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GUIDELINES
FOR PATIENTS®

2023

Early-Stage Prostate Cancer



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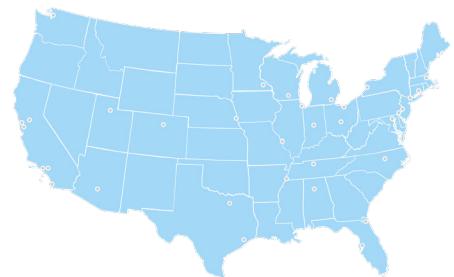


About the NCCN Guidelines for Patients®



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Did you know that top cancer centers across the United States work together to improve cancer care? This alliance of leading cancer centers is called the National Comprehensive Cancer Network® (NCCN®).



Cancer care is always changing. NCCN develops evidence-based cancer care recommendations used by health care providers worldwide. These frequently updated recommendations are the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®). The NCCN Guidelines for Patients plainly explain these expert recommendations for people with cancer and caregivers.

These NCCN Guidelines for Patients are based on the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Prostate Cancer Version 4.2023 — September 7, 2023.

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Prostate cancer basics

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The prostate is a gland located deep inside the pelvis. Anyone with a prostate has a chance of getting prostate cancer. It's usually not fatal, particularly early-stage prostate cancer. This chapter gives an overview of this common cancer.

What is prostate cancer?

Prostate cancer develops in a small gland called the prostate. Prostate cancer develops when cells in the gland start to grow out of control.

The prostate is part of the male reproductive system. Besides the prostate, the male reproductive system includes the penis, seminal vesicles, and testicles. The prostate is located deep inside the pelvis, which is in the lower part of the trunk of the body, just below the bladder.

What is cancer?

Cancer is a disease where cells—the building blocks of the body—grow out of control.

Cancer cells don't behave like normal cells. Cancer cells develop genetic changes (mutations) that allow them to multiply and make many more cancer cells. The cancer cells crowd out and overpower normal cells. This can end up harming the body.

Cancer cells survive much longer than normal cells do. They can replace many normal cells and cause organs to stop working well. Cancer cells can also spread to other areas of the body.

Treatment may get rid of cancer at first, but cancer often finds a way to resist treatment.

What are the symptoms of prostate cancer?

A symptom is a feeling or problem that can indicate a disease or condition. Prostate cancer often grows slowly and shows no symptoms for a long time. But you don't have to have symptoms to have prostate cancer. In fact, most patients who are diagnosed with early prostate cancer have no symptoms. Symptoms are more common for those with advanced prostate cancer. Symptoms, if they occur, can include:

- Blood in the urine or semen
- Burning or pain while urinating
- Unexplained weight loss
- Bone, hip, or back pain

It's important to know that prostate cancer has many of the same symptoms as a condition called enlarged prostate (also called benign prostatic hyperplasia, or BPH). It's difficult to tell the difference between the two conditions based on symptoms alone, and BPH is much more common than prostate cancer. Be sure to tell your doctor if you have any of these symptoms, because you may need special testing:

- Urinating frequently, especially at night
- Weak or intermittent urine stream
- Trouble urinating or straining to urinate
- Trouble holding in urine
- Feeling like your bladder hasn't fully emptied
- Dull pain in the groin or pelvis
- Erectile dysfunction (difficulty getting an erection) or painful ejaculation

Prostate cancer has one of the highest survival rates of any cancer when found early.

What causes prostate cancer?

Many people who develop cancer wonder where it came from and how they got it. Doctors don't know exactly what causes prostate cells to grow out of control (become cancerous). But several risk factors are linked to a higher risk of prostate cancer. A risk factor is anything that increases your chance of getting cancer.

Risk factors don't necessarily cause prostate cancer, but people with prostate cancer usually have one or more of these risk factors:

Age

The biggest risk factor for prostate cancer is age. Prostate cancer is diagnosed most often in those aged 65 years and above. Your chances of getting prostate cancer increase as you become older.

Where does the prostate fit in?

The prostate is located deep inside the lower body. It makes semen and is important for sexual reproduction.

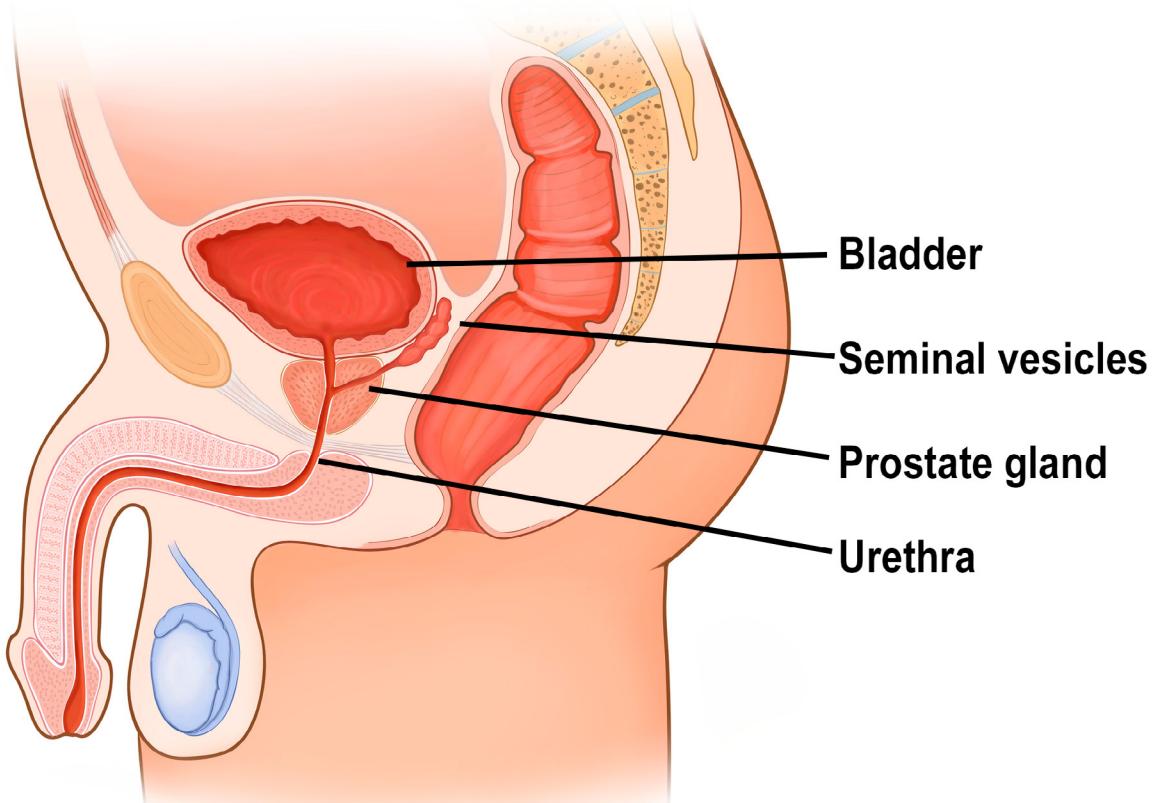
Prostate: A gland in the male reproductive system. A gland is an organ that makes fluids or chemicals the body needs. The prostate gland makes a liquid (prostate-specific antigen, or PSA) that nourishes and helps transmit semen.

Semen: A fluid made up of liquids from the prostate and the seminal vesicles as well as sperm from the testicles. During ejaculation, semen is released from the body through the urethra and out through the penis.

Urethra: A tube that carries urine from the bladder and out of the body. The prostate wraps around the urethra just beneath the bladder.

Seminal vesicles: Two glands that make another part of the fluid that becomes semen. The seminal vesicles are located above the prostate and behind the bladder.

Bladder: An organ that holds urine.



Family history

Your family health history is information about the diseases and health conditions in your family. A family history reflects a pattern of certain diseases among family members. Having a close family member with prostate cancer (a sibling or parent) increases the chance of getting it yourself. Those with a family history of certain other cancers (breast, ovarian, colon, pancreatic, and other cancers) are also at a higher risk for prostate cancer.

Genetic factors

When prostate cancer “runs in the family,” genetic testing can be done to find specific genetic changes (mutations) known to be linked with prostate cancer or other cancers. For instance, having an inherited genetic change in the *BRCA2* gene increases the risk of getting prostate cancer. Genetic abnormalities that aren’t inherited can occur, too.

Race

Black people are more likely than white people to develop prostate cancer. Prostate cancer in Black people is also more likely to occur at an earlier age and be more aggressive and more advanced when diagnosed. Black people are also twice as likely to die from prostate cancer compared with white people.

Diet and lifestyle

Eating food that’s high in fat, such as meat and dairy products, has been linked with an increased risk for prostate cancer. Eating more fruits and vegetables may reduce this risk. Exercise may also decrease the likelihood of dying from prostate cancer. On the other hand, smoking and obesity increase the risks of developing prostate cancer and dying from it.

These risk factors aside, anyone with a prostate has a risk of getting prostate cancer. Prostate cancer is the most common cancer in American males besides skin cancer.

The prostate enlarges with age

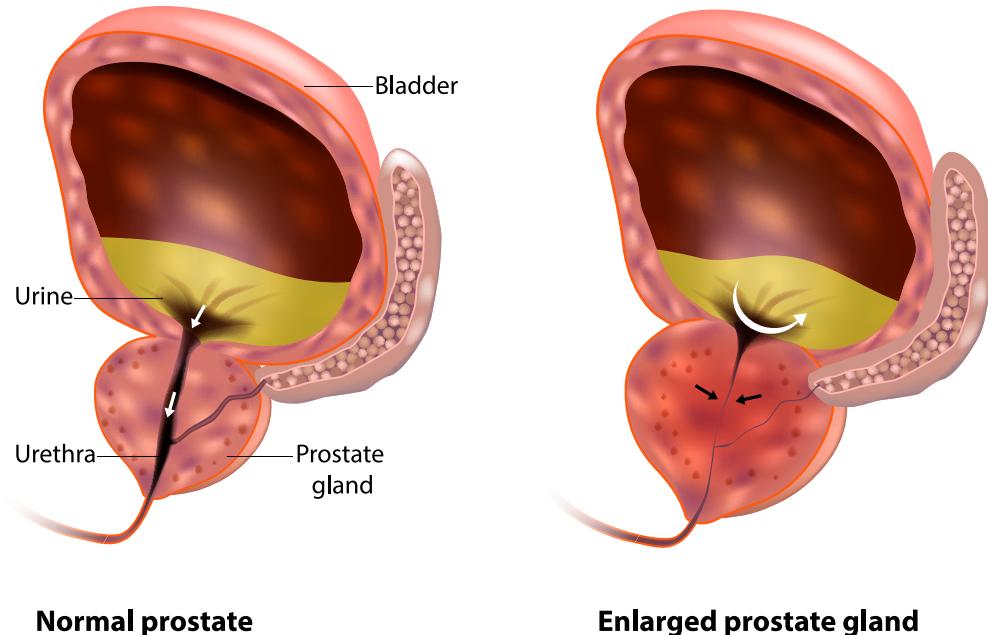
When you were a young adult, your prostate was about the size of a walnut or a ping-pong ball and it weighed about the same as an AA battery. As you grow older, your prostate gradually grows larger, possibly reaching the size of a lemon or an orange.

Having an enlarged prostate is a condition called benign prostatic hyperplasia (BPH). Benign means it's not cancerous. Doctors aren't sure what causes the prostate to grow as you get older. A common theory is that levels of hormones (like testosterone) change with age, which affects the size of the prostate.

An enlarged prostate doesn't cause prostate cancer or increase your risk of getting it. However, it's common to have an enlarged prostate and prostate cancer at the same time. Notably, an enlarged prostate due to BPH can cause the same symptoms as those caused by prostate cancer.

In many individuals with BPH, the prostate grows large enough to squeeze the urethra—a tube that passes through the prostate. The urethra allows urine to flow out of the bladder. This squeezing can narrow the urethra, which slows down or stops the flow of urine when you try to pee.

Although early-stage prostate cancer usually doesn't cause any symptoms, it also can slow the flow of urine if it grows large enough. That's why it's important to get these problems checked out.

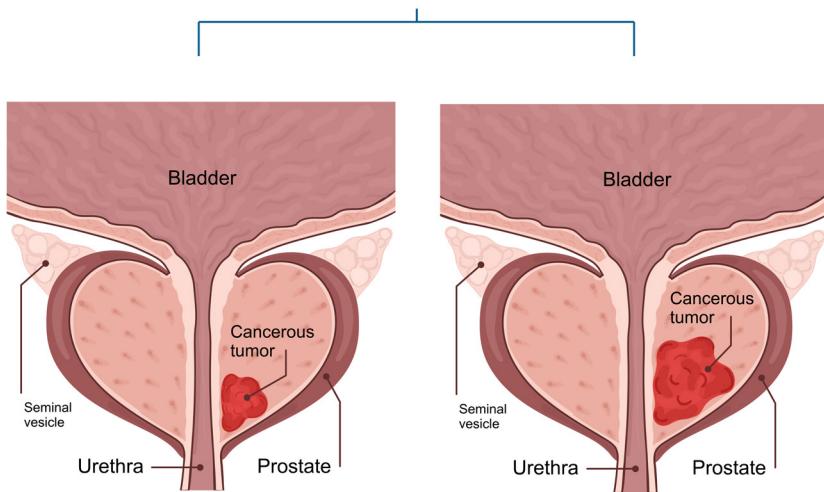


Early vs. advanced prostate cancer

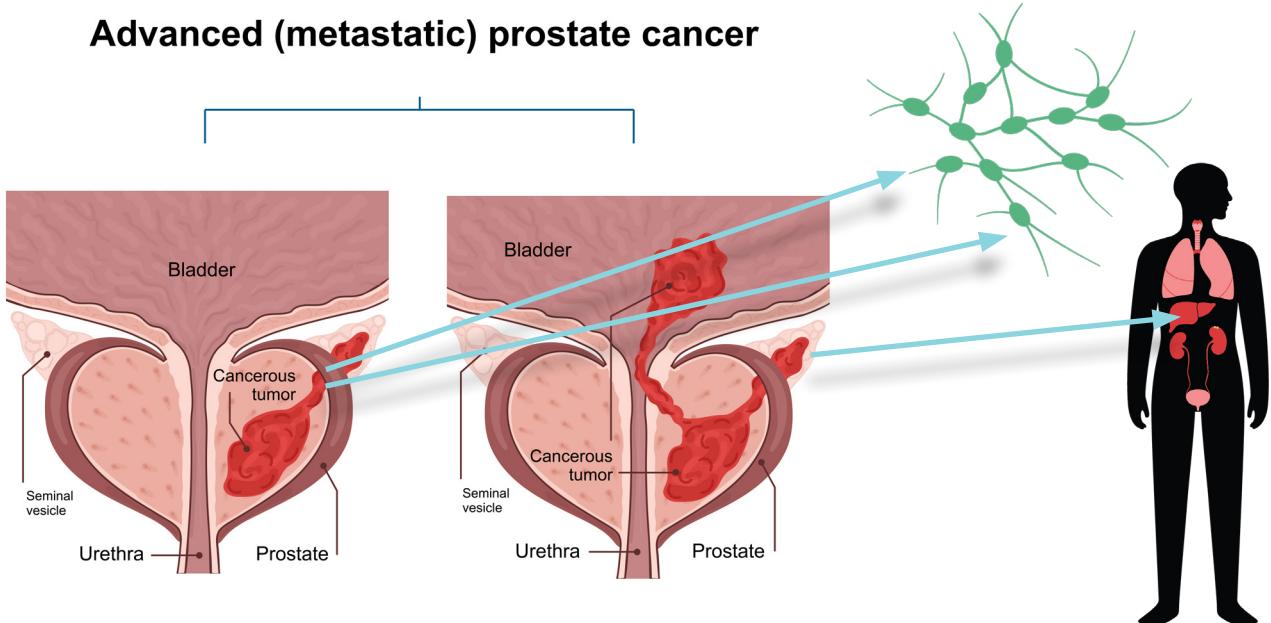
Early-stage prostate cancer has not spread beyond the prostate. The cancer usually grows slowly and stays in the prostate. This is called localized prostate cancer.

Advanced-stage prostate cancer has grown outside the prostate and spread to other areas in the body such as distant lymph nodes, bones, or organs like the liver or lungs. This is called metastatic prostate cancer.

Early (localized) prostate cancer



Advanced (metastatic) prostate cancer



What is early-stage prostate cancer?

Prostate cancer can be grouped into early-stage cancer or advanced-stage cancer.

Early stage

Early-stage prostate cancer has not spread beyond the prostate. The cancer usually grows slowly and stays in the prostate. Cancer that is contained entirely within the prostate is called localized prostate cancer.

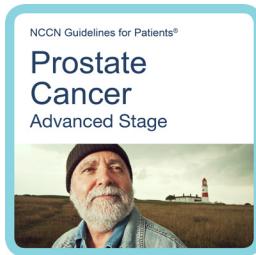
This book is all about early-stage (localized) prostate cancer.

Advanced stage

Advanced stage means that the cancer has spread beyond the prostate to other areas in the body. This spreading is called metastasis or metastatic cancer. Prostate cancer can metastasize to the bones, lymph nodes, liver, lungs, and other organs.

- Cancer that has spread from the prostate gland to nearby lymph nodes, but no farther, is called regional metastatic prostate cancer.
- Cancer that has spread beyond the prostate and the regional lymph nodes is called distant metastatic prostate cancer.

More information about advanced prostate cancer can be found at [NCCN.org/patientguidelines](https://www.nccn.org/patientguidelines) and on the [NCCN Patient Guides for Cancer](#) app.



Can prostate cancer be cured?

Early-stage prostate cancer is highly treatable and often curable. The earlier that prostate cancer is diagnosed and treated, the more likely that a patient will live without cancer. Most people with early-stage disease live without cancer for many years, usually the rest of their lives.

Treatments for early-stage prostate cancer include surgery, radiation, and hormone therapy, among others.

However, some people with prostate cancer don't need to be treated. Many patients with early-stage prostate cancer can have their cancer managed with active surveillance. During active surveillance, you'll have regular tests to keep an eye on your cancer. But you won't have treatment unless the cancer grows or changes in a way that requires treatment. The goal of active surveillance is to avoid the potential side effects of treatment, with the option for treatment in the future if you need it.

Advanced-stage prostate cancer is usually a life-long disease. But treatment can slow down its growth, reduce symptoms, and prolong your life. Treatments for advanced-stage prostate cancer include surgery, radiation therapy, chemotherapy, and hormone therapy. Many people with advanced-stage prostate cancer continue to live their lives with the cancer until they die from something else. Early detection and treatment can greatly reduce the chances of getting advanced-stage prostate cancer.

Something to remember: When found early, prostate cancer has one of the highest survival rates of any cancer.

Key points

- Prostate cancer develops when cells in the prostate gland grow out of control.
- Age is the biggest risk factor for prostate cancer. As you age, your chances of developing prostate cancer increase.
- Most cases of prostate cancer are diagnosed in people over the age of 65.
- Those with a close family member with prostate cancer (sibling, parent) have a greater chance of getting it themselves.
- Anyone with a prostate is at risk for prostate cancer, but Black people are at greater risk.
- Prostate cancer usually grows slowly and stays in the prostate.
- Early-stage prostate cancer hasn't spread beyond the prostate.
- Advanced-stage prostate cancer has spread beyond the prostate to other areas in the body. This spread is called metastasis.
- Cancer cells can spread to other body parts through blood or lymph.
- You don't have to have symptoms to have prostate cancer.
- Not everyone diagnosed with prostate cancer needs treatment.
- When found early, prostate cancer has one of the highest survival rates of any cancer.

“

Be your own advocate. Talk to someone who has gone through the same thing as you. Ask a lot of questions, even the ones you are afraid to ask. You have to protect yourself and ensure you make the best decisions for you, and get the best care for your particular situation.”

2

Tests for prostate cancer

- 14 Screening tests
- 15 General health tests
- 16 Diagnostic tests
- 22 Key points

Testing is necessary to find out if you have prostate cancer. If you do have prostate cancer, testing can show whether it's early-stage or advanced-stage cancer. Testing also helps your providers plan how to treat it.

Doctors use a variety of tests to find out if you have prostate cancer and to determine how advanced the cancer is. Tests are used to plan treatment and check how well treatment is working. This chapter will help you know what tests you may have and what to expect during testing. Bring someone with you to listen, ask questions, and write down the answers.

Testing begins with screening tests, followed by tests of your general health, and then diagnostic tests, if needed. Not every person with prostate cancer will receive every test listed here.

Screening tests

A screening test looks for disease before you have any symptoms. The goal of screening is to detect disease early when there's a better chance of stopping it.

Screening tests aren't diagnostic, which means they can't tell you for sure whether or not you actually have the disease. Rather, screening tests indicate that you may need a diagnostic test.

Two screening tests for prostate cancer are a prostate-specific antigen (PSA) test and a digital rectal exam.

PSA test

This test measures the amount of prostate-specific antigen (PSA) in your bloodstream. PSA is a protein made inside the prostate gland. Its job is to help semen transport sperm.

If there's something wrong with the prostate—like prostate cancer—the prostate may make more PSA. An unusually high amount of PSA in the blood may be a sign of prostate cancer. However, other conditions—such as an enlarged prostate or a urinary tract infection—can also cause high levels of PSA. This means that a PSA test by itself can't provide a diagnosis of prostate cancer. That's why a PSA test is often paired with imaging or a digital rectal exam, or both, to decide whether you need a biopsy.

If you have a high PSA level but no other symptoms of prostate cancer, a second PSA test may be performed. This is done to double-check the result before undergoing additional testing.

PSA level (also called total PSA) is measured in nanograms of PSA per milliliter (ng/mL) of blood.

Digital rectal exam

Don't be fooled by the name—no high-tech electronics are used in a digital rectal exam. For this test, the word "digital" means "finger." To put it simply, the doctor will put a finger into your rectum to feel your prostate. The doctor will wear gloves and use a lubricant to make it easier.

A digital rectal exam (also called a prostate exam) may sound like a crude and unpleasant form of testing. But it's the simplest and most direct way for the doctor to check the size and texture of your prostate. If the doctor finds an irregular or hardened part of the prostate, it could be a sign of a tumor.

Not every doctor will require you to have a digital rectal exam. This decision depends on a number of considerations. The digital rectal exam is usually paired with a PSA test and other factors—your age, race, family history,

and more—to determine whether you need further testing, such as imaging or a biopsy.

General health tests

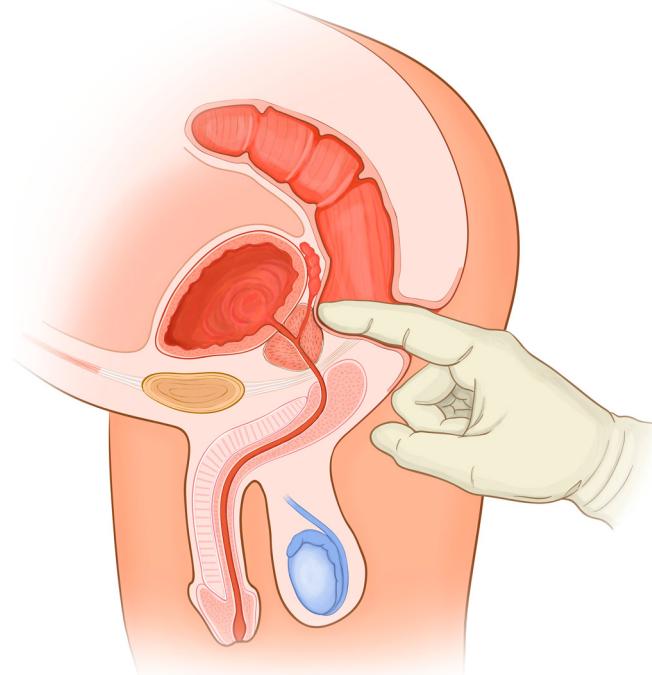
Health history

Your doctors need to have all your health information. They'll ask you about any health problems and treatments you've had in your life. Be prepared to talk about any illness or injury you've had and when it happened. Also tell your doctor about any symptoms you have.

Bring a list of old and new medicines and any over-the-counter medicines, herbals (such as saw palmetto), or supplements you take. Some of these can cause changes in your PSA level, so your doctor needs to know if you're taking them.

Digital rectal exam

A digital rectal exam is a procedure in which your doctor inserts a finger into your rectum to feel your prostate. An irregular or hardened part of the prostate could be a sign of a tumor. Not all parts of the prostate can be felt during this exam, though. So other tests, like PSA level and imaging, are used to get a more complete picture of your prostate health.



Family history

Some cancers and other diseases can run in families. Your doctor will ask about the health history of family members who are blood relatives. This information is called a family history.

It's important to ask members from both sides of your family about all cancers, not just prostate cancer. Ask family members about other health issues like heart disease and diabetes, at what age they were diagnosed, and if anyone died from cancer. Share this information and any changes to your family history with your care team.

Symptoms and quality of life

Your doctor or another member of your care team will ask you a series of questions about what symptoms you may have (such as peeing frequently, difficulty peeing or pooping, or sexual problems). You'll also be asked how these symptoms affect your quality of life. Quality of life refers to your overall satisfaction with your well-being and your ability to participate in regular activities. It's important to answer all these questions honestly and completely so your care team has a full and up-to-date assessment of how you're doing.

Blood and urine tests

For a blood test, a needle is inserted into a vein in your arm to remove a sample of blood. The sample is examined in a lab where cells, proteins, and other components in the blood are tested for signs of disease or other conditions.

If you have a higher PSA level, you may have additional blood or urine testing. These tests, sometimes referred to as biomarker tests, can be used in addition to PSA to help decide

whether a biopsy is needed. Such blood tests include 4Kscore, PHI, and IsoPSA, among others. Some of the urine tests include ExoDx, miR Sentinel, MPS, PCA3, and SelectMDx.

Diagnostic tests

If the PSA test, digital rectal exam, blood or urine tests, or other factors (like family history, race, or age) suggest you may have prostate cancer, you'll be offered diagnostic testing. Talk with your doctor about whether a biopsy or imaging should be the next test you take.

Imaging tests

An imaging test takes pictures (images) of the insides of your body. The images can reveal cancer, including its size, location, and other features such as the size of the prostate itself. The images may show where the cancer started (primary tumor) and whether the cancer has spread (metastasized). Imaging is also used after cancer treatment to see how well it worked and to check if the cancer comes back.

Imaging can come before, during, or after a biopsy.

- **Before** – Imaging is sometimes ordered beforehand to find out if a biopsy is truly necessary.
- **During** – Imaging is used during a biopsy to guide the removal of tissue samples.
- **After** – Imaging may come after a biopsy to see the size and location of the cancer, which helps to plan treatment.

Imaging methods for detecting prostate cancer include ultrasound, bone scan, MRI, CT, PET, or a combination of these.

After your scan, your images will be studied by a radiologist. A radiologist is a doctor who's an expert in reading imaging tests. The radiologist will send the results to your doctor. This information helps your doctor plan the next steps of your care. Your doctor will discuss the results with you. Be sure to ask any questions you may have.

Imaging may not be needed for early-stage prostate cancer. If your PSA, digital rectal exam, and biopsy results indicate that your risk is low for the cancer to metastasize (spread beyond the prostate), then you may not need imaging tests at this time.

On the other hand, if your test results suggest a high risk—or even a moderate risk—for the cancer to spread, your doctor may recommend one or more of the following imaging tests to look for cancer growth:

CT scan

A computed tomography (CT or CAT) scan uses x-rays and computer technology to take pictures of the inside of the body. CT takes many x-rays of the same body part from different angles. The computer combines all the x-ray pictures to make a single detailed image.

A CT scan of your abdomen and/or pelvis may be used to look for cancer that has spread beyond the prostate. CT scans are good at seeing lymph nodes and the area around the prostate.

A CT scanner is a large machine that has a tunnel in the middle. During the test, you'll lie on a table that moves slowly through the tunnel. Tell your team if you get nervous in small spaces. You may be given a sedative (medicine) to help you relax.

You may also be given a contrast agent (sometimes called contrast dye) before the CT scan. Contrast is used to make blood vessels, organs, and other tissues stand out more clearly in the images. The contrast agent is injected into the bloodstream and flushed out in urine.

For the scan, you'll be alone but a technician will operate the machine in a nearby room. The technician will be able to see, hear, and speak with you at all times. A CT scan is done in about 30 seconds, but the entire process takes 20 to 30 minutes.

MRI scan

A magnetic resonance imaging (MRI) scan uses radio waves and powerful magnets to take pictures of the inside of the body. An MRI is used to get a more detailed view of the cancer within the prostate. It's also used to see if cancer has spread to nearby lymph nodes or to the bones in your pelvis.

MRI may be used before a biopsy to target areas suspicious for cancer. Or it may be used after diagnosis to figure out whether the cancer has advanced outside the prostate or into the lymph nodes. It can also help to plan treatment with surgery, radiation, or ablation, or to decide whether active surveillance is appropriate. MRI can also be used after treatment to check if the cancer has come back (recurrence).

Like a CT scan, an MRI may use a contrast agent to make the images clearer. Also like a CT scan, the MRI scanner is a large machine with a tunnel in the middle. An MRI machine makes a lot of noise. Unlike a CT scan, MRI doesn't use radiation (x-rays).

An appointment for an MRI scan can take about 1 to 2 hours, including 30 to 60 minutes of actual scanning time. You'll need to remain as motionless as possible during each scan.

You may be positioned with pillows or bolsters to help you keep still.

Because an MRI uses magnets, don't bring any metal objects (jewelry, cell phone, wristwatch, belts with metal buckles) into the imaging room.

PET scan

A positron emission tomography (PET) scan highlights cells in your body that may be cancerous. A PET scan is used after you've been diagnosed to determine the extent of your cancer or to see if it has metastasized. PET imaging can also show how well treatment is working.

A PET scan requires injecting a radioactive substance called a tracer into your bloodstream. It takes about an hour for the tracer to circulate throughout your body. The tracer targets your cancer cells, which show up as bright spots on the scan. Afterward, the radiotracer is passed out of your body in your urine.

Like a CT and MRI, a PET scanner is a large machine with a tunnel in the middle. A PET appointment can take 1 to 2 hours, including about 30 minutes of actual scanning time.

➤ PSMA/PET

- PSMA/PET imaging is a special kind of PET imaging that locates a protein called prostate-specific membrane antigen (PSMA) on the surface of prostate cancer cells. Prostate cancer cells make a lot of PSMA, so doctors developed tracers that target this specific protein.
- PSMA/PET is especially useful for detecting cancer that has spread to nearby lymph nodes or has metastasized to farther areas. It's also used to monitor prostate cancer that may return after treatment (recurrence). Your treatment team will discuss whether a PSMA/PET scan could be helpful for your specific cancer.

PET imaging

A positron emission tomography (PET) scan highlights cells in your body that may be cancerous. A PET scan is used after you've been diagnosed to determine the extent of your cancer or to see if it has metastasized. PET imaging can also show how well treatment is working.



► PET/CT and PET/MRI

- Because PET uses a different imaging method, it's often combined with other types of imaging, such as CT or MRI, to provide an even more detailed image. These combined methods are called PET/CT or PET/MRI scans.

Bone scan

A bone scan can detect whether cancer has spread to your bones. A bone scan may be used if you have bone pain, have a high risk for bone metastases, or have changes in certain test results. Bone scans may also be used to monitor treatment.

A bone scan uses a radioactive tracer to make pictures of the inside of bones. Before the pictures are taken, the tracer is injected into your bloodstream. It can take a few hours for the tracer to enter your bones.

A special camera will take pictures of the tracer in your bones. Areas of bone damage absorb more tracer than healthy bone. These areas

show up as bright spots in the pictures. Bone damage can be caused by cancer, cancer treatment, or other health problems.

Biopsy

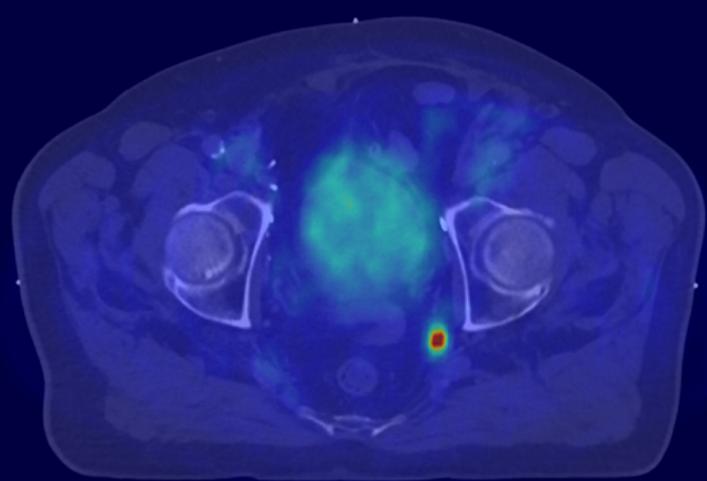
Although a high PSA level and an abnormal digital rectal exam are signs of possible prostate cancer, the only way to confirm cancer is to have a biopsy. A biopsy is a procedure in which a sample of cells or tissue is removed from your body and tested for cancer.

A biopsy is an invasive test, which means that it goes into (invades) your body. All invasive tests have some risk. The risks for a prostate biopsy include infection, bleeding, and pain. Doctors use invasive tests only when needed. You and your doctors will decide when, or if, you need a biopsy.

A biopsy procedure is usually performed by a urologist. A urologist is a doctor who's an expert in treating diseases of the urinary

PET/CT scan of prostate cancer

This image combines PET and CT scans to show a cross-section of a patient's pelvis. The greenish circle identifies cancer in the prostate, while the intense red dot indicates cancer that has spread to a pelvic lymph node.



system and the male reproductive organs. For this procedure, you'll lie on your side with your knees curled up or you'll lie on your back with your legs raised. You'll be given anesthesia to numb the pain or to put you to sleep. The urologist will insert a lubricated probe into your rectum. The probe provides a visual image of the prostate.

The urologist will then insert a hollow needle into the prostate gland using the video display to guide it. The needle will be inserted either through the rectum or through the perineum (the skin between the anus and scrotum). When the urologist removes the needle, it will pull out a small sample of prostate tissue called a core. A core sample is about as wide as a toothpick and as long as a raisin. Your urologist will take 12 or more core samples from different parts of the prostate. Checking different areas provides a more complete evaluation of cancer throughout the gland.

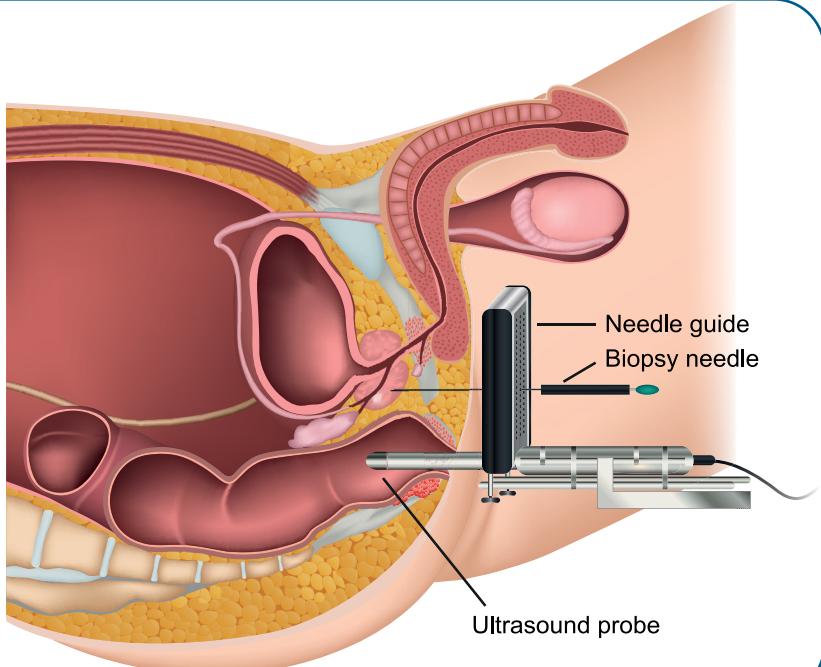
After the biopsy samples are removed, they'll be sent to a lab for testing. At the lab, a specialist called a pathologist will examine the samples under a microscope and test them for cancer. The pathologist will find out how many of the core samples contain cancer and will also measure the percentage of cancer in each core. With this information, the pathologist can estimate the amount of cancer in the prostate. Also, by knowing where each core sample was taken, the pathologist can figure out whether the cancer is concentrated in a certain section of the prostate.

The pathologist will put these results into a report. Ask your doctor to review the pathology report with you.

It's common to have more than one biopsy if you're on active surveillance. You'll have one biopsy to determine your diagnosis and maybe another biopsy in a year or two (called a confirmatory biopsy) to see if any changes have happened over time.

Biopsy of the prostate

A biopsy removes a sample of tissue that is tested for cancer. This is a transperineal biopsy, in which a needle is inserted through the perineum and into the prostate. An ultrasound probe, which goes into the rectum, helps the doctor guide the needle into the prostate. MRI scans of your prostate may be combined with the ultrasound image to provide a highly accurate picture of the cancer.



Can having a biopsy make your cancer worse? No. It's important to know that medical research has shown there's no increased risk of prostate cancer spreading or worsening due to a biopsy.

Genetic tests

A genetic test is used to find abnormal changes in your genes. Genes are small segments of DNA inside every cell. Genes provide the instructions to tell the cell how to make proteins, which carry out a lot of important functions in the body.

Once in a while, a gene will have or develop an abnormal change (mutation). A mutation is when something is different in your genes than in most other people's genes. Sometimes an abnormal change can cause a gene to make the wrong type of protein or make no protein at all. This abnormality could affect the cell, which may in turn cause a disease—such as cancer.

Mutations can be passed down in families, in which case they occur in every cell in your body. Or, mutations can occur spontaneously in just some of your cells. In other words, they may be present before you're born (called an inherited or germline mutation) or occur on their own later in life (called an acquired or somatic mutation).

The two basic types of genetic tests used for prostate cancer care are germline testing and molecular biomarker testing:

Germline testing

Sometimes, mutations in genes inherited from your parents can increase the risk of different cancers. You can pass these genes on to your children. Other family members might also carry these mutations. If you have a family history of cancer, your doctor might suggest

genetic germline testing to find out if you have an inherited cancer risk.

The goal of this type of genetic testing is to look for germline (inherited) mutations that occur in every cell in your body. Genetic germline testing is done using a sample of your blood, urine, or saliva.

For prostate cancer, germline testing looks for characteristic changes in these genes: *BRCA1*, *BRCA2*, *ATM*, *CHEK2*, *MLH1*, *MSH2*, *MSH6*, *PALB2*, *PMS2*, and others. Some mutations can put you at risk for more than one type of cancer. Germline mutations in genes like *BRCA1* or *BRCA2* are also related to breast, ovarian, and pancreatic cancer. Germline mutations in *MSH2*, *MSH6*, *MLH1*, and *PMS2* are related to colorectal and uterine cancers in addition to prostate cancer.

If a germline mutation is suspected based on your family's or your own health history, you should ask your doctor or a genetic counselor about testing. A genetic counselor is an expert who has special training in genetic diseases. A genetic counselor can help you decide whether you would like to undergo germline testing and help you interpret the results of these tests.

Germline testing is recommended for those with prostate cancer and any of the following:

- A family history of prostate cancer, breast cancer, ovarian cancer, intestinal cancer, and certain other cancers
- High-risk, very-high-risk, regional, or metastatic prostate cancer regardless of family history
- Ashkenazi Jewish ancestry
- Having any other type of cancer

Talk to your medical providers and/or a genetic counselor about your family history of cancer.

Molecular biomarker testing

In biomarker testing, a sample from your biopsy is tested to look at its molecular components. This information helps figure out how likely your cancer could spread to other parts of the body. Biomarker testing can be considered for those with localized, regional, or metastatic prostate cancer. Biomarker testing is sometimes called genomic testing, tumor profiling, or molecular tumor testing.

The main reason to have a molecular biomarker test is to help assess whether you have lower risk or higher risk prostate cancer. If you have lower risk cancer, you may be able to avoid or delay treatment such as surgery or radiation therapy, which means you'd also avoid or delay any treatment-related complications and side effects. At the same time, a molecular biomarker test can flag those who have higher risk prostate cancer, which may give them a head start on treatment.

Molecular biomarker testing is discussed further in Chapter 4.

Key points

- Tests are used to plan treatment and check how well treatment is working.
- An unusually high amount of PSA in the bloodstream may be a sign of prostate cancer.
- A digital rectal exam is the simplest way for the doctor to check the size and texture of your prostate.
- A biopsy is used to confirm (diagnose) prostate cancer. It's a procedure that removes samples of cells or tissue to find cancer.



Let us know what you think!

Please take a moment to complete an online survey about the NCCN Guidelines for Patients.

[NCCN.org/patients/response](https://www.NCCN.org/patients/response)

- Imaging tests may be used to see if the cancer has spread beyond the prostate.
- Imaging may not be needed for early-stage prostate cancer.
- A genetic test is used to find abnormal changes (mutations) in your genes.
- A genetic mutation can be passed down in families (inherited mutation). Or it can occur all by itself (somatic mutation).
- To find out if you have an inherited risk for cancer, you can talk to your doctor about germline testing or ask to be referred to a genetic counselor.
- A biopsy sample of your tumor might be tested to look at its molecular components (biomarker testing).
- A molecular biomarker test can show whether your prostate cancer is lower risk or higher risk.

3

Clinical characteristics of risk

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It's important to know the risk of your cancer getting worse. Doctors look at several key characteristics to find out your risk group. This chapter explains each of these characteristics.

Early-stage prostate cancer hasn't spread outside the prostate itself. But what are the chances that it could? What are the chances that it might grow or spread after treatment?

Both health care providers and patients want to know the risk for the cancer to spread. So providers look at the clinical characteristics of your cancer, such as your PSA level, biopsy results, and other test results (which we'll talk about in this chapter). From this information, your provider can classify your disease into one of five different risk groups:

- Very low risk
- Low risk
- Intermediate risk
- High risk
- Very high risk

Diagnosis vs. prognosis

What's the difference between your diagnosis and your prognosis? These two words sound alike but they're very different.

Diagnosis is identifying an illness based on tests. Your diagnosis names what illness you have.

Prognosis is the likely course and outcome of a disease based on tests and your response to treatment. Your prognosis predicts how your illness will turn out.

Why do you need to know your risk group? Because your risk group is the basis for your prognosis. A prognosis predicts the likely course and outcome of a disease. Your prognosis guides your treatment options. For example, patients with lower risk generally get minimal treatment or no treatment at all. Patients with higher risk usually get more aggressive treatment.

But before we get into treatment, let's talk about the clinical characteristics that make up each of the five risk groups. These characteristics come from the results of tests described in the previous chapter. Let's look at the following tests to see how they contribute to each risk group:

PSA

A simple blood test will tell you how much prostate-specific antigen (PSA) is in your bloodstream. A high PSA level may indicate a risk for prostate cancer. However, high PSA levels can vary by age and other factors:

Age

PSA level tends to increase with age. For people in their 40s, a PSA level above 2.5 ng/mL is very suspicious for disease. For those in their 60s, 4.5 ng/mL or higher is suspicious. A PSA level of 10 ng/mL or higher is a danger sign at any age. **See Guide 1.**

Race

Black males tend to have higher PSA levels than white males—about 1 point higher on average among males of the same age. Researchers don't know the reason for this difference, but they're investigating it.

Guide 1 PSA increases with age

Age in years	Normal PSA range
40–49	0.0 – 2.5 ng/mL
50–59	2.5 – 3.5 ng/mL
60–69	3.5 – 4.5 ng/mL
70–79	4.5 – 6.5 ng/mL

Other factors

Several other factors can affect PSA level, too.

- The larger the prostate, the more PSA it can make. In addition to cancer, other health issues can also cause an enlarged prostate.
- Some medicines, herbals, and supplements can also affect PSA level.
- PSA level rises temporarily after a biopsy of the prostate.
- PSA increases after ejaculations and vigorous exercise (like running or bicycling). Your doctor may recommend avoiding sex and exercise for 2 or 3 days before a PSA test. This short break allows PSA to return to its usual level.

PSA level doesn't tell the whole story, though. There are other ways that PSA can be interpreted, such as PSA density.

PSA density

If you have a larger prostate, you're also likely to have a higher PSA level. But that doesn't mean you have a greater risk for prostate cancer. To adjust for this, doctors can calculate the PSA density.

PSA density is the amount of PSA compared to the size of the prostate. PSA density is calculated by dividing the PSA level by the prostate size. The size of the prostate is measured by transrectal ultrasound or MRI scan. A higher PSA density (above 0.15 ng/mL², for example) indicates a greater likelihood of cancer. PSA density also accounts for those with small and very small prostates, who could have prostate cancer even with low PSAs.

Prostate biopsy

If cancer cells are found in your biopsy samples, further testing can identify your cancer risk. Results from these tests may indicate that the cancer will grow and spread quickly, for example. Or the results may suggest that the cancer will grow very slowly and not spread outside of the prostate at all. This information helps plan the best treatment for your type of cancer.

By looking at your biopsy samples, the pathologist will identify cancer cell patterns (called Gleason patterns), which are used to calculate your Gleason score, which translates to your Grade Group, which estimates your risk.

Gleason patterns → Gleason score → Grade Group → Risk

Gleason patterns

After studying your biopsy sample under a microscope, the pathologist assigns a number, ranging from 3 to 5, based on the “pattern” of cancer cells in the biopsy sample. Cancer with a cell pattern that looks more like normal and healthy cells has a lower number. Cancer with a cell pattern that looks more abnormal has a higher number.

Prostate cancers often contain more than one pattern of cancer cells. To account for this, a Gleason score is made up of two numbers. The pathologist gives one number to the pattern of cancer cells that take up the largest area in the tumor. The second number is given to the cell pattern that accounts for the second-largest area.

Add these two numbers together and you get a Gleason score. For example:

**pattern 3 + pattern 4 =
Gleason score of 7**

Gleason score

A Gleason score represents how much your biopsy sample looks like normal prostate tissue. It also describes how aggressive your prostate cancer is—how quickly it will grow and whether it will spread. A Gleason score is another factor that doctors use to determine risk and plan treatment.

A Gleason score of 6 is low-grade cancer, 7 is intermediate-grade, and 8 to 10 is high-grade. A higher Gleason score means the cancer is more likely to grow and spread quickly than a cancer with a lower Gleason score.

A Gleason score ranges from 6 to 10, where 6 is the lowest score. This can be confusing because 6 seems like it would be a medium score, not a low score. To make Gleason scores simpler to understand, they can be organized into Grade Groups.

Grade Groups

A Grade Group is a way to interpret a Gleason score. There are five Grade Groups, numbered 1 to 5. The higher the Grade Group, the more aggressive the cancer. So, cancer with a Gleason score of 6 is assigned as Grade Group 1 to show that it is the lowest score.

The Grade Group system also takes into account that Grade Group 2 and Grade Group 3 both have a Gleason score of 7. The difference is the cancer in Grade Group 3 is more serious. Why? Because the first number of the Gleason score in Grade Group 3 (4+3) is higher than the first number in Grade Group

2 (3+4). Remember, the first number is given to the cancer pattern that makes up the largest area of the tumor.

Grade Group 1 indicates low risk. Grade Groups 2 and 3 correspond to intermediate risk. Grade Groups 4 and 5 predict high risk and very high risk. **See Guide 2.**

Guide 2

How to find your risk from your Gleason score

Gleason patterns	Gleason score	Grade Group	Risk	Prognosis
3+3	6	1	Low risk	Low-grade cancer is less aggressive and is likely to grow and spread very slowly. If the cancer is small, many years may pass before it becomes a problem. Low-grade cancer may never need treatment.
3+4	7	2	Low to intermediate risk	Intermediate-grade cancer is moderately aggressive and likely to grow and spread at a modest pace. If the cancer is small, several years may pass before it becomes a problem. To prevent problems, treatment may be needed.
4+3	7	3	Intermediate risk	High-grade cancer is very aggressive and likely to grow and spread quickly. If the cancer is small, a few years may pass before the cancer becomes a life-threatening problem. To prevent problems, treatment is needed now.
4+4 3+5 5+3	8	4	High risk	
4+5 5+4 5+5	9 or 10	5	Very high risk	

Tumor stage

The tumor, node, metastasis (TNM) system is used to “stage” prostate cancer. Staging is a way to describe how much cancer is in your body and how far it has spread. Knowing your stage is important for predicting the course of your disease and for making a treatment plan.

In this system, the letters T, N, and M stand for different areas of cancer growth:

- **T (tumor)** – Describes the size of the main (primary) tumor and if it has grown outside the prostate
- **N (node)** – Identifies whether cancer has spread to nearby lymph nodes
- **M (metastasis)** – Indicates if cancer has spread to distant parts of the body (metastasized)

Based on test results, your providers will assign a number to each letter. The higher the number, the larger the tumor or the more the cancer has spread. These scores are combined to assign a stage to the cancer.

Cancer staging is often done twice. The first time is before any treatment. The second time is during or after treatment to see how well the treatment has worked.

What's next?

If you’ve read this chapter from the beginning, you’ll recall that it all started with a discussion of risk—the risk that your cancer might grow. All the elements described in this chapter (PSA level, digital rectal exam, biopsy results, Gleason score, Grade Group, and tumor stage) are put together to come up with your initial level of risk.

In the next chapter, we’ll talk about risk assessment and what that means for you.

Know your TNM score

Tumors come in all shapes and sizes. So it's not easy to compare one tumor to another. To make it easier, cancer experts created a "score" that can describe any tumor. Each letter is matched with a number to explain the extent of the cancer.

T = Tumor

T stands for tumor, and the numbers 0 through 4 refer to its size and growth:

- **T0** means that no tumor can be detected.
- **T1** tumors can't be felt during a digital rectal exam and aren't found on imaging tests, although a biopsy shows cancer is present.
- **T2** tumors can be felt during a digital rectal exam. They also may be seen on an imaging test. T2 tumors are found only in the prostate gland.
- **T3** tumors have broken through the outside layer of the prostate gland. They may reach the connective tissue around the prostate or the neck of the bladder.
- **T4** tumors have grown outside the prostate into nearby structures such as the bladder, rectum, pelvic muscles, or pelvic wall.

How to read a TNM score

Let's say your prostate cancer is given a TNM score of **T2, N0, M0**. This score means that the tumor is big enough to be felt during a digital rectal exam (T2), but it hasn't spread outside the prostate gland to nearby lymph nodes (N0) or to distant parts of the body (M0).

N = Node

N is for node, as in lymph node. There are hundreds of lymph nodes throughout your body. They work as filters to help fight infection and remove harmful substances. The number 0 or 1 after the letter N tells whether the cancer has or hasn't spread to the lymph nodes near the prostate:

- **N0** means cancer hasn't spread to any lymph nodes.
- **N1** means cancer has spread to lymph nodes near the prostate (regional lymph nodes).

M = Metastasis

When prostate cancer metastasizes, it tends to spread to the bones, liver, lungs, distant lymph nodes, and other organs:

- **M0** means the cancer hasn't spread to distant parts of the body.
- **M1** metastasis has spread to distant parts of the body.

Why know your TNM score? For one, it lets you know the extent of your cancer. It also helps characterize your risk group. Your risk group suggests the most appropriate treatment for you.

Key points

- Early-stage prostate cancer hasn't spread outside the prostate itself.
- Clinical characteristics of your cancer—PSA level, digital rectal exam, biopsy results, Gleason score, Grade Group, and tumor stage—are used to classify your disease into one of five different risk groups.
- Patients with lower risk generally get minimal or no treatment. Patients with higher risk usually get more aggressive treatment.
- The only way to know if you have prostate cancer is to remove tissue from your body and test it for cancer cells (biopsy).
- A Gleason score describes how aggressive your prostate cancer is.
- Gleason scores are organized into Grade Groups, which are simpler to understand.
- The tumor, node, metastasis (TNM) system is used to stage prostate cancer.
- Cancer staging describes how much cancer is in the body and where it is located.

“

When you are deciding on your treatment options, remember that even though some decisions need to be made fast, don't rush. Think through your options and get second, or even third opinions. Have people you can trust to talk through your options so you feel comfortable in your decisions.”

4

Assessing your risk

32 Risk groups

35 Life expectancy

35 Nomograms

36 Molecular biomarker tests

36 Key points

A risk assessment estimates the chances of future problems or difficulties. In the case of prostate cancer, a risk assessment helps to plan the best treatment for you.

After being told you have cancer, your next thought may be, “How soon can I start treatment to get rid of it?” The fact is, a lot of patients with prostate cancer don’t need treatment right away. Many never need treatment.

So who needs treatment and who doesn’t? Figuring out when to be treated or which treatment to use requires an assessment of your risks. A risk assessment involves identifying potential problems and then considering what would happen if those problems occurred.

In the case of prostate cancer, a risk assessment considers how likely the cancer is to:

- Remain within the prostate
- Spread to nearby lymph nodes
- Come back after treatment (recurrence)
- Be controlled with another treatment

Your care providers use these tools to make a risk assessment:

- Risk groups
- Life expectancy
- Nomograms
- Molecular biomarker tests

Risk groups

Doctors use risk groups to help choose treatment options and to predict the likelihood that the cancer will recur after initial treatment. As you read in Chapter 3, results from several different tests are put together to determine each risk group:

- **PSA level** indicates the likelihood of prostate cancer—and the higher the PSA level, the more likely that the cancer is a higher grade
- **Digital rectal exam** offers clues to the presence of a tumor
- **Biopsy** confirms whether there’s cancer in the prostate, and also suggests the extent of the cancer
- **Gleason score** and **Grade Group** estimate how quickly the will cancer grow
- **TNM score** represents how far the cancer has spread

Based on the results of these tests and measurements, you’ll be placed into an initial risk group. Your risk group helps determine which treatment options may be best for you. Using these tests together to create risk groups is more reliable than using any test by itself to choose treatment options. See **Guide 3** and **Guide 4**.

Additional tests

Once your doctor determines your risk group, you may need some additional tests before you can be treated, particularly if you're in a higher risk category. If you didn't have an MRI earlier, you'll likely have one at this point.

Other tests that may be done—or redone—to confirm your diagnosis and plan your treatment include:

- Biopsy
- Bone scan
- PSMA/PET, PET/CT, or PET/MRI

In addition to the tumor (T) stage, letters included after the stage give more information about the extent of cancer and its location in the prostate.

Guide 3

Tumor details for T stage

In addition to the tumor (T) stage, letters included after the stage give more information based on a digital rectal exam or removal of prostate tissue. The letter stands for the extent of cancer and/or its location in the prostate.

T1

T1a – Cancer found in 5 percent (5%) or less of the removed tissue.

T1

T1b – Cancer found in more than 5 percent (5%) of the removed tissue.

T1c – Cancer found in one or both sides of the prostate.

T2

T2a – Cancer is found in half or less than half of one side of the prostate.

T2b – Cancer is found in more than half of one side of the prostate, but it isn't in both sides.

T2c – Cancer has grown into both sides of the prostate.

T3

T3a – Cancer has grown outside the prostate, but not into the seminal vesicle(s).

T3b – Cancer has grown outside the prostate and into the seminal vesicle(s).

Guide 4

Characteristics that make up your risk group

Required characteristics	PSA level	Grade Group	Tumor stage	Biopsy results	PSA density	Risk group
All of these:	Less than 10 ng/mL	1	T1c	Cancer in 1 to 2 biopsy cores with no more than half of each core showing cancer	Less than 0.15	Very low risk
All of these:	Less than 10 ng/mL	1	T1 to T2a	More than 3 biopsy cores show cancer, but less than half of all cores show cancer		Low risk
All of these:	10 to 20 ng/mL	1 or 2	T2b or T2c	Less than half of biopsy cores show cancer		Favorable intermediate risk
At least one of these:	10 to 20 ng/mL	3	T2b or T2c	More than half of biopsy cores show cancer		Unfavorable intermediate risk
Only one of these:	More than 20 ng/mL	4 or 5	T3a	More than half of the biopsy cores show cancer, but less than 4 cores are Grade Group 4 or 5		High risk
At least one of these:	More than 20 ng/mL	5*	T3b to T4	More than 4 biopsy cores are Grade Group 4 or 5		Very high risk

* In the cancer cells that take up largest area in the tumor

Life expectancy

Life expectancy is the average lifespan of a person. It's measured in years. An estimate of your life expectancy is a key factor in deciding which tests and treatments you'll need.

It's important to know that life expectancy—when used for cancer care—is an estimate based on large numbers of people with the same cancer. That means life expectancy can be applied to a certain population or age range, but it's not as easy to make a precise estimate of the lifespan of an individual person.

Sometimes, patients in certain risk groups should wait until symptoms appear before having tests or starting treatment. Prostate cancer often grows slowly. There may be no benefit to having additional tests or undergoing treatment if you don't have any symptoms or if you have other more life-threatening health conditions.

If you don't have any symptoms, are expected to live 10 years or less, and have very-low-risk, low-risk, or intermediate-risk cancer, then observation is usually recommended. This is different than active surveillance, which usually involves routine imaging and biopsies.

We'll talk more about life expectancy and how it impacts treatment options in Chapter 6.

Nomograms

A nomogram predicts your prognosis, which is the likely course your cancer will take. A nomogram uses math to compare you and your prostate cancer to hundreds or thousands of other patients who have been treated for prostate cancer.

To use a nomogram, your doctor will input information about you and the characteristics of your cancer—your age, PSA level, Gleason score, or other details—and the nomogram will calculate the likelihood of a certain outcome (such as the cancer spreading).

Risk groups and nomograms both provide information that is specific to you, but nomograms can give somewhat more accurate estimates of cancer risk. Both are used, along with other risk assessment tools, to plan treatment.

Molecular biomarker tests

Molecules are very tiny particles found in the cells of your body. Special tests are used to measure certain molecules and biomarkers. A biomarker is something found in your body that can be measured to assess your health. One type of cancer biomarker is a molecule released by a tumor.

Molecular tests use samples of prostate or lymph node tissue removed during a biopsy. Results from these and other tests may help choose a treatment plan that's right for you. Another reason you might have a molecular test is to see how well your body is responding to prostate cancer treatment.

Importantly, molecular tests can help identify patients with lower risk prostate cancer who don't need treatment right away. These patients can be spared aggressive treatment along with its complications and side effects.

A molecular tumor test is also known as a genomic test, somatic test, biomarker test, or tumor profiling. A few of the more common molecular tests for prostate cancer are named Decipher, Genomic Prostate Score, and Polaris.

If your doctor recommends molecular testing, it would be in addition to standard tests such as PSA, Gleason score, and imaging. If you have any questions about why you're having a test or what it means, ask your care team.

Key points

- A risk assessment identifies potential problems and then considers what would happen if those problems occurred.
- A risk assessment takes into account your risk group, life expectancy, nomogram results, and possibly molecular tumor tests. A risk assessment is used to plan treatment.
- Results from several different tests are put together to determine your risk group.
- Risk groups are used to help choose treatment options and to predict the likelihood that cancer will recur after initial treatment.
- Life expectancy is an estimate of the number of years you will likely live. It's based on large numbers of people and is not an exact prediction. But it can help choose the best treatment for you.
- Observation is often recommended for those with a life expectancy of 5 years or less.
- A nomogram predicts your prognosis (the course your cancer will likely take).
- An important feature of molecular tests is that they can identify lower risk prostate cancer that doesn't need treatment right away.

5

Prostate cancer treatments

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- 38 Active surveillance
- 40 Surgery
- 43 Radiation therapy
- 45 Hormone therapy
- 47 Cryotherapy
- 47 High-intensity focused ultrasound
- 47 Clinical trials
- 49 Supportive care
- 50 Key points

There's more than one treatment for prostate cancer. This chapter describes your treatment options and what to expect. Discuss with your care team which treatment might be best for you.

Prostate cancer is usually a slow-growing disease. It's also a complex disease with many treatment options. Common treatments for early-stage prostate cancer include surgery and radiation therapy, which are sometimes combined with hormone therapy.

Then again, your treatment plan may include no direct therapy but instead include observation or active surveillance.

Observation

Observation involves monitoring your prostate cancer and watching for symptoms. (You may hear it called watch-and-wait or watchful waiting.) If symptoms develop, treatment is often focused on palliative care or symptom relief instead of trying to cure the cancer. Palliative care treats the symptoms of cancer and the side effects of cancer treatment. This allows patients to maintain a good quality of life without the burden of unnecessary treatment.

Observation often applies to older or frail patients with intermediate-risk prostate cancer and shorter life expectancies (5 to 10 years). It's also recommended for patients with lower risk prostate cancer and short life expectancy (5 years or less). These patients commonly have one or more other illnesses or diseases

that are more severe than their prostate cancer.

Observation is different from active surveillance. Observation is a less aggressive way to monitor prostate cancer. It doesn't require regular biopsies—just a visit for a physical once or twice a year. By comparison, active surveillance involves frequent testing to see whether the cancer is progressing in order to treat it before it can get worse.

Active surveillance

Active surveillance is a plan that closely watches your condition, with treatment at the ready if needed.

Because a small tumor can grow very slowly, it's possible to wait to treat prostate cancer until the tumor grows larger. During this time, you'll have tests and biopsies on a regular basis to look for changes in tumor growth. Although your care team may ask you to have tests more or less frequently, regular testing during active surveillance may follow a schedule like this:

- PSA once or twice a year
- Digital rectal exam once a year
- MRI every 1 to 2 years
- Prostate biopsy every 1 to 3 years

You won't receive any cancer treatment during active surveillance. But treatment will begin if your cancer grows or spreads.

Why wait to be treated? Mainly because surgery and other forms of treatment have side effects. If you can delay treatment without harm—or avoid it altogether—then you can also delay or entirely avoid the side effects of treatment.

Shared decision-making

Some people with cancer want their doctors and treatment team to just tell them which treatment to have. Doctors, nurses, and other providers are the experts, right? While it's true that your treatment team has lots of experience and knowledge, you're also an expert—you're the expert on you.

It's a good idea for your team to share the responsibility of your treatment with you. And it's a good idea for you to fully participate in making decisions about your care.

Here's what your treatment team should share with you:

- An explanation of the likely benefits and potential harms of each treatment option.
- The likelihood of cure, recurrence, progression, and possible mortality with each treatment option.
- The side effects of each treatment option along with its impact on quality of life, including sexual, urinary, and bowel function.

And here's what you should share with your treatment team:

- Your preferences and feelings about treatment, side effects, risks, and quality of life. These should be key parts of your treatment plan.

If the provider who's leading your treatment team doesn't have a talk with you about shared decision-making, feel free to speak up and ask about it.



In general, active surveillance is the preferred strategy for patients (particularly younger patients) with lower-risk prostate cancer and a longer life expectancy (10 or more years).

To see if you're a good candidate for active surveillance, you may need a confirmatory MRI with or without a confirmatory prostate biopsy. Molecular biomarker testing can also be considered in patients with very-low-, low-, and favorable intermediate-risk prostate cancer to help decide if active surveillance is an option.

Other factors to consider:

- Your life expectancy
- Your overall health
- Features or unique qualities of your tumor
- Possible side effects of treatment
- Your wishes about treatment

A big question about active surveillance: When do you know to switch from surveillance to treatment? There are a number of factors, but the most common one is that a patient's Grade Group in a recent biopsy has increased compared to a previous biopsy.

Other reasons for starting treatment may include an increase in the size of the tumor or a rise in PSA level.

Surgery

Surgery is a procedure to remove cancer from the body. The tumor is removed along with some normal-looking prostate tissue around its edge called the surgical margin.

- A **positive margin** is when cancer cells are found along the edge of the tissue that the surgeon removes.
- A **negative margin** is when no cancer cells are found around the edge of the tissue that the surgeon removes.

A negative margin is the better result because it means that all the tumor in that area has likely been removed.

Surgery can be used as the main (primary) treatment. Or surgery may be only one part of your treatment plan. The type of surgery you receive depends on the size and location of the tumor. It also depends on whether cancer is found in any surrounding organs or tissues.

Radical prostatectomy

Prostatectomy means removing the prostate gland through surgery. A radical prostatectomy removes not only the entire prostate but also the surrounding tissue, seminal vesicles, and sometimes the nearby lymph nodes. So it can be a highly effective way of curing prostate cancer.

Radical prostatectomy is often used when:

- The tumor is found only in the prostate.
- The tumor can be removed completely with surgery.
- You have a life expectancy of 10 or more years.
- You have no other serious health conditions.

A radical prostatectomy is complex and requires a great deal of skill. Surgeons who are experienced in this type of surgery often have better results.

There are two surgical methods for radical prostatectomy:

- **Open surgery** removes the prostate through a single cut or incision. The incision is long enough to let your doctor directly view and access the tumor to remove it.
- **Minimally invasive** surgery uses several small incisions or holes instead of one larger cut. The surgeon inserts small tools through each incision to perform the

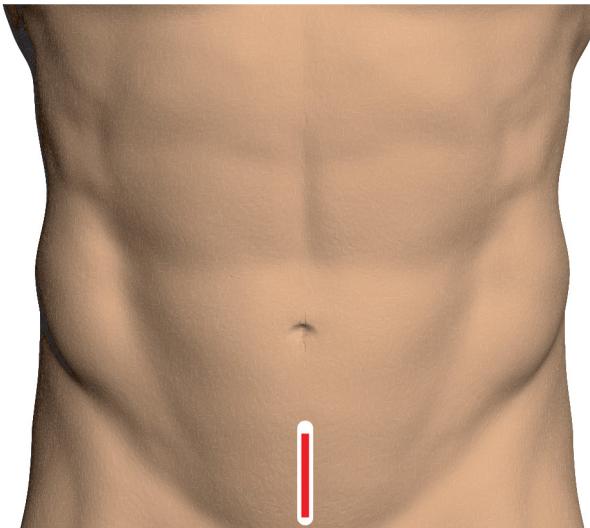
surgery. Sometimes the surgeon uses a robot to guide the tools more precisely.

Minimally invasive surgery has become more common than open surgery. Patients who receive minimally invasive surgery often have shorter hospital stays, less blood loss, fewer surgical complications, and faster recovery time.

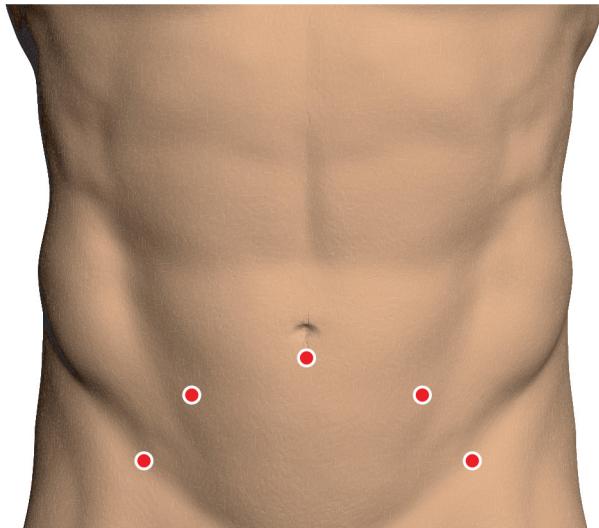
The major side effects from minimally invasive radical prostatectomy—incontinence and erectile dysfunction—occur about as often as they do with open surgery.

Open vs. minimally invasive prostatectomy

A prostatectomy is an operation that removes the whole prostate. Open surgery removes the prostate through a single cut or incision. Minimally invasive surgery uses several small incisions or holes instead of one larger cut.



Open



Minimally invasive

Side effects of surgery

Radical prostatectomy frequently causes two side effects:

Urinary incontinence. You'll likely lose the ability to hold your pee after a radical prostatectomy. This is called urinary incontinence and it's usually temporary. Most patients gradually recover control of their bladder after a few months or so.

Immediately after the procedure, a catheter will be inserted into your urethra to allow you to empty your bladder and for your urethra to heal. The catheter will stay in place for 1 to 2 weeks after surgery. You'll be shown how to care for it while at home. If the catheter is removed too early, you may lose control of your bladder or be unable to urinate due to scar tissue.

Erectile dysfunction. Erectile dysfunction means having difficulty or being unable to have an erection of the penis. It's a common problem after prostate surgery, but it often—although not always—improves over time.

There's a higher risk for erectile dysfunction if:

- You are older
- You have erectile problems before surgery
- Your cavernous nerves are damaged or removed during surgery

The cavernous nerves control the ability to have erections. These nerves run alongside the prostate. Surgeons do their best to avoid these nerves when performing a prostatectomy, but damage to the nerves during surgery is sometimes unavoidable.

Removing your prostate and seminal vesicles will cause you to have dry orgasms. This means there will be no semen and you'll be

unable to have children. You may want to look into sperm banking before the surgery if you're thinking of having children.

It may take several months to 2 years to restore the erectile function you had before the prostatectomy. However, you may never regain the same sex drive you once had. Treatment options for erectile dysfunction include pills (like Viagra and Cialis), injections of medication into the penis, vacuum constriction devices ("penis pump"), and surgical implants that produce an erection.

It's also common to have psychological as well as relationship problems with erectile dysfunction. It's a leading cause of depression in patients with prostate cancer. This happens often and is nothing to be ashamed of. Ask your care team about therapy or counseling if you're having any problems due to erectile dysfunction or any symptoms of depression. Help is readily available.

“

Now more than ever, those living with cancer are living better, longer lives thanks to the power of research and advancements in treatment.”

Radiation therapy

Radiation therapy uses high-energy radiation, like x-rays or gamma rays, to kill cancer cells and shrink tumors. Radiation therapy is given in regular doses over a certain period of time.

Radiation can be used instead of surgery to cure cancer. Sometimes, radiation therapy is given after surgery to help prevent your cancer from coming back. Also, if your PSA begins to rise after surgery, radiation therapy might be recommended to try to kill any cancer cells that could have been left behind. One advantage of radiation therapy is that it's less invasive than surgery.

External beam radiation therapy

External beam radiation therapy (EBRT) uses a machine that aims radiation directly at cancer inside the body. The radiation beam focuses directly on the cancer while avoiding healthy tissue. This allows for safer delivery of higher doses of radiation, sometimes with fewer treatments.

There are two main types of radiation treatment:

EBRT

External beam radiation therapy (EBRT) uses a machine that aims radiation precisely at cancer inside the body. The radiation beam focuses directly on the cancer while trying to avoid healthy tissue. This technique delivers higher doses of radiation more safely.



Brachytherapy

Brachytherapy is an internal form of radiation therapy. In this treatment, radiation is delivered inside the body by placing a radioactive object into or next to the tumor. You might hear it called brachy (said “bray-key”) for short.

Brachytherapy may be used alone or combined with EBRT, hormone therapy, or both. Brachytherapy alone may be an option for very-low-, low-, or favorable intermediate-risk prostate cancer, depending on life expectancy. Patients with high-risk cancers aren't usually considered for brachytherapy alone.

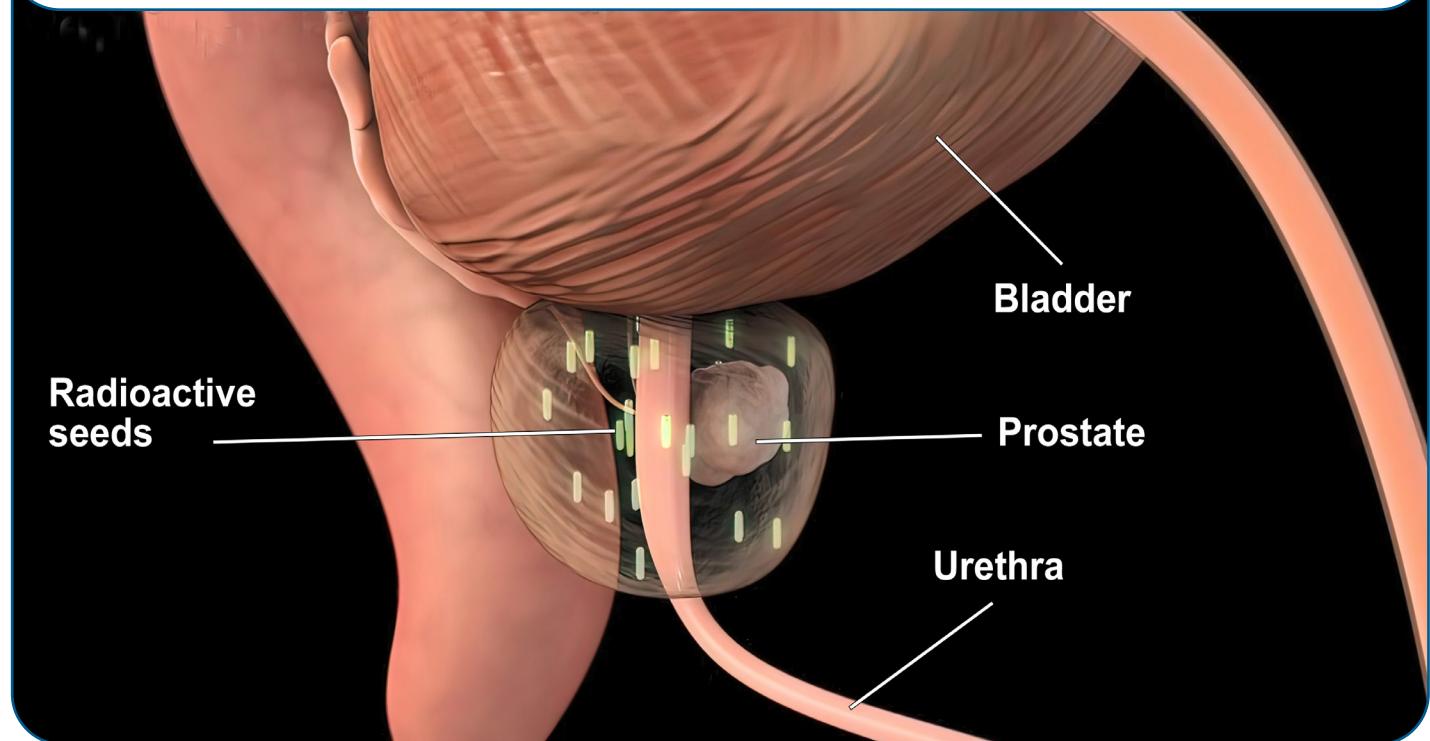
Side effects of radiation therapy

Some of the common side effects of radiation therapy are urinary and bowel problems, erectile dysfunction, and fatigue.

Urinary and bowel problems. Urinary problems include having to go more often, having to go suddenly, and a burning sensation when you go. Bowel problems can include diarrhea, pooping frequently, being unable to hold it in, and sometimes bleeding from the rectum. Urinary and bowel problems usually go away after several weeks for most people, though not for all.

Brachytherapy radiation

One type of brachytherapy uses tiny radioactive metal “seeds” that are implanted into your prostate. Each seed is about the size of a grain of rice. They'll stay in your prostate permanently and provide a low dose of radiation continuously for a few months. This treatment strategy spares nearby healthy tissue from unnecessary radiation.



Erectile dysfunction. Radiation therapy can damage the nerves that control the ability to have erections. Erectile dysfunction doesn't happen right away after radiation. It usually occurs gradually, starting and then worsening between 1 to 3 years after radiation treatment. (For more, see "Erectile dysfunction" in the earlier section *Side effects of surgery*, page 42.)

Fatigue. Feeling very tired for a few weeks to months after radiation treatment is also common.

Hormone therapy

Hormone therapy is rarely used by itself for the treatment of early-stage prostate cancer. When hormone therapy is used (generally for patients with higher risk), it's usually given with radiation therapy, which increases radiation's effectiveness. Hormone therapy may be given before, during, or after radiation therapy.

Hormone therapy is treatment that adds, blocks, or removes hormones. A hormone is a natural chemical made by a gland in the body. Its job is to activate cells or organs.

Male hormones are called androgens. The main androgen is testosterone. Most of the testosterone in the body is made by the testicles. Testosterone helps produce sperm, among other functions. But testosterone also helps prostate cancer grow. A type of hormone therapy called androgen deprivation therapy (ADT) can stop your body from making testosterone or block cancer cells from using testosterone. This can shrink the tumor or slow tumor growth for a while.

You might hear the term "castration" used when describing prostate cancer or its treatment. This term describes a drastic

reduction of testosterone. Castration can be a short-term reversible treatment using drugs or it can be permanent surgical removal of one or both testicles (orchectomy). Though orchectomy is a surgical procedure, it's still considered hormone therapy because it removes the primary source of testosterone: the testicles. Unlike drug hormone therapy, orchectomy can't be reversed.

Surgical removal of the testicles is much less common nowadays because drug therapy is often just as effective at blocking testosterone. Orchectomy is now used only for advanced metastatic prostate cancer.

Hormone therapies for prostate cancer include luteinizing hormone-releasing hormone (LHRH) agonists and LHRH antagonists, both of which cause the testicles to stop making testosterone. Most LHRH agonists and LHRH antagonists are injections. These may be given monthly or 2, 3, or 4 times a year. Anti-androgens, corticosteroids, and androgen synthesis inhibitors are available as pills and taken 1 to 3 times a day, depending on the medication. **See Guide 5** on next page.

Side effects of hormone therapy

Hormone therapy has significant side effects. Many factors affect your risk for side effects including your age, your health before treatment, how long or often you have treatment, and other things.

Side effects differ among the types of hormone therapy. In general, the longer you're on hormone therapy, the greater your risk of thinning and weakening of your bones (osteoporosis), bone fractures, weight gain, loss of muscle mass, diabetes, and heart disease. Other side effects of hormone therapy include tiredness (fatigue), mood changes,

weight gain, and growth and tenderness of your breasts.

Hormone therapy increases the risk for diabetes and cardiovascular disease. If you already have either of these conditions, hormone therapy can cause them to get worse. In Black patients, hormone therapy may increase the risk of death from heart issues.

In addition, the sexual side effects of hormone therapy are a significant cause of stress.

Hormone therapy may reduce your desire for sex and cause erectile dysfunction. Erectile dysfunction medicines (such as Viagra and Cialis) aren't usually effective for those on hormone therapy. These drugs don't restore the loss of sexual desire caused by lower androgen levels.

Talk to your care team about how to manage the side effects of hormone therapy. They have ways to lessen or soothe most of these problems.



share with us.

Take our survey,
and help make the
NCCN Guidelines for Patients better
for everyone!

[NCCN.org/patients/comments](https://www.NCCN.org/patients/comments)

Guide 5

Hormone therapy drugs for early-stage prostate cancer

LHRH agonists	Eligard (leuprolide), Lupron Depot (leuprolide), Trelstar (triptorelin), Zoladex (goserelin)
LHRH antagonists	Firmagon (degarelix), Orgovyx (relugolix)
Anti-androgens	Casodex (bicalutamide), Eulexin (flutamide), Nilandron (nilutamide)
Corticosteroids*	methylprednisolone, prednisone
Androgen synthesis inhibitors*	Zytiga (abiraterone)

* Only for patients with very-high-risk prostate cancer

Cryotherapy

Cryotherapy, also known as cryosurgery or cryoablation, destroys cancer cells by freezing them. For this treatment, long hollow needles are inserted through the perineum (the area between the scrotum and anus) and into the prostate. Freezing cold gas is sent through the needles to destroy cancer tissue or the entire prostate. Cryotherapy affects only the prostate, leaving the surrounding area unharmed. You'll be given anesthesia to relieve any pain during the procedure.

Cryotherapy is mainly used as a secondary therapy for people with early prostate cancer whose cancer returns after radiation treatment. After-effects of cryotherapy can include pain, erectile dysfunction, and urinary incontinence.

High-intensity focused ultrasound

Like cryotherapy, high-intensity focused ultrasound for early prostate cancer is primarily used if the cancer returns after radiation treatment.

High-intensity focused ultrasound, or HIFU, destroys prostate tissue with heat generated by high-energy ultrasound waves. For this procedure, an ultrasound probe is inserted into the rectum. The probe focuses high-frequency sound energy on the prostate, leaving the surrounding tissue unaffected. The energy converts into high heat, which vaporizes one portion of tissue at a time until the entire tumor is destroyed.

Side effects of HIFU are usually temporary and include having to pee urgently or more often, or having a weak or slower urine stream.

Urinary incontinence and erectile dysfunction are also possible.

Clinical trials

Therapy may also be given as part of a clinical trial. A clinical trial is a type of medical research study. Clinical trials are a key way to assess new treatment approaches. After being developed and tested in a laboratory, potential new ways of fighting cancer need to be studied in people. If found to be safe and effective in a clinical trial, a drug, device, or treatment approach may be approved by the U.S. Food and Drug Administration (FDA).

Everyone with cancer should carefully consider all the treatment options available for their cancer type, including standard treatments and clinical trials. Talk to your doctor about whether a clinical trial may make sense for you.

Phases

Most cancer clinical trials focus on treatment. Treatment trials are done in phases.

- **Phase 1** trials study the dose, safety, and side effects of an investigational drug or treatment approach. They also look for early signs that the drug or approach is helpful.
- **Phase 2** trials study how well the drug or approach works against a specific type of cancer.
- **Phase 3** trials test the drug or approach against a standard treatment. If the results are good, it may be approved by the FDA.
- **Phase 4** trials study the long-term safety and benefit of an FDA-approved treatment.

Who can enroll?

Every clinical trial has rules for joining, called eligibility criteria. The rules may be about age, cancer type and stage, treatment history, or general health. These requirements ensure that participants are alike in certain ways in order to compare how they respond to a specific treatment.

Informed consent

Clinical trials are managed by a group of experts called a research team. The research team will review the study with you in detail, including its purpose and the risks and benefits of joining. All of this information is also provided in an informed consent form. This is an agreement that confirms you've been fully told about your part in the trial. Read the form carefully and ask questions before signing it. Take time to discuss it with family, friends, or others you trust. Keep in mind that you can leave and seek treatment outside of the clinical trial at any time.

Start the conversation

Don't wait for your doctor to bring up clinical trials. Start the conversation and learn about all your treatment options. Ask if a clinical trial is available for your situation. If you find a study that you may be eligible for, ask your treatment team if you meet the requirements. If you have already started standard treatment, you may not be eligible for certain clinical trials. Try not to be discouraged if you cannot join. New clinical trials are always becoming available.

Frequently asked questions

There are many myths and misconceptions surrounding clinical trials. The possible benefits and risks are not well understood by many with cancer.



Finding a clinical trial

In the United States

NCCN Cancer Centers
NCCN.org/cancercenters

The National Cancer Institute (NCI)
cancer.gov/about-cancer/treatment/clinical-trials/search

Worldwide

The U.S. National Library of Medicine (NLM)
clinicaltrials.gov

Need help finding a clinical trial?

NCI's Cancer Information Service (CIS)
1.800.4.CANCER (1.800.422.6237)
cancer.gov/contact

Will I get a placebo?

Placebos (inactive versions of real medicines) are almost never used alone in cancer clinical trials. It's common to receive either a placebo with a standard treatment or a new drug with

a standard treatment. You'll be informed if a placebo is part of a clinical trial before you enroll.

Are clinical trials free?

There's no fee to enroll in a clinical trial. The study sponsor pays for research-related costs, including the study drug. You may, however, have costs indirectly related to the trial, such as the cost of transportation or childcare due to extra appointments and the costs of routine patient care during the trial.

Depending on the trial, you may continue to receive standard cancer care. The standard therapy is billed to—and often covered by—insurance. You're responsible for copays and any costs for this care that aren't covered by your insurance.

Supportive care

Supportive care aims to improve your quality of life. Supportive care (sometimes called palliative care) is health care that relieves the symptoms caused by cancer and the side effects caused by its treatment.

Supportive care addresses many needs: relieving symptoms, preventing or lessening treatment side effects, advising about nutrition and diet, and providing emotional or spiritual support, financial aid, or family counseling. Supportive care can also help with making treatment decisions.

Supportive care is important at any stage of cancer, not just at the end of life. In fact, people who start supportive care when they begin treatment tend to have improved outcomes and better quality of life.

Supportive care involves the whole person, not just their cancer. If you're having a

Without clinical trials, our treatment wouldn't change. It would always remain the same. Some people refer to clinical trials as receiving tomorrow's best treatment today.



problem that's interfering with your treatment or affecting your quality of life, ask what supportive care resources may be available to help you.

Support groups

Many people diagnosed with cancer find support groups to be helpful. Support groups often include people at different stages of treatment. Some people may be newly diagnosed, while others may be finished with treatment. If your hospital or community doesn't have support groups for people with prostate cancer, check out the websites listed on page 78 of this book.

Key points

- Observation looks for signs of cancer in order to treat the symptoms before they start or get worse. Treatment, if needed, focuses on palliative care or symptom relief instead of trying to cure the cancer.
- Active surveillance involves frequent testing, including biopsies, to see whether the cancer is progressing in order to cure it before it can get worse.
- Active surveillance is the preferred strategy for patients with lower-risk prostate cancer and a longer life expectancy.
- Surgery removes the tumor along with some normal-looking tissue around its edge called a surgical margin. The goal of surgery is to have no cancer cells in the surgical margin.
- A radical prostatectomy removes the whole prostate, the surrounding tissue, the seminal vesicles, and sometimes the nearby lymph nodes in the pelvis.
- Side effects of a radical prostatectomy can include urinary incontinence and erectile dysfunction.
- Radiation kills cancer cells or stops new cancer cells from being made.
- Common side effects of radiation therapy are urinary problems, bowel problems, and erectile dysfunction.
- Hormone therapy treats prostate cancer by stopping testosterone from being made or by blocking cancer cells from using testosterone. It's sometimes used in combination with radiation therapy for early-stage prostate cancer.
- Castration describes a drastic reduction of testosterone. This can be done surgically or with drugs.
- A clinical trial studies a treatment to see how safe it is and how well it works. Sometimes a clinical trial is the preferred treatment option for prostate cancer.
- Supportive care relieves the symptoms caused by cancer and the side effects caused by its treatment.
- Supportive care is important at any stage of cancer, not just at the end of life.

6

Initial treatment for your risk group

- 52 Very low risk
- 55 Low risk
- 56 Intermediate risk
- 56 Favorable intermediate risk
- 58 Unfavorable intermediate risk
- 61 High risk or very high risk
- 63 After initial treatment
- 64 Key points

You've had a lot of tests to assess your risk for prostate cancer. You and your care team will now use your risk assessment to decide your initial treatment options.

Has your doctor or care team told you which risk group you're in?

If you know your risk group, look for it in the following pages to learn about your initial therapy options.

Very low risk

Patients included in the very-low-risk group have all of the following traits:

- Stage T1c tumor
- Grade Group 1
- PSA less than 10 ng/mL
- Cancer in 1 to 2 biopsy cores with no more than half of each core showing cancer
- PSA density less than 0.15 ng/mL

NCCN experts are concerned about overtreatment of early-stage prostate cancer. One result of overtreatment is that the treatment might cause more problems than the disease itself. For many patients, especially those with lower risk prostate cancer, observation or active surveillance can be better options than direct treatment.

Guide 6 Very-low-risk group: Initial therapy options

Life expectancy	Initial therapy
20 or more years	Active surveillance (preferred)
	Radiation therapy (EBRT or brachytherapy)
	Prostate surgery → If adverse feature(s), then also one of these: <ul style="list-style-type: none"> • EBRT • EBRT and hormone therapy • Monitoring for cancer recurrence
10 to 20 years	Active surveillance
Less than 10 years	Observation

Treatment options, based on life expectancy, are described next. Also **see Guide 6.**

Life expectancy: 20 or more years

If you have very-low-risk prostate cancer and your life expectancy is 20 years or more, options include:

Active surveillance

Active surveillance is the preferred option if you have slow-growing prostate cancer and your life expectancy is 20 years or more. Tests during active surveillance include PSA, digital rectal exam, MRI scan, and biopsies. These tests are done on a regular basis so that treatment can be started when and if needed.

See Guide 7.

To see if you're a good candidate for active surveillance, you may need a confirmatory MRI (if you haven't received an MRI already) with or without a confirmatory prostate biopsy. All patients should have a confirmatory prostate biopsy 1 to 2 years after their initial biopsy.

Radiation therapy

While active surveillance is preferred, radiation therapy is also an option in certain cases. Very-low-risk prostate cancer can be treated with external beam radiation therapy (EBRT) or brachytherapy.

Prostate surgery

Surgery to remove the entire prostate (radical prostatectomy) is uncommon for people with very-low-risk prostate cancer, although it may be an option in certain cases.

Guide 7 Tests during active surveillance

Test	Frequency
PSA test	Once or twice a year, or as needed
Digital rectal exam	Once a year, or as needed
Repeat MRI	Every 1 to 2 years, or as needed
Repeat prostate biopsy	Every 1 to 3 years, or as needed

Life expectancy: Between 10 and 20 years

If you have very-low-risk prostate cancer and your life expectancy is between 10 and 20 years, active surveillance is recommended.

Active surveillance

Active surveillance consists of testing on a regular basis, including PSA tests and biopsies, so that treatment can be started when and if needed. **See Guide 7.**

To see if you're a good candidate for active surveillance, you may need a confirmatory MRI (if you haven't received an MRI already) with or without a confirmatory prostate biopsy. All patients should have a confirmatory prostate biopsy 1 to 2 years after their initial biopsy.

Life expectancy: Less than 10 years

If you have very-low-risk prostate cancer and your life expectancy is less than 10 years, observation is recommended.

Observation

This option is for those who have other more serious health problems and whose prostate cancer isn't causing any symptoms. Observation involves occasional PSA tests and watching for symptoms, which can be treated with palliative therapy.

Guide 8

Low-risk group: Initial therapy options

Life expectancy	Initial therapy
10 or more years	Active surveillance (preferred)
	Radiation therapy (EBRT or brachytherapy)
	Prostate surgery → If adverse feature(s), then also one of these: <ul style="list-style-type: none"> • EBRT • EBRT and hormone therapy • Monitoring for cancer recurrence
Less than 10 years	Observation

Low risk

The low-risk group includes patients who have all of the following traits:

- Stage T1 to T2a tumor
- Grade Group 1
- PSA of less than 10 ng/mL
- More than 3 biopsy cores show cancer, but less than half of all cores show cancer

Treatment options are based on life expectancy. The initial treatment options for low-risk disease are described next and shown in **Guide 8**.

Life expectancy: 10 or more years

If you have low-risk prostate cancer and your life expectancy is 10 years or more, initial treatment options are:

Active surveillance

Active surveillance is the preferred option if you have slow-growing disease and you have a longer life expectancy. **See Guide 7**.

To see if you're a good candidate for active surveillance, you may need a confirmatory

MRI (if you haven't received an MRI already) with or without a confirmatory prostate biopsy and/or molecular biomarker testing. All patients should have a confirmatory prostate biopsy 1 to 2 years after their initial biopsy.

Radiation therapy

If you'll likely live more than 10 years, you may decide you want treatment now instead of active surveillance. Low-risk cancers can be treated with radiation therapy, either external beam radiation therapy or brachytherapy.

Prostate surgery

Prostate surgery (radical prostatectomy) removes the whole prostate. It's not a common treatment option for people with low-risk prostate cancer.

In certain cases when prostate surgery is chosen for a patient with low-risk prostate cancer, the urologist will look for signs of disease called adverse (or high-risk) features.

See Guide 9. If your prostate cancer has adverse features, then you might also have additional treatment after surgery to prevent the cancer from returning. If test results don't show adverse features, then you can be monitored for cancer recurrence.

Guide 9 Adverse features

If tests show you have any of these high-risk features, you may need additional therapy:

- Cancer in the normal-looking tissue removed with the tumor (surgical margin)
- Cancer outside the layer surrounding the prostate
- Cancer in the seminal vesicle(s)
- Certain PSA levels (the range varies depending on risk group)

Life expectancy: Less than 10 years

If you have low-risk prostate cancer and your life expectancy is less than 10 years, observation is recommended.

Observation

Observation is for those who have other more serious health problems and whose prostate cancer isn't causing any symptoms. Observation involves occasional PSA tests and watching for symptoms, which can be treated with palliative therapy.

Intermediate risk

The intermediate-risk group is for those who don't have high-risk or very-high-risk group features but do have one or more of the following intermediate risk factors:

- Stage T2b or T2c tumor
- Grade Group 2 or 3
- PSA 10 to 20 ng/mL

The intermediate-risk group is further divided into favorable and unfavorable subgroups. Treatment is based on whether your prostate cancer is **favorable** intermediate risk or **unfavorable** intermediate risk:

Favorable intermediate risk

The favorable intermediate-risk subgroup is for those who have all of the following traits:

- 1 intermediate risk factor
- Grade Group 1 or 2
- Less than half of biopsy cores show cancer

Treatment options are based on life expectancy. **See Guide 10** on the next page.

Life expectancy: 10 or more years

If you have favorable intermediate-risk prostate cancer and your life expectancy is 10 or more years, there are three initial treatment options:

Active surveillance

Active surveillance consists of testing on a regular basis so that treatment can be started when needed. For favorable intermediate-risk disease, you should be watched closely for

any changes. **See Guide 7.** To see if you're a good candidate for active surveillance, you may need a confirmatory MRI (if you haven't received an MRI already) with or without a confirmatory prostate biopsy and/or molecular biomarker testing.

Patients in the favorable intermediate-risk group who have a low percentage of Gleason pattern 4 cancer, low tumor volume, low PSA density, and/or low genomic risk (according to a molecular tumor analysis) are particularly good candidates for active surveillance.

Radiation therapy

Radiation therapy is a treatment option for some patients with favorable-intermediate risk. Radiation treatments include either external beam radiation therapy or brachytherapy.

Prostate surgery

If you're expected to live 10 or more years, surgically removing your prostate (radical prostatectomy) may be an option.

If you have prostate surgery, you might also have additional treatment to help prevent the cancer from returning. This is called adjuvant therapy. Adjuvant therapy options are based

Guide 10 Favorable intermediate-risk group: Initial therapy options

Life expectancy	Initial therapy
10 or more years	Active surveillance
	Radiation therapy (EBRT or brachytherapy)
5 to 10 years	Prostate surgery with or without pelvic lymph node dissection
	Observation (preferred)
	Radiation therapy (EBRT or brachytherapy)

on whether there are high-risk (adverse) features as well as cancer in the lymph nodes (metastasis). Adverse features suggest that not all of the cancer was removed during surgery. **See Guide 9.**

If your prostate cancer has adverse features and no lymph node metastases, the adjuvant therapy options are external beam radiation therapy or monitoring for cancer recurrence. Adjuvant radiation therapy targets areas where the cancer cells have likely spread. Hormone therapy might be added to the radiation therapy. Treatment will be started after you've healed from the prostatectomy operation. Monitoring for cancer recurrence is the other adjuvant option. Monitoring involves periodic PSA tests and sometimes digital rectal exams. If your PSA level rises during monitoring, radiation therapy may be started.

If there are lymph node metastases but no adverse features, your options for adjuvant treatment are hormone therapy or monitoring for cancer recurrence. Radiation therapy may be added to the hormone therapy.

If test results don't find high-risk features or cancer in the lymph nodes, then you'll be monitored for recurrence of cancer.

Life expectancy: Between 5 and 10 years

If you have favorable intermediate-risk prostate cancer and your life expectancy is between 5 and 10 years, there are two treatment options:

Observation

Observation is the preferred option for those with a life expectancy of 5 to 10 years and whose prostate cancer isn't causing symptoms. Observation involves occasional PSA tests and watching for symptoms, which can be treated with palliative therapy.

Radiation therapy

Radiation therapy is a treatment option for some with favorable-intermediate risk. Radiation treatments include either external beam radiation therapy or brachytherapy.

Unfavorable intermediate risk

The unfavorable intermediate-risk subgroup is for those who have one or more of the following:

- 2 or more intermediate-risk factors
- Grade Group 3
- More than half of biopsy cores show cancer

Treatment options are based on life expectancy. Treatment options for patients with unfavorable intermediate-risk cancer are shown in **Guide 11** on the next page.

Life expectancy: 10 or more years

If you have unfavorable intermediate-risk prostate cancer and your life expectancy is 10 or more years, your treatment options include:

Prostate surgery

Surgically removing your prostate (radical prostatectomy) may be an option. Your pelvic lymph nodes may also be removed if there's a small risk for cancer to spread to them. Your urologist will determine this risk using a nomogram. A surgical procedure called a pelvic lymph node dissection (PLND) is performed to remove them and check them for cancer.

You may receive additional treatment after surgery to help stop the cancer from returning.

Guide 11**Unfavorable intermediate-risk group: Initial therapy options**

Life expectancy	Initial therapy
10 or more years	<p>Prostate surgery with or without pelvic lymph node dissection</p> <p>→ If adverse feature(s) and no lymph node metastasis, then also one of these:</p> <ul style="list-style-type: none"> • EBRT • EBRT and hormone therapy • Monitoring for cancer recurrence <p>→ If lymph node metastasis and no adverse feature(s), then also one of these:</p> <ul style="list-style-type: none"> • Hormone therapy • Hormone therapy and EBRT • Monitoring for cancer recurrence <p>Radiation therapy (EBRT) and hormone therapy</p> <p>Radiation therapy (EBRT and brachytherapy)</p> <p>Radiation therapy (EBRT and brachytherapy) and hormone therapy</p>
5 to 10 years	<p>Observation</p> <p>Radiation therapy (EBRT) and hormone therapy</p> <p>Radiation therapy (EBRT and brachytherapy)</p> <p>Radiation therapy (EBRT and brachytherapy) and hormone therapy</p>

This is called adjuvant therapy. The choice of adjuvant therapy is based on whether your cancer has high-risk (adverse) features and/or lymph node metastasis. **See Guide 9.**

Adverse features suggest that not all the cancer was removed during surgery. If there are adverse features but no lymph node metastases, then options for adjuvant

therapy include external beam radiation therapy (EBRT) or monitoring. EBRT targets areas where the cancer cells have likely spread. Hormone therapy may be added to the radiation therapy. Treatment will be started after you've healed from your prostate surgery. Monitoring for cancer recurrence is the other adjuvant option. Monitoring involves periodic PSA tests and sometimes digital rectal exams. If your PSA level begins to rise during monitoring, radiation therapy may be started.

If cancer has spread to lymph nodes (metastasis) but there are no adverse features, your options for adjuvant treatment are hormone therapy or monitoring for cancer recurrence. Radiation therapy may be added to the hormone therapy. If there's a rise in PSA level during monitoring, you may need treatment for PSA recurrence. See Chapter 7.

If test results don't find high-risk features or cancer in the lymph nodes, then you'll be monitored for recurrence of cancer.

Radiation therapy

Radiation therapy is also a treatment option for those with unfavorable intermediate risk and life expectancy of 10 years or more. The most appropriate radiation therapy is EBRT, which can be enhanced with 4 to 6 months of hormone therapy. Or EBRT can be reinforced with brachytherapy, with or without the option of 4 to 6 months of hormone therapy.

Life expectancy: Between 5 and 10 years

If you have unfavorable intermediate-risk prostate cancer and your life expectancy is 5 to 10 years, your treatment options include:

Observation

Because the cancer may progress too slowly to cause problems within 5 to 10 years, active surveillance is not recommended for patients in this risk group. Observation is the recommended option instead. Observation involves occasional PSA tests and watching for symptoms, which can be treated with palliative therapy.

Radiation therapy

Radiation therapy is also a treatment option for those in the unfavorable-intermediate risk group. Treatment includes external beam radiation therapy (EBRT) with or without brachytherapy. Your treatment team may also recommend 4 to 6 months of hormone therapy to go with the radiation therapy.

High risk or very high risk

The **high-risk group** includes those who have only one of the following characteristics:

- Stage T3a tumor
- Grade Group 4
- Grade Group 5
- PSA of more than 20 ng/mL
- More than half of the biopsy cores show cancer, but fewer than 4 cores are Grade Group 4 or 5

The **very-high-risk group** includes those who have one or more of the following characteristics:

- Stage T3b to T4 tumor
- Primary Gleason pattern 5
- 2 or more high-risk factors
- More than 4 biopsy cores that are Grade Group 4 or 5

Those who have high-risk or very-high-risk cancer and are expected to live 5 years or less should undergo bone imaging to see if the cancer has spread to any bones. Imaging of your abdomen and pelvis is also important to look for cancer in the lymph nodes and areas besides the prostate.

Treatment is more aggressive for high-risk and very-high-risk prostate cancer. Treatment options are based on life expectancy and whether or not you have symptoms. **See Guide 12** on the next page.

Life expectancy: More than 5 years or you have symptoms

If your life expectancy is more than 5 years or you have symptoms, there are several options for initial therapy:

Radiation therapy

External beam radiation therapy (EBRT) combined with long-term hormone therapy is an effective initial treatment for patients at high risk or very high risk. For this option, hormone therapy is given before, during, and after radiation therapy for 18 months to 3 years.

Another radiation therapy option is EBRT, brachytherapy, and long-term hormone therapy (1 to 3 years). Combining EBRT and brachytherapy allows for more careful control of the radiation dose. When hormone therapy is added to this combination, patient outcomes tend to improve.

There's also a third radiation treatment option for patients with very-high-risk prostate cancer: Zytiga (abiraterone) can be combined with EBRT and 2 years of hormone therapy.

Prostate surgery

If you're expected to live more than 5 years, a radical prostatectomy with the removal of your pelvic lymph nodes (pelvic lymph node dissection, or PLND) is an option for patients in the high-risk group and certain patients in the very-high-risk group. Your age and overall health will be factors in deciding if this is a good option for you.

You may receive additional treatment after prostate surgery to help prevent the cancer from returning. Options for additional treatment after a prostatectomy are based on whether you have adverse (high-risk) features and/or cancer in the lymph nodes. **See Guide 9.**

Guide 12**High-risk and very-high-risk groups: Initial therapy options**

Life expectancy	Initial therapy
More than 5 years or you have symptoms	Radiation therapy (EBRT) and hormone therapy
	Radiation therapy (EBRT and brachytherapy)
	Radiation therapy (EBRT) and hormone therapy and Zytiga (abiraterone)
5 years or less and no symptoms	If adverse feature(s) and no lymph node metastasis, then also one of these:
	<ul style="list-style-type: none"> → • EBRT • EBRT and hormone therapy • Monitoring for cancer recurrence
	If lymph node metastasis and no adverse feature(s), then also one of these:
	<ul style="list-style-type: none"> → • Hormone therapy • Hormone therapy and EBRT • Monitoring for cancer recurrence
	Observation
	Hormone therapy
	Radiation therapy (EBRT)

If test results find no adverse features and no cancer in the lymph nodes, no additional treatment is needed. Your cancer will be monitored. Monitoring involves periodic PSA tests and sometimes digital rectal exams. If your PSA level begins to rise during

monitoring, you may need treatment for PSA recurrence. See Chapter 7.

If test results find adverse features but no cancer in the lymph nodes, your options are EBRT (with or without hormone therapy)

or monitoring for cancer recurrence. EBRT targets areas where the cancer cells have likely spread. Treatment will be started after you've healed from the prostate surgery. Hormone therapy might be added to radiation therapy to improve outcomes.

If there are no adverse features but cancer has spread to your lymph nodes, then the options are hormone therapy (with or without EBRT) or monitoring for cancer recurrence. You might start the hormone therapy right away with the option of adding the radiation therapy. If your PSA level is undetectable, monitoring is a reasonable option. However, if your PSA level begins to rise during monitoring, you may need treatment for PSA recurrence. See Chapter 7.

Life expectancy: 5 years or less and no symptoms

There are three options for high-risk or very-high-risk prostate cancer when life expectancy is 5 years or less and you have no symptoms:

Observation

Observation is the option for most people in these higher-risk groups. Observation involves occasional PSA tests and watching for symptoms, which can be treated with palliative therapy.

Hormone therapy

If observation isn't a good fit, hormone therapy is an option. Hormone therapy can be medical or surgical castration. Medical castration is treatment with drugs to drastically reduce male hormones. Surgical castration is the permanent surgical removal of one or both testicles (orchectomy).

Radiation therapy

External beam radiation therapy (EBRT) is an option because it's been shown to be effective

in patients with high-risk and very-high-risk prostate cancer.

Supportive care

In addition to these treatments, you may also receive supportive care. Supportive care is for relieving the symptoms caused by cancer and the side effects caused by its treatment.

After initial treatment

If your initial treatment was successful, you'll be monitored for cancer recurrence. Monitoring involves these follow-up tests:

- PSA test every 6 to 12 months for 5 years, then once a year after that. (For patients with a high risk of recurrence, PSA testing every 3 months may be better.)
- Digital rectal exam, if your doctor suspects cancer recurrence.

If lymph node metastases are found while you're on hormone therapy or under observation, or if your PSA (and digital rectal exam, if performed) indicates the cancer has returned, then you'll have additional imaging and discussions of your options. Options may include ongoing monitoring or additional (or different) treatment. See Chapter 7.

Key points

- NCCN experts are concerned about overtreatment of early-stage prostate cancer. For many patients, especially those with lower risk prostate cancer, observation or active surveillance can be better options than direct treatment.
- All patients choosing active surveillance should have a confirmatory prostate biopsy 1 to 2 years after their initial biopsy.
- Adjuvant therapy is additional treatment after initial therapy that helps prevent cancer from returning.
- Observation is recommended for patients with favorable or unfavorable intermediate-risk prostate cancer, no symptoms, and a life expectancy between 5 and 10 years.
- If there's a risk that cancer has spread or will spread to lymph nodes within the pelvis, then a surgical procedure called a pelvic lymph node dissection (PLND) is performed to remove the lymph nodes and check them for cancer.
- After a radical prostatectomy, additional (adjuvant) treatment may help prevent the cancer from returning. The choice of adjuvant treatment is based on whether there are adverse (high-risk) features and/or cancer in the lymph nodes.
- Treatment is more aggressive for high-risk and very-high-risk cancer. For those who choose surgery, adjuvant treatment with radiation therapy is often needed. Sometimes long-term hormone therapy is also added to improve outcomes.



We want your feedback!

Our goal is to provide helpful and easy-to-understand information on cancer.

Take our survey to let us know what we got right and what we could do better.

NCCN.org/patients/feedback

- If your PSA level begins to rise after initial treatment, you may need treatment for PSA recurrence.

7

PSA persistence and recurrence

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- 69 Key points

Even after treatment with prostate surgery or radiation therapy, your PSA level may not go down low enough. Or, your PSA level may drop but, at some point, begin to rise again. These are usually signs that you'll need further treatment.

If you had a radical prostatectomy, all the cells that make PSA should be gone, so your PSA level should be undetectable. If you had radiation therapy, your PSA level should fall steadily to near zero.

But in about 1 in 3 people with prostate cancer, their PSA level either doesn't drop low enough (called PSA persistence) or it drops to near zero but eventually starts to rise again (called PSA recurrence). PSA recurrence may not happen for several years after initial treatment.

PSA persistence and PSA recurrence may be signs that the cancer hasn't fully gone away or that it has come back in other parts of the body. For these reasons, treatment for PSA persistence and PSA recurrence often includes both local and systemic (whole-body) therapies. The local therapy is usually radiation, while systemic therapy involves hormone treatment.

Most of the treatment options listed in this chapter are for those with a life expectancy of more than 5 years. For those with a life expectancy of 5 years or less, observation may be a more reasonable option than undergoing treatment.

Testing for persistence or recurrence

Before deciding on any treatment, you'll need some more tests to find out how aggressive the cancer may be. Imaging is used to find out whether cancer has returned in the pelvis or another area of the body.

- **PSA doubling time** – This test measures the time that the PSA level takes to double. If it doubles in a short amount of time (6 months or less, for example), it suggests that the cancer is growing quickly.
- **Imaging** – This often includes imaging the whole body with a PET scan.
- **Biopsy** – If imaging shows possible cancer somewhere, you may need a biopsy of that area. A biopsy may be needed in the prostate after radiation, in the prostate bed after surgery, or somewhere else, like a lymph node or a bone.

Treatment for persistence or recurrence

If your life expectancy is more than 5 years, treatment for PSA persistence or PSA recurrence is based on whether your previous treatment was radical prostatectomy or radiation therapy. **See Guide 13** on the next page.

Guide 13

Treatment for PSA persistence or PSA recurrence

	Test results	Treatment options
PSA persistence/recurrence after radical prostatectomy	No other signs of cancer	<ul style="list-style-type: none"> Radiation therapy with or without hormone therapy Monitoring
	Cancer in prostate bed or pelvis	<ul style="list-style-type: none"> Radiation therapy and hormone therapy, with or without abiraterone
	Cancer has spread to another area of the body (metastasized)	<ul style="list-style-type: none"> Advanced treatment required
PSA recurrence after radiation therapy	No other signs of cancer	<ul style="list-style-type: none"> Monitoring Hormone therapy
	Cancer in prostate	<ul style="list-style-type: none"> Monitoring Radical prostatectomy with dissection of pelvic lymph nodes Brachytherapy Cryotherapy High-intensity focused ultrasound
	Cancer in pelvis	<ul style="list-style-type: none"> Monitoring Hormone therapy Radiation therapy of pelvic lymph nodes Dissection of pelvic lymph nodes
	Cancer has spread to another area of the body (metastasized)	<ul style="list-style-type: none"> Advanced treatment required

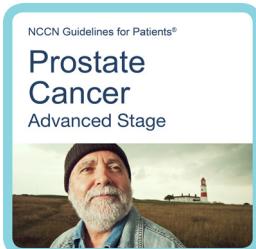
After prostate surgery

If you have PSA persistence or PSA recurrence and your initial therapy was radical prostatectomy, your next treatment depends on your latest test results:

- If tests don't find cancer in the prostate bed or anywhere else in the body, the preferred treatment is radiation therapy with or without hormone therapy. Monitoring is an option for certain patients.
- If tests find cancer in the prostate bed or elsewhere in the pelvis, then the recommended treatment is radiation therapy, often combined with hormone therapy. Zytiga (abiraterone) may also be added to this regimen.
- If tests find that cancer has spread to another area of the body, that means the cancer has metastasized and needs more advanced treatment.

Advanced prostate cancer

More information on testing and treatment for advanced prostate cancer is available at [NCCN.org/patientguidelines](https://www.NCCN.org/patientguidelines) and on the [NCCN Patient Guides for Cancer](#) app.



After radiation therapy

If you have PSA recurrence and your initial treatment was radiation therapy, your next treatment depends on your latest test results:

- If tests don't find cancer in the prostate or anywhere else in the body, you may simply be monitored with regular testing. If symptoms appear or treatment is needed, hormone therapy is recommended.
- If tests find cancer in the prostate, you'll have one of these treatments:
 - Monitoring
 - Radical prostatectomy combined with dissection of pelvic lymph nodes
 - Brachytherapy
 - Cryotherapy
 - High-intensity focused ultrasound
- If tests find cancer in lymph nodes near the prostate or somewhere else in the pelvis, your options for treatment include:
 - Monitoring
 - Hormone therapy
 - Radiation therapy of pelvic lymph nodes
 - Dissection of pelvic lymph nodes
- If tests find that cancer has spread to another area of the body, that means the cancer has metastasized and needs more advanced treatment.

Now what?

After you've been treated for PSA persistence or PSA recurrence, you'll continue to have tests and visits to treat your existing cancer or to watch out for cancer to return. Surveillance is a key part of your follow-up plan. Be sure to continue to go to follow-up visits and stay in touch with your treatment team. As always, you can ask to join a clinical trial.

It's common to feel frustration, anger, regret, despair, and uncertainty—even all at the same time. Know that you can have prostate cancer and still enjoy life after diagnosis and treatment. Try to enjoy life as much as possible. Talk with family or friends. Join a support group to learn how other patients are dealing with their cancer. Or talk to your doctor or another member of your care team. They can point you to professionals who can help you deal with these feelings and guide you toward your next steps.

Key points

- After treatment for prostate cancer, some people have PSA persistence (PSA level doesn't drop low enough) or PSA recurrence (PSA level drops but starts to rise again).
- PSA persistence and PSA recurrence may be signs that cancer hasn't fully gone away or that it may come back in other parts of the body.
- For those with a life expectancy of 5 years or less, observation may be a more reasonable option than undergoing treatment.
- If tests find that cancer has spread to another area of the body, that means the cancer has metastasized and needs more advanced treatment.
- You can have prostate cancer and still enjoy life after diagnosis and treatment.

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Making treatment decisions

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It's important to be comfortable with the cancer treatment you choose. This choice starts with having an open and honest conversation with your care team about the benefits and risks of treatment.

It's your choice

Treatment decisions are very personal. What is important to you may not be important to someone else. In shared decision-making, you and your doctors share information, discuss the options, and agree on a treatment plan. Be clear about your goals for treatment and find out what to expect from treatment. It starts with an open and honest conversation between you and your team.

Some things that may play a role in your decision-making:

- What you want and how that might differ from what others want
- Your religious and spiritual beliefs
- Your feelings about certain treatments like surgery or hormone therapy
- Your feelings about pain or side effects
- Cost of treatment, travel to treatment centers, and time away from school or work
- Quality of life and length of life
- How active you are and the activities that are important to you

Think about what you want from treatment. Discuss openly the risks and benefits of specific treatments and procedures. Weigh options and share concerns with your care team. If you can build a relationship with your team, you'll feel supported when considering options and making treatment decisions.

Second opinion

It's normal to want to start treatment as soon as possible. While cancer treatment shouldn't be ignored, there is usually time to have another cancer care provider review your test results and suggest a treatment plan. This is called getting a second opinion, and it's a normal part of cancer care. Even doctors get second opinions!

Seek out a prostate cancer specialist, if you can, because they have experience diagnosing and treating a lot of people with your type of cancer.

Things you can do to prepare:

- Check with your insurance company about its rules on second opinions. There may be out-of-pocket costs to see providers who are not part of your insurance plan.
- Make plans to have copies of all your records sent to the doctor you will see for your second opinion.

Questions to ask

Possible questions to ask your cancer care team are listed on the following pages. Feel free to use these or come up with your own. Have a notebook handy to jot down the answers to your questions.

Questions about cancer testing

1. What tests will I have?
2. Do the tests have any risks?
3. Will my insurance pay for all the tests you are recommending?
4. Do I need to do anything to prepare for testing?
5. Should I bring someone with me to the appointments?
6. Where do I go for testing, and how long will it take?
7. If any of the tests will hurt, what will you do to make me comfortable?
8. How soon will I know the results and who will explain them to me?
9. How can I get a copy of the pathology report and other test results?
10. What is the cancer stage? What does this stage mean in terms of survival?

Questions about treatment options

1. What are my treatment options?
 2. Is a clinical trial an option for me?
 3. What will happen if I do nothing?
 4. Are you suggesting options other than what NCCN recommends? If yes, why?
 5. How do my age, sex, overall health, and other factors affect my options?
 6. Does any option offer a cure or long-term cancer control?
 7. What are the side effects of the treatments?
 8. Will the treatment hurt?
 9. How long do I have to decide about treatment, and is there a social worker or someone who can help me decide?
 10. How do I get a second opinion?
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Questions about what to expect

1. Does this hospital or cancer center offer the best treatment for me?
 2. Do I have a choice of when to begin treatment?
 3. How long will treatment last?
 4. Will my insurance cover the treatment you're recommending?
 5. Are there any programs to help pay for treatment?
 6. What supportive care and services are available to me and my caregivers?
 7. Who should I contact with questions or concerns if the office is closed?
 8. How will you know if treatment is working?
 9. What are the chances of the cancer worsening or returning?
 10. What follow-up care is needed after treatment?
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Questions about side effects

1. What are the possible complications and side effects of treatment?
2. Which side effects are most common and how long do they usually last?
3. Which side effects are serious or life-threatening?
4. Are there any long-term or permanent side effects?
5. What symptoms should I report right away, and who do I contact?
6. Will treatment affect my ability to urinate? Or have an erection?
7. What can I do to prevent or relieve the side effects of treatment?
8. Do any medications worsen side effects?
9. Do any side effects lessen or worsen in severity over time?
10. Will you stop or change treatment if there are serious side effects?

Questions about clinical trials

1. Do you recommend that I consider a clinical trial for treatment?
 2. How do I find clinical trials that I can participate in?
 3. What are the treatments used in the clinical trial?
 4. Has the treatment been used for other types of cancer?
 5. What are the risks and benefits of this treatment?
 6. What side effects should I expect and how will they be managed?
 7. How long will I be in the clinical trial?
 8. Will I be able to get other treatment if this doesn't work?
 9. How will you know if the treatment is working?
 10. Will the clinical trial cost me anything?
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Questions about your care team's experience

1. Are you board certified? If yes, in what area?
 2. What is your experience as well as your team's experience with treating my type of prostate cancer?
 3. How many patients like me (of the same age, race) have you treated?
 4. Will you be consulting with experts to discuss my care? Whom will you consult?
 5. Is my treatment or procedure a major part of your practice? How often have you done this treatment or procedure in the last year?
 6. How many of your patients have had complications? What were the complications?
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Resources

Cancer Hope Network
Canceropennetwork.org

FORCE: Facing Our Risk of Cancer Empowered
facingourrisk.org

Malecare
malecare.org

National Alliance of State Prostate Cancer Coalitions (NASPCC)
naspcc.org

PCaAware National Prostate Cancer Awareness Foundation
pcaaware.org

Prostate Conditions Education Council (PCEC)
prostateconditions.org

Triage Cancer
triagecancer.org

Veterans Prostate Cancer Awareness Inc.
vPCA.vet

ZERO Prostate Cancer
zerocancer.org



Words to know

active surveillance

Frequent and ongoing testing to watch for changes in cancer status so treatment can be started if needed.

androgen deprivation therapy (ADT)

Hormone therapy that stops the body from making testosterone or blocks cancer cells from using testosterone. ADT can be given through drugs or surgery.

anti-androgen

A drug that stops the action of the hormone testosterone.

biopsy

A procedure that removes fluid or tissue samples to be tested for disease.

brachytherapy

A treatment with radiation from an object placed near or in the tumor. Also called internal radiation.

castration

Surgery that removes the testicles or drugs that suppress the function of the testicles to keep testosterone levels low or close to zero.

computed tomography (CT)

An imaging test that uses x-rays from many angles to make a picture of the inside of the body.

digital rectal exam

An exam of the prostate by feeling it through the wall of the rectum.

erectile dysfunction

A lack of blood flow to the penis that limits getting or staying erect.

enlarged prostate

An overgrowth of tissue in the prostate that isn't caused by cancer. Also sometimes called benign prostatic hyperplasia.

external beam radiation therapy (EBRT)

A treatment in which a machine outside the body aims radiation precisely at cancer inside the body.

genetic abnormality

An abnormal change in the cell's instructions for making and controlling cells. Also called a mutation.

Gleason score

A rating of how much prostate cancer cells look like normal cells under the microscope.

Grade Group

Like a Gleason score, a Grade Group is a rating of how much prostate cancer cells look like normal cells under the microscope. Grade Groups are meant to be easier to use than Gleason scores.

hormone therapy

A cancer treatment that stops the making or action of hormones. Also called androgen deprivation therapy.

life expectancy

The number of years a person is likely to live based on statistics of other people in similar circumstances.

luteinizing hormone-releasing hormone (LHRH) agonist

A drug that acts in the brain to stop the testicles from making testosterone.

luteinizing hormone-releasing hormone (LHRH) antagonist

A drug that acts in the brain to stop the testicles from making testosterone.

lymphatic system

A network of organs and vessels that fights infections and transports a fluid called lymph.

magnetic resonance imaging (MRI)

A test that uses radio waves and powerful magnets to make pictures of the insides of the body.

metastasis

The spread of cancer from the site where it started to a new site.

nerve-sparing radical prostatectomy

An operation that removes the prostate and one or neither cavernous nerve bundle.

nomogram

A mathematical tool that uses health information to predict an outcome.

observation

A period of watching for cancer growth or occurrence while not receiving treatment.

orchectomy

An operation to reduce testosterone in the body by removing one or both testicles.

palliative therapy

Health care for the symptoms of cancer or the side effects of cancer treatment. Palliative therapy is an important part of supportive care.

pathologist

A doctor who specializes in testing cells and tissue to find disease.

pelvic lymph node dissection (PLND)

An operation that removes lymph nodes between the hip bones.

perineum

The body region between the scrotum and anus.

positron emission tomography (PET)

A test that uses radioactive material to see the shape and function of body parts.

prostate-specific antigen (PSA)

A protein made by the prostate that helps semen transport sperm. PSA is measured in nanograms per milliliter of blood (ng/mL).

PSA density

The level of PSA—a prostate-made protein—in relation to the size of the prostate.

PSA persistence

When PSA level is still detectable after prostate cancer treatment.

PSA recurrence

When PSA level drops after prostate cancer treatment but then rises again.

radiation therapy

Treatment that uses high-energy rays (radiation) to kill cancer cells.

radical prostatectomy

An operation that removes the entire prostate as well as surrounding tissue, seminal vesicles, and sometimes lymph nodes.

recurrence

The return of cancer after a disease-free period.

risk factor

Something that increases the chance of getting a disease.

seminal vesicle

One of two male glands that makes fluid used by sperm for energy.

staging

The process of rating the extent of cancer in the body.

supportive care

Health care other than curative treatment that supports the physical, emotional, social, and spiritual needs of patients, families, and caregivers.

surgical margin

The normal-looking tissue around a tumor that is removed during an operation.

testosterone

A hormone that helps male sexual organs to work.

ultrasound

A test that uses sound waves to take pictures of the inside of the body.

urethra

A tube that carries urine from the bladder to outside the body through the penis. It also expels semen.

urinary incontinence

A condition in which the release of urine can't be controlled.

NCCN Contributors

This patient guide is based on the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Prostate Cancer, Version 4.2023. It was adapted, reviewed, and published with help from the following people:

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NCCN Cancer Centers

Abramson Cancer Center
at the University of Pennsylvania
Philadelphia, Pennsylvania
800.789.7366 • pennmedicine.org/cancer

Case Comprehensive Cancer Center/
University Hospitals Seidman Cancer Center and
Cleveland Clinic Taussig Cancer Institute
Cleveland, Ohio
UH Seidman Cancer Center
800.641.2422 • uhhospitals.org/services/cancer-services
CC Taussig Cancer Institute
866.223.8100 • my.clevelandclinic.org/departments/cancer
Case CCC
216.844.8797 • case.edu/cancer

City of Hope National Medical Center
Duarte, California
800.826.4673 • cityofhope.org

Dana-Farber/Brigham and Women's Cancer Center |
Mass General Cancer Center
Boston, Massachusetts
617.732.5500 • youhaveus.org
617.726.5130 • massgeneral.org/cancer-center

Duke Cancer Institute
Durham, North Carolina
888.275.3853 • dukecancerinstitute.org

Fox Chase Cancer Center
Philadelphia, Pennsylvania
888.369.2427 • foxchase.org

Fred & Pamela Buffett Cancer Center
Omaha, Nebraska
402.559.5600 • unmc.edu/cancercenter

Fred Hutchinson Cancer Center
Seattle, Washington
206.667.5000 • fredhutch.org

Huntsman Cancer Institute at the University of Utah
Salt Lake City, Utah
800.824.2073 • healthcare.utah.edu/huntsmancancerinstitute

Indiana University Melvin and Bren Simon
Comprehensive Cancer Center
Indianapolis, Indiana
888.600.4822 • www.cancer.iu.edu

Mayo Clinic Comprehensive Cancer Center
Phoenix/Scottsdale, Arizona
Jacksonville, Florida
Rochester, Minnesota
480.301.8000 • *Arizona*
904.953.0853 • *Florida*
507.538.3270 • *Minnesota*
mayoclinic.org/cancercenter

Memorial Sloan Kettering Cancer Center
New York, New York
800.525.2225 • mskcc.org

Moffitt Cancer Center
Tampa, Florida
888.663.3488 • moffitt.org

O'Neal Comprehensive Cancer Center at UAB
Birmingham, Alabama
800.822.0933 • uab.edu/onealcancercenter

Robert H. Lurie Comprehensive Cancer Center
of Northwestern University
Chicago, Illinois
866.587.4322 • cancer.northwestern.edu

Roswell Park Comprehensive Cancer Center
Buffalo, New York
877.275.7724 • roswellpark.org

Siteman Cancer Center at Barnes-Jewish Hospital
and Washington University School of Medicine
St. Louis, Missouri
800.600.3606 • siteman.wustl.edu

St. Jude Children's Research Hospital/
The University of Tennessee Health Science Center
Memphis, Tennessee
866.278.5833 • stjude.org
901.448.5500 • uthsc.edu

Stanford Cancer Institute
Stanford, California
877.668.7535 • cancer.stanford.edu

The Ohio State University Comprehensive Cancer Center -
James Cancer Hospital and Solove Research Institute
Columbus, Ohio
800.293.5066 • cancer.osu.edu

The Sidney Kimmel Comprehensive
Cancer Center at Johns Hopkins
Baltimore, Maryland
410.955.8964
www.hopkinskimmelcancercenter.org

The UChicago Medicine Comprehensive Cancer Center
Chicago, Illinois
773.702.1000 • uchicagomedicine.org/cancer

The University of Texas MD Anderson Cancer Center
Houston, Texas
844.269.5922 • mdanderson.org

UC Davis Comprehensive Cancer Center
Sacramento, California
916.734.5959 • 800.770.9261
health.ucdavis.edu/cancer

UC San Diego Moores Cancer Center
La Jolla, California
858.822.6100 • cancer.ucsd.edu

UCLA Jonsson Comprehensive Cancer Center
Los Angeles, California
310.825.5268 • cancer.ucla.edu

UCSF Helen Diller Family
Comprehensive Cancer Center
San Francisco, California
800.689.8273 • cancer.ucsf.edu

University of Colorado Cancer Center
Aurora, Colorado
720.848.0300 • coloradocancercenter.org

University of Michigan Rogel Cancer Center
Ann Arbor, Michigan
800.865.1125 • rogelcancercenter.org

University of Wisconsin Carbone Cancer Center
Madison, Wisconsin
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