treatment.

People who take part in a clinical trial may receive:

- The standard drugs alone or
- The standard drugs plus the new treatment being studied

Taking part in a clinical trial helps 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.

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

Many of today's standard treatments for cancer are based on earlier clinical trials. **Ask if there is a clinical trial right for you.**

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.

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.

Learn More About Prostate Cancer

American Cancer Society
<https://www.cancer.org/>

National Cancer Institute
<https://www.cancer.gov/>

National Comprehensive Cancer Network Guidelines for Patients
<https://www.nccn.org/patients/guidelines/ovarian/index.html>

MedlinePlus
<https://medlineplus.gov/>

UsTOO
www.ustoo.org

Common Questions

What does my pathology report tell me?

What is the stage of my cancer?

What are my goals for treatment?

What are my treatment choices?

What kind of support services are available for me about finances, emotions, spiritual questions, etc.?

My Health Care Team	Contact Information
Surgeon/Urologist:	
Medical Oncologist:	
Radiation Oncologist:	
Primary Care Doctor:	
Navigator:	
Nurse:	
Dietitian/Nutritionist:	
Other:	
Other:	
Other:	

Adapted from: PDQ® Adult Treatment Editorial Board. PDQ Prostate Cancer Treatment. Bethesda, MD: National Cancer Institute. Updated <04/30/2018>. Available at: <https://www.cancer.gov/types/prostate/patient/prostate-treatment-pdq>. Accessed <06/04/2018>.

SANFORD[®]
CANCER CENTER