

Prostate Cancer

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- ✓ Designed to help you discuss cancer treatment with your doctors

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These NCCN Guidelines for Patients® are based on the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Prostate Cancer (Version 4.2019, August 19, 2019).

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Supporters

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California Prostate Cancer Coalition (CPCC)

CPCC is pleased to endorse this important resource. We believe it to be the most understandable and comprehensive guide for men diagnosed with prostate cancer who want to really understand what the disease is about and what their specific treatment options are. prostatecalif.org

Malecare Cancer Support

Malecare Cancer Support group members know that nothing is more perplexing than prostate cancer treatment choice making. The NCCN Patient Guidelines provide an excellent starting point for discussion, particularly for African Americans who die from prostate cancer at twice the rate as Caucasian men. malecare.org

National Alliance of State Prostate Cancer Coalitions (NASPCC)

NASPCC strongly endorses the NCCN Guidelines for Patients: Prostate Cancer, as an invaluable resource for patients and others. It is a reliable wealth of important information about prostate cancer, in a readable and understandable format. nasppc.org

National Prostate Cancer Awareness Foundation (PCaAware)

Guidelines for Patients plays a critical role in our outreach efforts to help men and their partners gain a better understanding of the need for men to be aware and pro-active when it concerns the subtle warning signs of early stage prostate cancer. Breaking down the “wall of silence” surrounding men and prostate cancer is our single mission. Success is achieved when men speak up, are engaged in their personal health and are not afraid to take action. Also, be sure to visit us on LinkedIn. pcaaware.org

Prostate Cancer Foundation (PCF)

The Prostate Cancer Foundation is the world’s leading philanthropic organization dedicated to funding life-saving cancer research. The NCCN Guidelines for Patients: Prostate Cancer outlines essential information about diagnosis and treatment in a comprehensible format. It serves as a foundation of knowledge as patients and families begin to discuss options with their health care provider. pcf.org

Prostate Health Education Network (PHEN)

“Knowledge is the best defense against prostate cancer” is a message that PHEN stresses to patients. This NCCN patient guide encapsulates a broad spectrum of important information that patients can use to increase their knowledge and help them make informed decisions along their prostate cancer journey. PHEN is pleased to endorse this guide. prostatehealthed.org

Urology Care Foundation

The Urology Care Foundation is the world’s leading nonprofit urological health foundation – and the official foundation of the American Urological Association. As an organization that strongly believes in providing prostate cancer patients, caregivers and those impacted by this disease the educational tools and resources necessary to make informed care and treatment decisions, we are pleased to endorse this NCCN Guidelines for Patients. urologyhealth.org/

Us TOO International Prostate Cancer Education and Support Network

Us TOO provides educational resources, support services, and personal connections to the prostate cancer community. This includes a network of more than 200 support groups across the country and abroad to help patients and caregivers make informed decisions on health care. The NCCN Guidelines for Patients: Prostate Cancer establish a baseline of credible medical expertise for prostate cancer health care providers and patients to practice shared decision-making on treatment options and management of side effects at all phases of the disease. UsTOO.org

Veterans Prostate Cancer Awareness

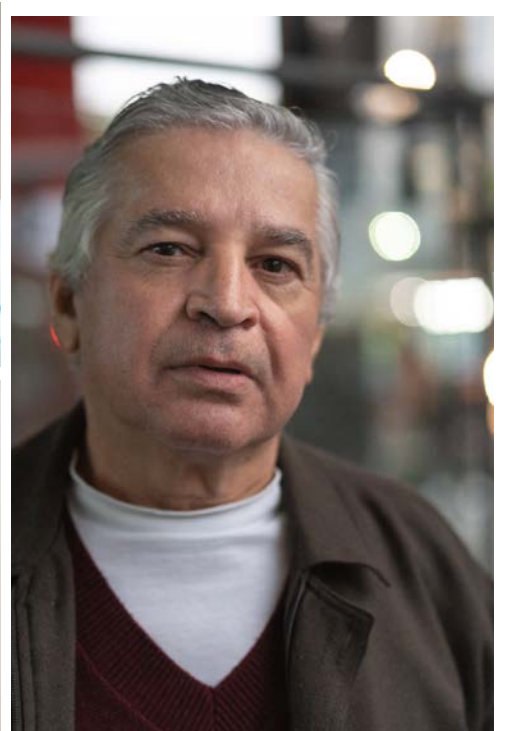
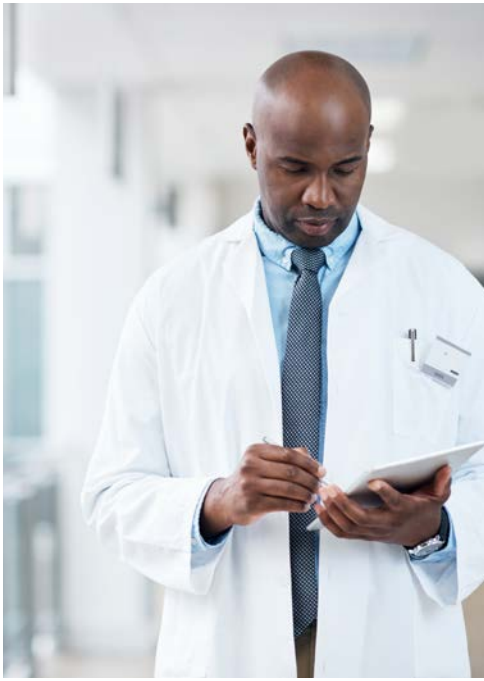
Veterans Prostate Cancer Awareness commends the National Comprehensive Cancer Network (NCCN) for developing the Patient Guidelines for use as the standard in education and awareness for prostate cancer patients and providers. On behalf of all Veterans, VPCa thanks NCCN for providing this valuable tool to use as guidance on the journey through prostate cancer. vetsprostate.org

ZERO – The End of Prostate Cancer

Every 19 minutes a man loses his battle with prostate cancer. NCCN’s Guidelines for Patients is a premier resource in helping men and their families to be proactive and make informed decisions. By advancing research, encouraging action, and providing educational support, we can create Generation ZERO —the first generation of men free from prostate cancer. zerocancer.org

With generous support from

- Pamela Becker in honor of Dr. Stanley Becker
- Don and Marianne Green
- Michael Kuettel MD, PhD, MBA



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Prostate cancer basics

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Learn the basics about prostate cancer. This will help you prepare and plan for treatment.

The prostate

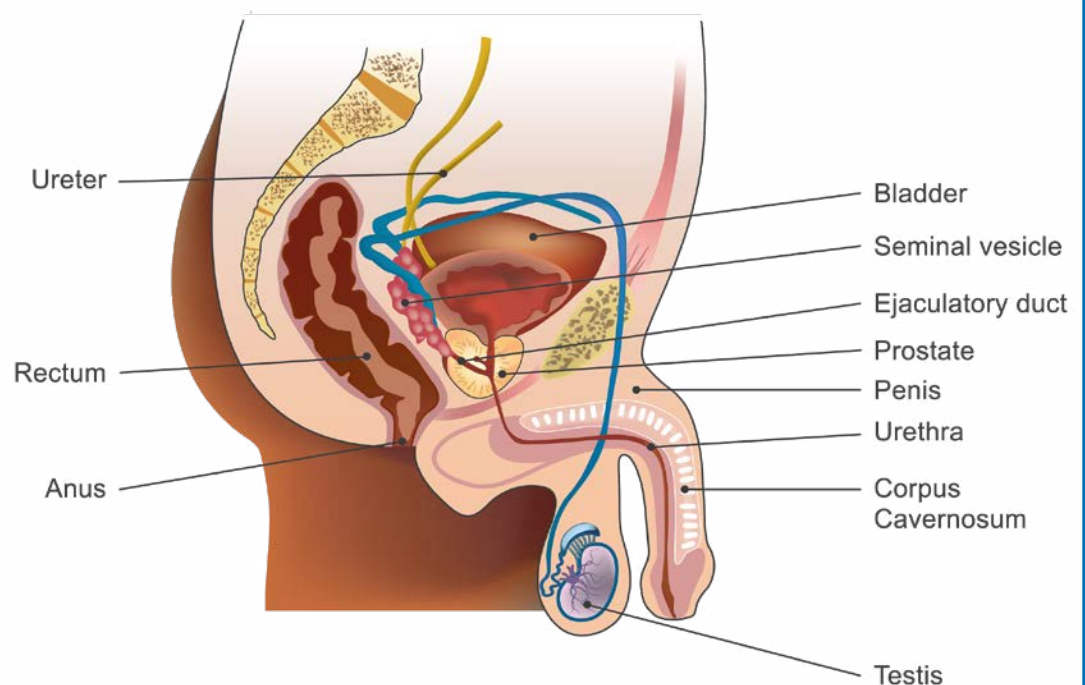
The prostate is a walnut-sized gland. A gland is an organ that makes fluids or chemicals the body needs. The prostate gland produces a white-colored fluid that is part of semen. Semen is made up of sperm from the testicles and fluid from the prostate and other sex glands. During ejaculation, semen is released from the body through the penis.

The prostate is found below the bladder near the base of the penis and in front of the rectum. The prostate can be felt during a rectal exam. As a man ages, the prostate tends to grow larger.

The prostate surrounds the urethra. The urethra is a tube that carries urine from the bladder and out of the body. Above the prostate and behind the bladder are two seminal vesicles. Seminal vesicles are also glands that make a fluid that is part of semen. Semen leaves the body through the urethra.

The prostate

The prostate gland is located below the bladder.



How prostate cancer spreads

Cancer is a disease that starts in the cells of your body. Prostate cancer starts in the cells of the prostate gland. Almost all prostate cancers are adenocarcinomas. An adenocarcinoma is cancer in the cells that secrete fluids or other substances. Adenocarcinomas of the prostate are the focus of this book.

Unlike normal cells, cancer cells can grow or spread to form tumors in other parts of the body.

Cancer that has spread is called a metastasis.

- Cancer that has spread to a nearby body part is called a **local metastasis**. It might be referred to as localized or regional.
- Cancer that has spread to a body part far from the primary tumor is called a **distant metastasis**.

Cancer can spread to distant sites through blood. Prostate cancer can metastasize in the bones, lymph nodes, liver, lungs, and other organs.

Cancer can also spread through lymph. Lymph is a clear fluid that gives cells water and food. It also contains white blood cells that fight germs. Lymph travels throughout the body in a network of small tubes called lymph vessels. Lymph nodes are small groups of special disease-fighting cells. Lymph vessels and nodes are found everywhere in the body.

Usually, prostate cancer grows slowly and stays in the prostate. However, some prostate cancers grow and spread quickly.

Many early-stage prostate cancers need testosterone, a hormone, to grow. As a result, treatment will often focus on reducing the amount of testosterone in the body or blocking what testosterone does in the body.

Facts about prostate cancer

A risk factor is anything that increases your chance of cancer.

A few facts:

- All men are at risk for prostate cancer.
- 1 out of 9 men will develop prostate cancer.
- Not all men diagnosed with prostate cancer need treatment.
- Age is the most common risk factor. The older a man is, the greater the chance of getting prostate cancer.

African-American men

All men are at risk for prostate cancer, but African-American men are more likely to get prostate cancer and at a younger age. Cancer in African-American men tends to be more aggressive and more advanced. However, once diagnosed, African-Americans have similar treatment results as other men with the same cancer stage.

Family history

Men who have a family member with prostate cancer have a greater chance of getting prostate cancer.

Review

- The prostate gland makes a fluid that is part of semen.
- Prostate cancer starts in the cells of the prostate gland.
- Cancer cells can spread to other body parts through blood or lymph.
- Usually prostate cancer grows slowly and stays in the prostate.
- All men are at risk for prostate cancer, but African-American men are more likely to get prostate cancer.

Helpful tips:

- ✓ Keep a list of contact information of all of your health care providers.
- ✓ Ask a caregiver to help you plan your appointments.
- ✓ Use a calendar or day planner to keep track of your upcoming tests and doctors' appointments.

2

Prostate cancer tests

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Treatment planning starts with testing. Testing is used to find and treat prostate cancer. A biopsy is needed to confirm cancer. This chapter presents an overview of tests you might receive and what to expect.

General health tests

Medical history

Before and after cancer treatment, your doctor will look at your medical history. A medical history is a record of all health issues and treatments you have had in your life. Be prepared to list any illness or injury and when it happened. Bring a list of old and new medicines and any over-the-counter medicines, herbs, or other supplements you take. Tell your doctor about any symptoms you have. A medical history will help determine which cancer treatment is best for you.

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 is important to ask members from both your mother's and father's side of the family about all cancers, not just prostate cancer. Ask about other health issues like heart disease and diabetes, at what age they were diagnosed, and if anyone died from their cancer.

Physical exam

A physical exam is a study of your body. Doctors should perform a thorough physical exam along with a complete health history. A doctor will check your body for signs of disease.

A health care provider will:

- Check your temperature, blood pressure, pulse, and breathing rate
- Weigh you
- Listen to your lungs and heart
- Look in your eyes, ears, nose, and throat
- Feel and apply pressure to parts of your body to see if organs are of normal size, are soft or hard, or cause pain when touched. Tell your doctor if you feel pain.
- Feel for enlarged lymph nodes in your neck, underarm, and groin. Tell the doctor if you have felt any lumps or have any pain.
- Perform a digital rectal exam to check your prostate

Imaging tests

Imaging tests take pictures of the inside of your body. These tests are used to detect and treat prostate cancer. Doctors can see the primary tumor, or where the cancer started, and look for cancer in other parts of your body.

A radiologist, who is an expert who looks at test images, will review your images and write a report. The radiologist will send this report to your doctor who will discuss the results with you. Feel free to ask as many questions as you like.

Common imaging tests:

- X-rays use low-dose radiation to take one picture at a time.
- Ultrasounds use high-energy sound waves to make pictures.
- Computed tomography (CT) scans use x-rays to take pictures from many angles to create real-looking images.
- Magnetic resonance imaging (MRI) scans use radio waves and strong magnets to make detailed pictures.
- Positron emission tomography (PET) scans use a radioactive drug called a tracer to find disease and take real-looking pictures. A tracer is a substance put in your body to see how cancer is growing and where it is in the body. Cancer cells show up as bright spots on PET scans.

The types of imaging scans recommended for prostate cancer are described next.

CT scan

A computed tomography (CT) scan uses x-rays and computer technology to take pictures from many angles to create real-looking images of the inside of your body. All of the images are combined to make one detailed picture.

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

Before the CT scan, you may be given contrast. Contrast material is used to improve the pictures inside the body. Contrast materials are not dyes, but substances that help certain areas in the body stand out.

CT machine

A CT machine is large and has a tunnel in the middle. During the test, you will need to lie on a table that moves through the tunnel.



Tell your doctors if you have had bad reactions to contrast in the past. This is important. You might be given medicines, such as Benadryl® and prednisone, for an allergy to contrast. Contrast might not be used if you have a serious allergy or if your kidneys aren't working well.

MRI scan

A magnetic resonance imaging (MRI) scan uses radio waves and powerful magnets to take pictures of the inside of the body. It does not use x-rays. An MRI may cause your body to feel a bit warm. Like a CT scan, a contrast material may be used to make the pictures clearer.

A special type of MRI scan, called a multi-parametric MRI, might be done before a biopsy to learn more about your prostate cancer. It can be used in staging. The short name for this test is mpMRI.

You might have more than one mpMRI during the course of treatment. An mpMRI might help detect certain types of tumors. It also might be better at determining risk group for active surveillance.

An MRI might be used to look for prostate cancer that has metastasized to nearby lymph nodes in your pelvis.

PET scan

Positron emission tomography (PET) scans use a radioactive drug called a tracer to find disease and take three-dimensional or real-looking pictures. A tracer is a substance put in your body to see how cancer is growing and where it is in the body. Cancer cells show up as bright spots on PET scans. Not all bright spots

are cancer. Usually a PET scan is combined with a CT (PET/CT) or MRI (PET/MRI). A PET/CT or PET/MRI may be used to look for small tumors (metastases) in soft tissue and in bone.

TRUS

A TRUS is a transrectal ultrasound. In this procedure, a probe is inserted into the rectum where high-energy sound waves are bounced off internal tissues to form an image called a sonogram. A TRUS is used to look for tumors in the prostate and nearby areas. A TRUS is also used to guide biopsies.

Bone scan

A bone scan is an imaging test that can show if cancer has spread to your bones. This test may be used if you have bone pain, are at high risk for bone metastases, or if there are changes in certain test results. Bone scans might be used to monitor treatment.

A bone scan uses a radiotracer to make pictures of the inside of bones. A radiotracer is a substance that releases small amounts of radiation. Before the pictures are taken, the tracer will be injected into your vein. It can take a few hours for the tracer to enter your bones. For the scan, you will need to lie very still on a table. A special camera will take pictures of the tracer in your bones as it moves over your body. Areas of bone damage use more radiotracer than healthy bone and show up as bright spots on the pictures. Bone damage can be caused by cancer, cancer treatment, or other health problems.

Blood tests

Blood tests check for signs of disease, how well organs are working, and treatment results. One common blood test is a complete blood count (CBC). A CBC measures the number of red blood cells, white blood cells, and platelets in your blood. Your doctor will want to know if you have enough red blood cells to carry oxygen throughout your body, white blood cells to fight infection, and platelets to control bleeding.

A blood chemistry test is another common type of blood test. This test measures the levels of different chemicals in the blood. Cancer or other diseases can cause levels that are too low or too high.

A prostate-specific antigen (PSA) measures a protein made by the fluid-making cells that line the small glands inside the prostate. These cells are where most prostate cancers start. You will have this test often.

Tissue tests

A biopsy, or tissue sample, is needed to confirm (diagnose) prostate cancer. Prostate cancer treatment often begins after biopsy.

A biopsy is the removal of tissue or a group of cells by a surgeon. A biopsy looks for cancerous cells. Your doctor will order a biopsy to learn more about your cancer and share the results with you.

A pathologist is an expert who will test the biopsy and write a report called a pathology report. The pathologist may perform other tests to see if the cancer cells have specific genes or proteins. This information will help choose the best treatment plan for your type of cancer. Ask questions about your biopsy results and what it means for your cancer treatment.

A core biopsy or a core needle biopsy is the most common type of prostate biopsy. A wide needle is used to remove one or more samples. Core samples will be taken from different parts of your prostate.

Genetic tests

Your health care provider might refer you for genetic testing to learn more about your cancer. A genetic counselor will speak to you about the results. Genetic tests help plan treatment.

There are 2 types of genetic tests used in prostate cancer:

- Germline testing
- Tumor testing

Germline testing

Germline testing is done using blood or saliva (spitting into a cup). The goal is to look for germline mutations. Germline mutations are passed down from parent to child. They are inherited. Some germline mutations for prostate cancer include *BRCA1*, *BRCA2*, *ATM*, *CHEK2*, *PALB2*, *MLH1*, *MSH2*, *MSH6*, and *PMS2* (Lynch syndrome).

You might notice some of the germline mutations like *BRCA1* or *BRCA2* are related to other cancers such as breast, ovarian, pancreatic, colorectal, and melanoma skin cancer. This is because some mutations can put you at risk for more than one type of cancer. You can pass these genes on to your children. Also, family members might carry these mutations.

If a germline mutation is suspected, you should be recommended for genetic counseling and follow-up germline testing.

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

- A family history of prostate cancer
- High-risk, very-high-risk, regional, or metastatic prostate cancer regardless of family history
- Ashkenazi Jewish ancestry
- Intraductal cancer shown on a biopsy

Tumor testing

A sample from a biopsy of your tumor will be tested to look for biomarkers or proteins. This information is used to choose the best treatment for you. Tumor testing can be considered for patients with regional or metastatic prostate cancer. Regional cancer has spread to nearby lymph nodes. Metastatic cancer has spread to distant parts of the body. Tumor testing is sometimes called gene profiling or molecular testing.

MSI testing

Microsatellites are short, repeated, strings of DNA (the information inside genes). When errors or defects occur, they are fixed. Some cancers prevent these errors from being fixed. This is called microsatellite instability (MSI). Knowing this can help plan treatment. When cancer cells have more than a normal number of microsatellites, it is called MSI-H (microsatellite instability high). A next-generation sequencing (NGS) assay is the preferred MSI test.

MMR testing

Mismatch repair (MMR) helps fix mutations in certain genes. When MMR is lacking (dMMR), these mutations may lead to cancer. Knowing this can help plan treatment or predict how well treatment will work with your type of tumor.

Test results

Results from your blood tests, imaging studies, and biopsy will determine your treatment plan. It is important you understand what these tests mean. Ask questions and keep copies of your test results. Online patient portals are a great way to access your test results.

Whether you are going for a second opinion, test, or office visit, keep these things in mind:

- Bring someone with you to doctor visits. Encourage this person to ask questions and take notes.
- Write down questions and take notes during appointments. Don't be afraid to ask your health care team questions. Get to know your care team and let them get to know you.
- Get copies of blood tests, imaging results, and reports about the specific type of cancer you have. It will be helpful when getting a second opinion.
- Organize your papers. Create files for insurance forms, medical records, and test results.
- Keep a list of contact information for everyone on your care team.

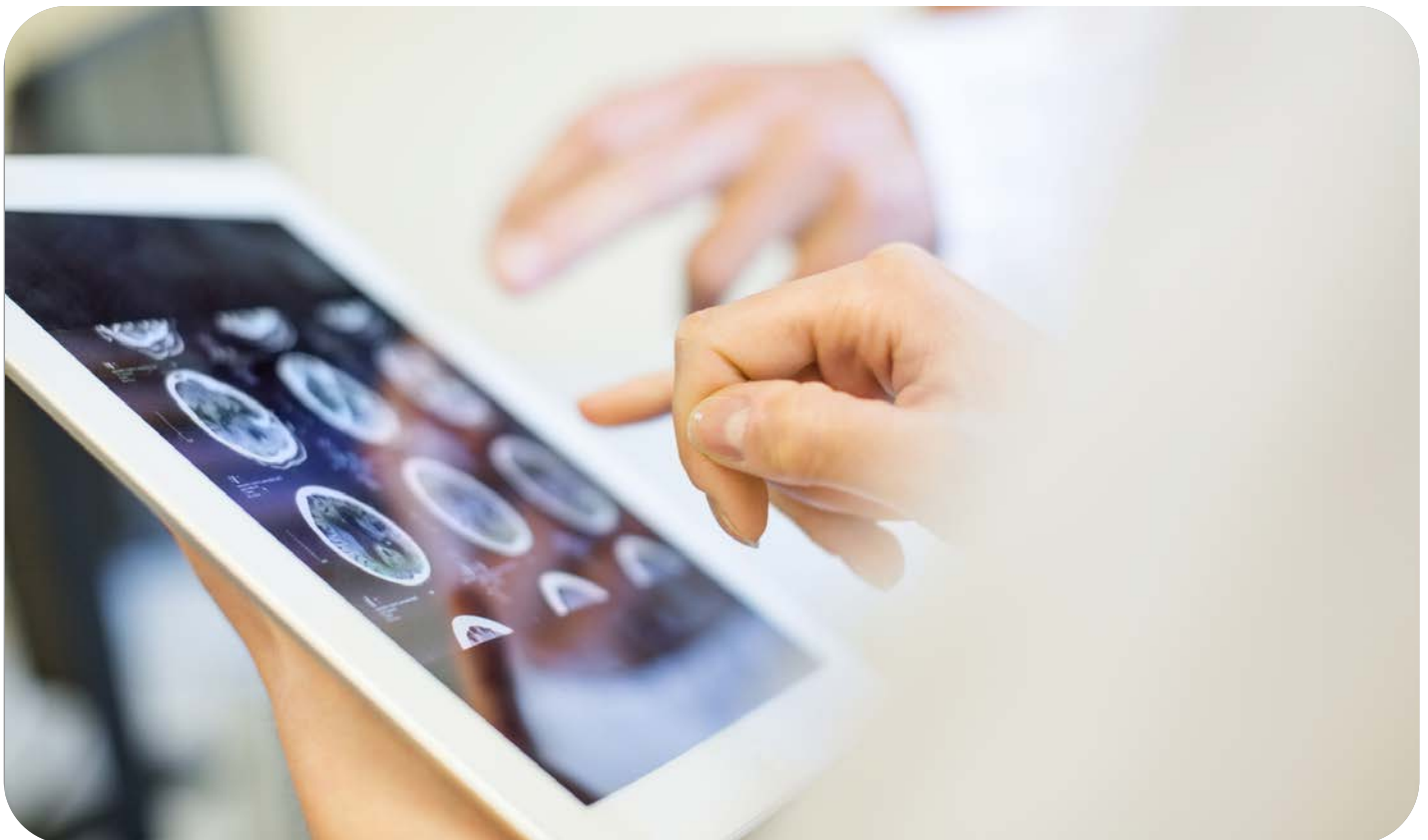
Review

- Tests are used to plan treatment and check how well treatment is working.
- Blood, imaging, and tissue tests check for signs of disease.
- A biopsy is used to confirm (diagnose) prostate cancer.
- Your health care provider might refer you for genetic testing to learn more about your cancer.
- Imaging tests may be used to see if the cancer has spread beyond the prostate.

3

Prostate cancer staging

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Cancer staging is how your doctors rate and describe the extent of cancer in your body. Doctors use cancer staging to plan which treatments are best for you.

Staging is based on a combination of factors listed below:

- Digital rectal exam
- PSA
- Biopsy
- Gleason score
- Grade Group
- TNM score

Digital rectal exam

A digital rectal exam is used to screen for cancer, rate the cancer stage, and assess how your cancer is responding to treatment. For this exam, your doctor will insert a lubricated, gloved finger into your rectum to feel your prostate for abnormalities. Not all parts of the prostate can be felt during this exam. It is more commonly called a prostate exam.

PSA

Prostate-specific antigen (PSA) is a protein made by the fluid-making cells that line the small glands inside the prostate. These cells are where most prostate cancers start. PSA turns semen that has clotted after ejaculation back into a liquid. Normal prostate cells, as well as prostate cancer cells, make PSA.

A small amount of PSA is made by all cells, even in women. PSA test results are one piece of information used for cancer staging, treatment planning, and checking treatment results.

PSA level

Serum PSA level is measured using a blood sample. PSA level is the number of nanograms of PSA per milliliter (ng/mL) of blood. Normal PSA levels vary by age and other conditions.

The larger the prostate, the more PSA it can make. Large prostates can be a result of cancer or other health issues. Some medicines, herbs, and supplements can also affect the PSA level. PSA increases after ejaculations and vigorous exercise, especially running or bicycling. Thus, your doctor may recommend you refrain from sex and exercise before a PSA test. This will allow the PSA test to be more exact.

PSA density

PSA density (PSAD) is the amount of PSA compared to the size of the prostate. It is calculated by dividing the PSA level by the size of the prostate. The size of the prostate is measured by digital rectal exam, ultrasound, or an MRI scan.

PSA recurrence

When PSA levels rise after prostate cancer treatment with surgery or radiation therapy, it is called PSA recurrence. This could mean that the cancer has returned (recurrence) or that the treatment did not succeed in reducing the amount of cancer in the body (persistence).

PSA velocity and PSA doubling time

PSA velocity measures how fast PSA levels change over a period of time. How quickly this level increases could be a sign of prostate cancer and may help find a fast-growing prostate cancer. PSA doubling time (PSADT) is the time it takes for the PSA level to double.

Prostate biopsy

A biopsy removes a sample of tissue for testing. Rising PSA levels and abnormal digital rectal exam may suggest cancer is present. However, the only way to know if you have prostate cancer is to remove tissue from your body and have a pathologist look at it under a microscope.

Types of biopsies

There are different types of biopsies used for prostate cancer. It is common to have more than one biopsy. A biopsy can be guided with an ultrasound, an MRI, or both.

You might have one or more of the following:

- Core biopsy
- TRUS-guided biopsy
- MRI-US fusion biopsy
- Prostate bed biopsy
- Metastatic lesion biopsy

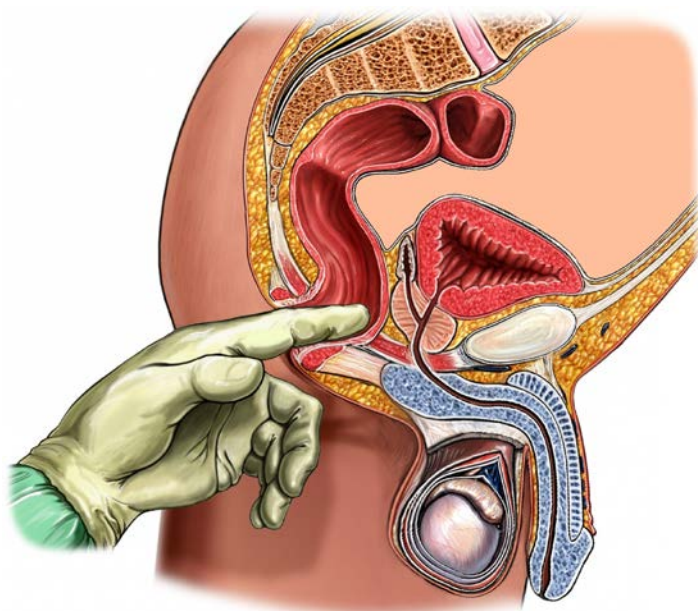
Core biopsy

In a core biopsy or a core needle biopsy, a hollow needle is used to remove a tissue sample. Core samples will be taken from different parts of your prostate.

Digital rectal exam

Your prostate can be felt through the wall of your rectum. A digital rectal exam is a procedure during which your doctor will insert a finger into your rectum to feel your prostate.

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TRUS-guided biopsy

A transrectal ultrasound (TRUS)-guided biopsy is the most common type of prostate biopsy. A sample of tissue is removed using a hollow needle that is inserted through the rectum (transrectal) and into the prostate. To ensure the best samples are removed, a TRUS is used to guide the needle. The TRUS uses sound waves to make a picture of your prostate that is seen by your doctor on a screen.

A spring-loaded needle will be inserted through the TRUS. Your doctor will trigger the needle to go through the rectal wall and into your prostate. The needle will remove tissue about the length of a dime and the width of a toothpick. At least 12 samples—called cores—are often taken. This is done to check for cancer in different areas of the prostate. Prostate biopsies aren't perfect tests. They sometimes miss cancer.

MRI-US fusion biopsy

An MRI-US fusion biopsy uses both an MRI and ultrasound. These images are then combined to help guide the biopsy. This will allow for better tracking of the movement of your prostate. It will also help doctors pinpoint which area of tissue to sample. An MRI-US fusion biopsy may help improve finding prostate cancers that are Grade Group 2 or higher.

Prostate bed biopsy

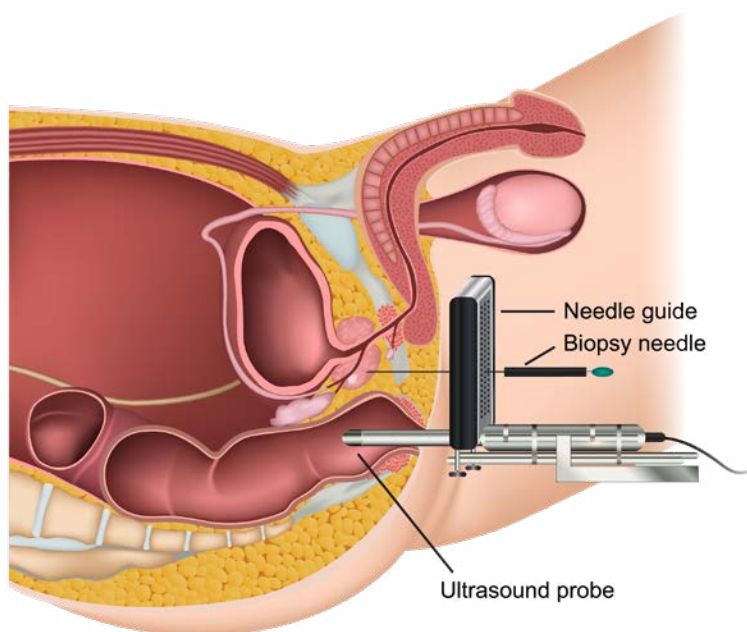
After surgery to remove your prostate, a biopsy might be done of the area to look for signs that prostate cancer has returned or spread. This is called a prostate bed biopsy and might be done after imaging tests suggest cancer recurrence.

Metastatic lesion biopsy

Sometimes, a sample of a metastasis or metastatic lesion is taken for genetic tumor testing. This ensures you receive the best treatment for your type of cancer.

Prostate biopsy

There are different types of biopsies used for prostate cancer. It is common to have more than one biopsy.



Gleason score

The Gleason score describes how aggressive a prostate cancer is. A pathologist assigns this score after studying your biopsy under a microscope. It can be helpful to have a second pathologist review your biopsy to be sure the Gleason score is the same. The Gleason score is just one factor used by doctors to plan treatment.

A Gleason score is made up of two grades. A Gleason grade ranges from 1 to 5. A low grade of 1 means the cancer cells in your biopsy look very much like normal, healthy tissue. This is called well-differentiated. Cells that look very abnormal under a microscope are called poorly differentiated or undifferentiated, and have a grade of 4 or 5. The higher the grade, the more abnormal the biopsy looks and the more aggressive the cancer is. Most prostate cancers are grade 3 or higher.

Prostate tumors are given two grades. A primary grade is given to describe the cancer cells in the largest area of the tumor. A secondary grade is given to describe cancer cells in the second largest area of the tumor. When these grades are added together, it is called a Gleason score. For example, 3+4= a Gleason score of 7.

Gleason scores range from 2 to 10, but most prostate cancers are scored 6 to 10. A Gleason score in the 8 to 10 range means the cancer is more likely to grow and spread quickly than a lower grade cancer. [See Guide 1.](#)

Guide 1 Gleason score summary

6 or less	The cancer is likely to grow and spread very slowly. If the cancer is small, many years may pass before it becomes a problem. Thus, you may never need cancer treatment. Also called low grade .
7	The cancer is 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. Also called intermediate grade .
8, 9, or 10	The cancer is likely to grow and spread fast. If the cancer is small, a few years may pass before the cancer becomes a problem. To prevent problems, treatment is needed now. Also called high grade .

Grade Groups

Gleason scores are organized into Grade Groups. Grade Groups are meant to be simpler and more accurate. This method helps prevent overtreatment for those with low-grade prostate cancer. A Grade Group is just one factor used by doctors to plan treatment.

There are 5 Grade Groups. 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. If you look at the first number in the Gleason pattern (4+3) in Grade Group 3, it is higher than in Grade Group 2 (3+4). Remember, the first number or primary grade is given to rate cancer in the largest area of the tumor. [See Guide 2.](#)

Guide 2 Grade Groups	
1	<ul style="list-style-type: none"> Gleason score 6 or less Gleason pattern 1+3, 2+3, 3+3
2	<ul style="list-style-type: none"> Gleason score 7 Gleason pattern 3+4
3	<ul style="list-style-type: none"> Gleason score 7 Gleason pattern 4+3
4	<ul style="list-style-type: none"> Gleason score 8 Gleason pattern 4+4, 3+5, 5+3
5	<ul style="list-style-type: none"> Gleason score 9 or 10 Gleason pattern 4+5, 5+4, 5+5

TNM score

The American Joint Committee on Cancer (AJCC) created a way to determine how much cancer is in your body and where it is located. This is called staging. Staging is needed to make treatment decisions.

The tumor, node, metastasis (TNM) system is used to stage prostate cancer. In this system, the letters T, N, and M describe different areas of cancer growth. Based on cancer test results, your doctor will assign a score or number to each letter. The higher the number, the larger the tumor or the more the cancer has spread. These scores will be combined to assign the cancer a stage. A TNM example might look like this: T2, N0, M0. [See Guide 3.](#)

- **T (tumor)** - Size of the main (primary) tumor and if it has grown outside the prostate
- **N (node)** - If cancer has spread to nearby lymph nodes
- **M (metastasis)** - If cancer has spread to distant parts of the body or metastasized

Guide 3

Prostate cancer stage by TNM score

Stage	Primary tumor (T)	Regional lymph nodes (N)	Distant metastasis (M)
Localized	T1 Tumor cannot be felt during digital rectal exam and is not found on imaging tests, but cancer is present.	N0 There is no cancer in nearby lymph nodes.	M0 Cancer has not spread to other parts of the body.
	T2 Tumor is felt during digital rectal exam and is found only in the prostate.	N0	M0
	T3 Tumor has broken through outside layer of prostate. It may have grown into seminal vesicle(s).	N0	M0
	T4 Tumor has grown outside the prostate into nearby structures such as the bladder, rectum, pelvic muscles, and/or pelvic wall.	N0	M0
Regional	Any T	N1 There is cancer (metastasis) in nearby lymph nodes.	M0
Metastatic	Any T	Any N	M1 Cancer has spread to other parts of the body (metastasized).

T = Tumor

T1 tumors cannot be felt during a digital rectal exam and are not found on imaging tests, but cancer is present. Cancer might be found by chance during a biopsy or surgery for another health issue related to the prostate or bladder. This is called an incidental finding.

- **T1a** means that incidental cancer was found in **5 percent (5%) or less** of the removed tissue.
- **T1b** means that incidental cancer was found in **more than 5 percent (5%)** of the removed tissue.
- **T1c** tumors are found by needle biopsy in one or both sides of the prostate.

T2 tumors can be felt by your doctor during a digital rectal exam. They also may be seen on an imaging test. T2 scores are based on whether the cancer is in one or both sides of the prostate. T2 tumors are found only in the prostate gland.

- **T2a** tumors involve half or less of one side of the prostate.
- **T2b** tumors involve more than half of one side of the prostate, but not in both sides.
- **T2c** tumors have grown into both sides of the prostate.

T3 tumors have broken through the outside layer of the prostate gland. It might have reached the connective tissue around the prostate or the neck of the bladder.

- **T3a** tumors have grown outside the prostate, but not into the seminal vesicle(s).
- **T3b** tumors have grown outside the prostate and into the seminal vesicle(s).

T4 tumors have grown outside the prostate into nearby structures such as the bladder, rectum, pelvic muscles, and/or pelvic wall.

N = Node

There are hundreds of lymph nodes throughout your body. They work as filters to help fight infection and remove harmful things from your body. Nearby lymph nodes include the hypogastric, obturator, internal and external iliac, and sacral lymph nodes. Most often, prostate cancer spreads to the external iliac, internal iliac, or obturator nodes. Cancer that has spread to lymph nodes near the prostate is shown as N1.

M = Metastatic

Cancer that has spread to distant parts of the body is shown as M1. Prostate cancer tends to metastasize in the bones and can spread to the liver, lungs, distant lymph nodes, and other organs.

Prostate cancer stages

There are many ways to describe prostate cancer. This can be very confusing. Some words you might hear to describe your cancer are:

- Localized
- Locally advanced
- Regional
- Advanced
- Metastatic

Localized prostate cancer

Localized prostate cancer is cancer that is found only in the prostate. It has not spread to lymph nodes or distant organs.

TNM staging for localized prostate cancer might be one of the following:

- T1, N0, M0
- T2, N0, M0
- T3, N0, M0
- T4, N0, M0

Locally advanced prostate cancer

Locally advanced is a term used by some doctors to describe prostate cancer that has spread to nearby lymph nodes or organs like the bladder or rectum. This term may not be used in the same way by all doctors. If your doctor uses this term to describe your cancer, ask what it means.

Regional prostate cancer

Regional means prostate cancer has spread to nearby lymph nodes (N1). Nearby lymph nodes include the hypogastric, obturator, internal and external iliac, and sacral lymph nodes. Most often, prostate cancer spreads to the external iliac, internal iliac, or obturator nodes.

TNM staging for regional prostate cancer is:

- Any T, N1, M0

Advanced prostate cancer

Advanced prostate cancer is cancer that cannot be cured with surgery or radiation. Advanced prostate cancer can be metastatic, but not always. For example, advanced cancers such as castration-resistant prostate cancer may or may not be metastatic.

Metastatic prostate cancer

Metastatic (M1) prostate cancer has spread to distant parts of the body.

TNM staging for metastatic prostate cancer is:

- Any T, Any N, M1

Review

- Cancer staging describes how much cancer is in the body and where it is located.
- Prostate cancer staging is based on digital rectal exam, PSA, prostate biopsy, Gleason score, Grade Group, and TNM score.
- Digital rectal exam, PSA, and a prostate biopsy help determine the size of a tumor.
- The Gleason score describes how aggressive a prostate cancer is.
- Gleason scores are organized into Grade Groups for more accurate treatment.
- The tumor, node, metastasis (TNM) system is used to stage prostate cancer.



Create a medical binder

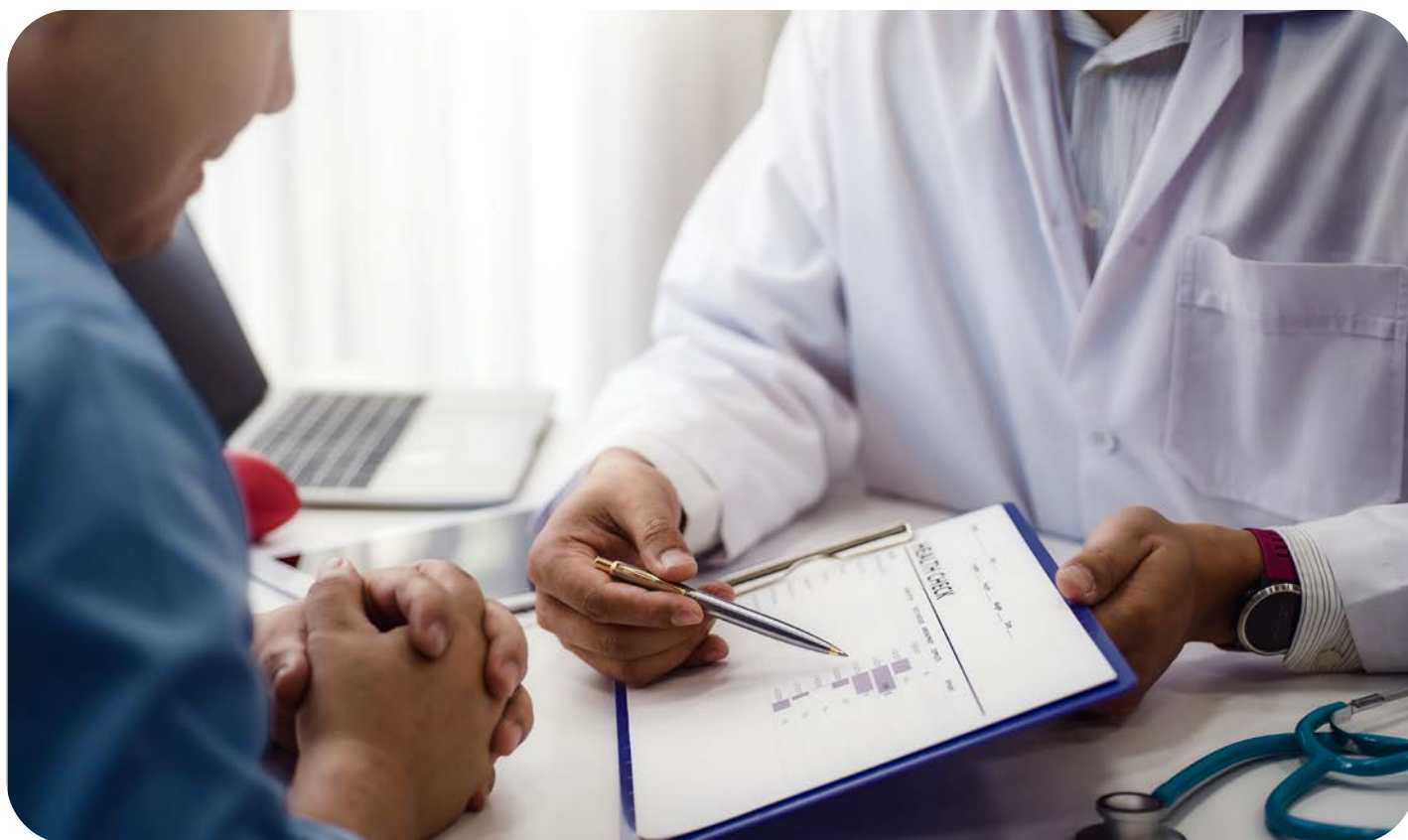
A medical binder or notebook is a great way to organize all of your records in one place.

- ✓ Make copies of blood tests, imaging results, and reports about your specific type of cancer. It will be helpful when getting a second opinion.
- ✓ Choose a binder that meets your needs. Consider a zipper pocket to include a pen, small calendar, and insurance cards.
- ✓ Create folders for insurance forms, medical records, and tests results. You can do the same on your computer.
- ✓ Use online patient portals to view your test results and other records. Download or print the records to add to your binder.
- ✓ Organize your binder in a way that works for you. Add a section for questions and to take notes.
- ✓ Bring your medical binder to appointments. You never know when you might need it!

4

Planning your treatment

28	Life expectancy
28	Risk assessment
30	Metastases
31	Possible treatment side effects
32	Treatment team
33	Review



Many factors go into treatment planning. Your personal needs are important. This chapter discusses life expectancy, risk groups, and other factors that go into treatment planning.

Life expectancy

Life expectancy is the average life span of a person. It is measured in years. An estimate of your life expectancy is an important factor in deciding which tests and treatments you will need.

Prostate cancer often grows slowly. There may be no benefit to having tests or continuing treatment if you don't have any symptoms or if you have other more life-threatening health conditions.

Risk assessment

A risk assessment estimates the overall risk or chance that something will happen in the future. In the case of prostate cancer, a risk assessment will help to plan the best treatment for you. Before and during treatment, information will be collected about you and your cancer. Your risk assessment might change over time.

Your doctors will consider how likely the cancer:

- Might spread, how far, and how quickly
- Will respond to certain treatments
- Will return (called recurrence)

Doctors use these tools in risk assessment:

- Life expectancy
- Risk groups
- Nomograms
- Molecular testing (sometimes)

A risk assessment is not a guarantee. How your disease might progress is uncertain. You might do better or worse than your risk assessment.

Risk groups

Treatment options for prostate cancer are based on your risk group. The following information is used to determine your risk group:

- TNM score
- Gleason score and/or Grade Group
- PSA values
- Biopsy results

When you are first diagnosed, you will be placed into an initial risk group. Risk groups are for localized disease. [See Guide 4.](#)

Initial risk groups are:

- Very low
- Low
- Intermediate favorable
- Intermediate unfavorable
- High
- Very high
- Regional

Guide 4**Initial risk groups****Very low**

Has all of the following:

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

Low

Has all of the following:

- T1 to T2a stage
- Grade Group 1
- PSA of less than 10 ng/mL

Intermediate

Has all of the following:

- No high-risk group features
- No very-high-risk group features
- 1 or more of the following intermediate risk factors:
 - T2b or T2c stage
 - Grade Group 2 or 3
 - PSA of 10 to 20 ng/mL

Favorable

Has all of the following:

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

Unfavorable

Has one or more from below:

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

High

Has one from below:

- T3a stage
- Grade Group 4
- Grade Group 5
- PSA of more than 20 ng/mL

Very high

Has one from below:

- T3b to T4 stage
- Primary Gleason pattern 5
- More than 4 biopsy cores with Grade Group 4 or 5

Nomograms

A nomogram predicts the course your cancer will take, called a prognosis. It uses math to compare you and your prostate cancer to other men who have been treated for prostate cancer. Nomograms might be used to predict the extent of cancer and the long-term results for surgery or other treatment. A nomogram that predicts how likely prostate cancer has spread to your pelvic lymph nodes might be used when making treatment decisions. In addition to risk groups and other factors, nomograms should be used to plan treatment.

Nomograms are just one tool. Some people will do better than expected. Others will do worse. Factors, such as your general health, are also very important.

Molecular tumor tests

Molecules are very tiny particles found in the cells of your body. There are special tests that measure certain molecules and biomarkers. A biomarker may be a molecule secreted by a tumor or a specific response in the body when cancer is present. When biomarkers are found, cancer may be present. PSA is an example of a biomarker used in detecting prostate cancer. This biomarker is found in a blood test.

Some molecular tests are done using prostate or lymph node tissue that was removed during biopsy. Results from these and other tests may help choose a treatment plan that is right for you.

If your doctor recommends molecular testing, it would be in addition to standard tests, such as PSA, Gleason grade, and imaging. You might have this test to see how well your body is responding to prostate cancer treatment. A molecular tumor test is also known as a molecular assay or analysis. If you have any questions about why you are having a test or what it means, ask your care team.

Metastases

Imaging tests can help show if the cancer has spread or metastasized in bones, lymph nodes, or other tissues. Treatment will depend on the type of metastasis.

There are different types of metastasis:

- Bone
- Lymph node and soft tissue
- Visceral

A bone scan is used to look for bone metastasis. Pelvic imaging with or without abdominal imaging is used to look for metastasis in the lymph nodes or other nearby visceral (internal) organs.

In prostate cancer, a visceral metastasis is cancer that has spread to the liver, lung, adrenal gland, brain, or an area inside the abdomen and pelvis. Lymph nodes are not considered visceral. You might have more tests if cancer is suspected in these or other areas of the body. Imaging tests to look for metastatic disease should not be performed if you are very low risk or low risk.

- Cancer that has metastasized in lymph nodes located near the prostate is called **regional prostate cancer**.
- Cancer that has spread to distant sites in the body is called **metastatic prostate cancer**.

Low-volume and high-volume are terms used to describe metastases.

- **Low-volume metastatic (M1) disease** includes visceral metastases and/or 3 or fewer bone metastases.
- **High-volume metastatic (M1) disease** includes visceral metastases and/or 4 or more bone metastases with 1 or more bone metastasis outside the spine or pelvis.

If your life expectancy is more than 5 years or you have cancer symptoms, testing for metastases may help with treatment planning.

Possible treatment side effects

A side effect is a problem or uncomfortable condition caused by treatment. Side effects are part of any treatment.

Possible side effects from prostate cancer treatment are:

- Urinary retention
- Urinary incontinence
- Erectile dysfunction

Often, these side effects are temporary and go away on their own. However, there is always a risk that a side effect may become long term or permanent. Talk with your doctor about your risk for these and other side effects, such as bowel problems, and how they might be prevented or treated.

Urinary retention

Prostate cancer and its treatment can cause urinary retention or the inability to completely empty the bladder. Your bladder might feel like it is full even after urinating.

Urinary incontinence

Prostate cancer and its treatment can cause urinary incontinence or the inability to control the flow of urine from the bladder. There are different degrees of incontinence.

Erectile dysfunction

Erectile dysfunction or impotence is the inability to achieve or maintain an erection. It might be caused by surgery, radiation therapy, or systemic therapy. Erectile function after surgery will likely be close to what it was before surgery. But, it may be worse. Prostate surgery that spares the nerves near the prostate can help maintain erectile function and prevent urinary issues.

Treatment team

Treating prostate cancer takes a team approach. It is important to see both a radiation oncologist and a urologist to discuss which treatment approach is right for you.

Some members of your care team will be with you throughout cancer treatment, while others will only be there for parts of it. Get to know your care team and let them get to know you.

Your primary care doctor handles medical care not related to your cancer. This person can help you express your feelings about treatments to your cancer care team.

A urologist is an expert in the male and female urinary tract and the male reproductive organs.

A urologic oncologist specializes in diagnosing and treating cancers of the male and female urinary tract and the male reproductive organs.

A radiation oncologist prescribes and plans radiation therapy to treat cancer.

A medical oncologist treats cancer in adults using systemic therapy. Often, this person will lead the overall treatment team and keep track of tests and exams done by other specialists.

Advanced practice providers are an important part of any team. These are registered nurse practitioners and physician assistants who monitor your health and provide care.

Oncology nurses provide your hands-on care, like giving systemic therapy, managing your care, answering questions, and helping you cope with side effects.

Depending on your diagnosis, your team might include:

An anesthesiologist who gives anesthesia, a medicine so you do not feel pain during surgery or procedures

A diagnostic radiologist who reads the results of x-rays and other imaging tests

A pathologist who reads tests and studies the cells, tissues, and organs removed during a biopsy or surgery

An interventional radiologist who performs needle biopsies of tumors and sometimes performs ablation therapies

A surgical oncologist who performs operations to remove cancer

You know your body better than anyone. Help other team members understand:

- How you feel
- What you need
- What is working and what is not

Keep a list of names and contact information for each member of your team. This will make it easier for you and anyone involved in your care to know who to contact with questions or concerns.

Review

- Doctors plan treatment using many sources of information.
- Life expectancy is the number of years you will likely live. It is used to plan treatment.
- A nomogram predicts the course your cancer will take, called a prognosis.
- A risk assessment is used to plan treatment. A risk assessment consists of life expectancy, risk groups, nomograms, and possible molecular tumor tests.
- You will be put into an initial risk group. This is based on your TNM score, Gleason score and/or Grade Group, PSA values, and biopsy results. Initial treatment will be based on your initial risk group.
- Side effects of prostate cancer may include urinary retention, urinary incontinence, and erectile dysfunction.
- Since surgery and radiation therapy have similar long-term cure rates, it is important to see both a radiation oncologist and a urologist to discuss which treatment approach is right for you.

Get to know
your care team
and let them get
to know you.

5

Prostate cancer treatment

35	Observation
35	Active surveillance
36	Surgery
39	Radiation therapy
40	Systemic therapy
44	Hormone therapy
47	Thermal ablation
48	Clinical trials
49	Review



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

Prostate cancer is usually a slow-growing disease. It is a complex disease with many treatment options. Treatment can be local, systemic, or a combination of both. Local therapies target specific areas of the body that contain cancer cells. Systemic therapies attack cancer cells throughout the body.

There are 2 types of treatment:

- **Local therapy** focuses on a certain area. In prostate cancer, this treatment can include surgery, cryosurgery, radiation therapy, or high-intensity focused ultrasound (HIFU).
- **Systemic therapy** works throughout the body. It includes hormone therapy, chemotherapy, and immunotherapy.

Treatment options are described next.

Observation

Observation involves monitoring your prostate cancer and watching for symptoms. A rising PSA level or a change in a digital rectal exam might be a sign that you will soon have symptoms. The goal is to treat symptoms just before they are likely to start. This is so you have a good quality of life. Treatment is focused on palliation or symptom relief rather than to cure the cancer. This is different from active surveillance.

Active surveillance watches for signs that your cancer is progressing in order to cure it before it gets worse.

Active surveillance

Active surveillance is a term used to describe a plan that closely watches your condition. You might hear it called watch-and-wait. During this time you will have tests, including biopsies, on a regular basis to look for changes in tumor growth. You will not have any cancer treatment during active surveillance.

Since small tumors may grow very slowly, it is possible to wait to treat prostate cancer until the tumor grows larger. Surgery and other forms of treatment have side effects. If you can delay treatment, then you can delay the side effects of treatment.

Factors that should be considered if active surveillance is an option for you:

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

Race should be also considered when thinking about active surveillance. African-American men with apparent very-low-risk prostate cancer may have a high Grade Group tumor that is not found during biopsy. Prostate cancer in African-American men may worsen faster and might have a higher Gleason grade or more cancer cells than Caucasian-Americans.

To see if you are a good candidate for active surveillance, your doctor should consider:

- mpMRI
- Prostate biopsy

Tests during active surveillance include:

- PSA no more than every 6 months or as needed
- Digital rectal exam no more than every 12 months or as needed
- Repeat prostate biopsy no more than every 12 months or as needed
- Repeat mpMRI no more than every 12 months or as needed

Doctors don't agree on the need for and frequency of repeat biopsies. Some doctors do repeat biopsies each year and others do them based on test results. Examples of such test results include a rise in PSA level, change in a digital rectal exam, or an MRI that shows more aggressive disease.

A decision to do a repeat biopsy should balance the potential benefits and risks. Risks include infection and other side effects. If 10 or fewer cores were removed and the results are not clear, you may have a repeat biopsy within 6 months of being diagnosed with prostate cancer. If you're likely to live less than 10 years and are on observation, you may not have a repeat prostate biopsy.

There is debate over which events during active surveillance should signal the start of treatment. The decision to start treatment should be based on your doctor's judgment and your personal wishes.

Surgery

Surgery is a form of local treatment. It is an operation or procedure to remove cancer from the body. The tumor will be removed along with some normal-looking prostate tissue around its edge. The normal-looking tissue is called the surgical margin. A clear or negative margin (R0) is when no cancer cells are found in the tissue around the edge of the tumor. In a positive margin (R1), cancer cells are found in normal-looking tissue around the tumor. A negative margin (R0) is the best result.

Surgery can be used as the main or primary treatment. This may be only one part of a treatment plan.

The type of surgery you receive depends on the size and location of the tumor. It also depends on whether there is cancer in any surrounding organs and tissues.

There are 2 types of surgery:

- Open surgery
- Minimally invasive surgery

Open surgery removes the prostate through one large cut or incision.

Minimally invasive surgery (laparoscopic or robotic surgery) uses a few small cuts instead of one large one. Tools are inserted through each incision to perform the surgery. One of the tools, called a laparoscope, is a long lens with a video camera at the end. Other tools are used to remove the tumor. Laparoscopic surgery can also be done using robotic arms to control the surgical tools. This is called robot-assisted laparoscopic surgery.

Radical prostatectomy

A radical prostatectomy is an operation that removes the entire prostate, seminal vesicles, and some nearby tissue. Pelvic lymph nodes may be removed.

A radical prostatectomy is often used when all of the following are true:

- 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 may be an option for those with high-risk or very-high-risk prostate cancer in certain cases. In these cases surgery will be followed by radiation therapy.

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.

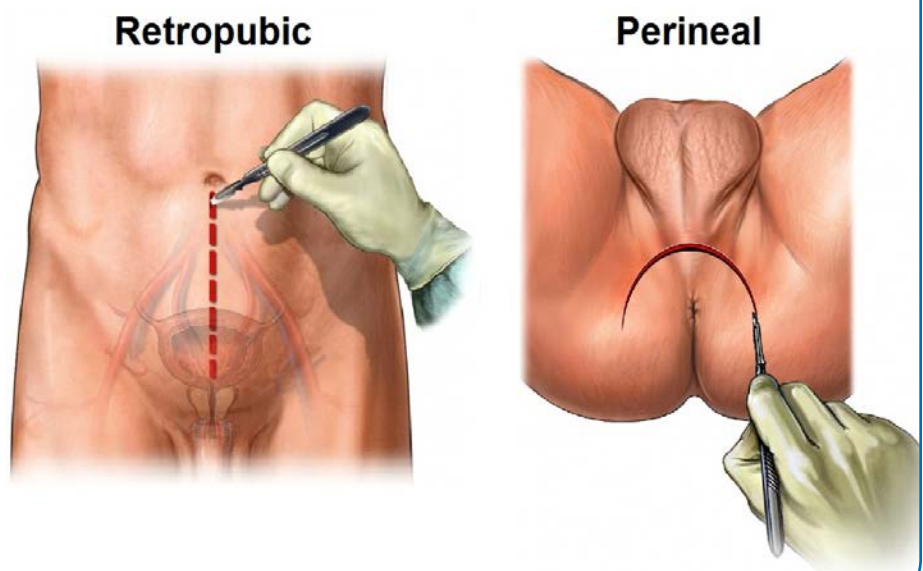
After a radical prostatectomy, a catheter will be inserted into your urethra to allow your urethra to heal. It will stay in place for 1 to 2 weeks after surgery. You will be shown how to care for it while at home. If removed too early, you may lose control of your bladder (urinary incontinence) or be unable to urinate due to scar tissue.

A radical prostatectomy can be open or minimally invasive surgery. Staging before a radical prostatectomy is called **clinical staging**. After a radical prostatectomy, your prostate will be tested to confirm cancer stage. This is called **pathologic staging**.

Open methods to radical prostatectomy

Your prostate may be removed through one large cut in your pelvis or between your legs.

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There are 2 types of open radical prostatectomies:

- Retropubic
- Perineal

Radical retropubic prostatectomy

This surgery removes tissue through a cut that runs from your belly button down to the base of your penis. During the operation, you will lie on your back on a table with your legs slightly higher than your head.

Before removing your prostate, some veins and your urethra will be cut to clear the area. Your seminal vesicles will be removed along with your prostate. After removing your prostate, your urethra will be reattached to your bladder.

Your cavernous nerve bundles are on both sides of your prostate. These are needed for natural erections. A nerve-sparing prostatectomy will be done if your cavernous nerves are likely to be cancer-free. However, if cancer is suspected, then one or both bundles of nerves will be removed. If removed, good erections are still possible with the help of medication. You can still orgasm with or without these nerves.

Radical perineal prostatectomy

In a radical perineal prostatectomy a cut is made in your perineum. The perineum is the area between your scrotum and anus.

Your prostate and seminal vesicles will be removed after being separated from nearby tissues. An attempt will be made to spare nearby nerves. After your prostate has been removed, your urethra will be reattached to your bladder. Lymph nodes cannot be removed with this operation.

After surgery

Most men have temporary urinary incontinence and erectile dysfunction after a radical prostatectomy. These two side effects may be short lived, but for some men they are lifelong issues.

You're at higher risk for erectile dysfunction if 1) you're older, 2) you have erectile problems before surgery, or 3) your cavernous nerves are damaged or removed during surgery. If your cavernous nerves are removed, there is no good proof that nerve grafts will help restore your ability to have erections. Aids, such as medication, are still needed.

Removing your prostate and seminal vesicles will cause you to have dry orgasms. This means your semen will no longer contain sperm and you will be unable to have children.

Pelvic lymph node dissection

A pelvic lymph node dissection (PLND) is an operation to remove lymph nodes from your pelvis. It can be done as open retropubic, laparoscopic, or robotic surgery. PLND is usually part of a radical prostatectomy.

An extended PLND removes more lymph nodes than a limited PLND. An extended PLND is preferred. It finds metastases about two times as often as a limited PLND. It also stages cancer more completely and may cure some men with very tiny (microscopic) metastases.

Radiation therapy

Radiation therapy uses high-energy radiation from x-rays, gamma rays, and other sources to kill cancer cells and shrink tumors. It is given over a certain period of time. Radiation therapy may be given alone or before, during, or after surgery to treat or slow the growth of cancer. It may be used as supportive care to help ease discomfort or pain in locally advanced and metastatic cancer. Radiation therapy is a form of local treatment.

There are 2 main types of radiation treatment:

- **External beam radiation therapy (EBRT)** uses a machine outside of the body to aim radiation at the tumor(s).
- **Internal radiation** is placed inside the body as a solid like seeds. This is called brachytherapy.

EBRT

There is more than one type EBRT used in the treatment of prostate cancer. These allow for safer, higher doses of radiation.

Types of EBRT that may be used to treat your cancer include:

- **Stereotactic body radiation therapy (SBRT)** uses high-energy radiation beams to treat cancers.
- **Proton beam radiation therapy** uses streams of particles called protons to kill tumor cells.
- **Three-dimensional conformal radiation therapy (3D-CRT)** uses computer software and CT images to aim beams that match the shape of the tumor.
- **Intensity-modulated radiation therapy (IMRT)** uses small beams of different strengths to match the shape of the tumor. IMRT is a type of 3D-CRT that may be used for more aggressive prostate cancer.
- **Image-guided radiation therapy (IGRT)** uses a computer to create a picture of the tumor. This helps guide the radiation beam during treatment. It is used with IMRT and 3D-CRT.

The prostate can shift slightly within the body. Tumors may also change shape and size between and during treatment visits. Because of this, IGRT can improve how well 3D-CRT and IMRT target the tumor.

Brachytherapy

Brachytherapy is another standard radiation therapy option for prostate cancer. In this treatment radiation is placed inside or next to the tumor. Brachytherapy may be used alone or combined with EBRT, androgen deprivation therapy (ADT), or both. You might hear it called brachy (said braykey) for short.

Brachytherapy alone may be an option for men with very low-, low-, or favorable intermediate-risk prostate cancer depending on life expectancy. Those with high-risk cancers are not usually considered for brachytherapy alone.

There are 2 types of brachytherapy used to treat prostate cancer:

- Low dose-rate (LDR) brachytherapy
- High dose-rate (HDR) brachytherapy

LDR brachytherapy

Low dose-rate (LDR) brachytherapy uses thin, hollow needles to place radioactive seeds into your prostate. The seeds are about the size of a grain of rice. They are inserted into your body through the perineum and guided into your prostate with imaging tests.

The seeds usually consist of either radioactive iodine or palladium. They will stay in your prostate and give a low dose of radiation for a few months. The radiation travels a very short distance. This allows for a large amount of radiation within a small area while sparing nearby healthy tissue. Over time, the seeds will stop radiating, but will stay in your body (permanent).

HDR brachytherapy

High dose-rate (HDR) brachytherapy uses thin needles placed inside your prostate gland. These needles are then attached to tubes called catheters. Radiation will be delivered through these catheters. After treatment, the needles and catheters are removed.

Brachytherapy boost

Brachytherapy used with EBRT is called a brachytherapy boost, or brachy boost for short. LDR or HDR brachytherapy can be added as a boost to EBRT plus ADT in men with unfavorable intermediate-, high-, or very-high-risk prostate cancer who are being treated to cure the disease. Brachytherapy boost has higher side effects than IGRT.

Systemic therapy

A cancer treatment that affects the whole body is called systemic therapy. It includes hormone therapy, chemotherapy, targeted therapy, and immunotherapy. Each works differently to shrink the tumor and prevent recurrence. Systemic treatments may be used alone or together. [See Guide 5.](#)

Systemic therapies that might be used to treat prostate cancer include:

- **Immunotherapy** – uses your body's natural defenses to find and destroy cancer cells
- **Chemotherapy** – attacks rapidly dividing cells in the body
- **Hormone therapy** – adds, blocks, or removes hormones

Often, more than one drug is used to treat cancer. This puts healthy cells at risk for damage. Cell damage can lead to harmful side effects. In some cases, you may have to stop or delay treatment. Your doctor may change the systemic treatment approach or lower the dosage.

Ask your doctor about the goal of systemic therapy for your stage of prostate cancer. Be clear about your wishes for treatment.

Immunotherapy

The immune system is the body's natural defense against infection and disease. It is a complex network of cells, tissues, and organs. The immune system includes many chemicals and proteins. These chemicals and proteins are made naturally in your body.

Immunotherapy is a type of systemic therapy that increases the activity of your immune system. By doing so, it improves your body's ability to find and destroy cancer cells. Immunotherapy is given alone when used for treating prostate cancer.

Guide 5 Systemic therapies

Chemotherapies

- Docetaxel
- Mitoxantrone
- Cabazitaxel
- Cisplatin, carboplatin, and etoposide (only for small cell neuroendocrine prostate cancer)

Immunotherapies

- Pembrolizumab
- Sipuleucel-T

Bone-targeted therapies

- Denosumab
- Zoledronic acid
- Alendronate
- Radium-223

Steroids

- Prednisone
- Methylprednisolone
- Dexamethasone
- Hydrocortisone

There are 2 immunotherapy drugs approved to treat prostate cancer:

- Sipuleucel-T
- Pembrolizumab

Sipuleucel-T

Sipuleucel-T is a therapy that uses your white blood cells to destroy prostate cancer cells. Immune cells will be collected from your body and sent to a lab. Then, the immune cells will be activated or changed to target prostate cancer cells. This drug is known as a cancer vaccine.

Pembrolizumab

Pembrolizumab blocks the action of programmed death receptor-1 (PD-1), a protein. By blocking PD-1, the immune system can then attack cancer cells. The goal is to stop or slow the growth of cancer.

Pembrolizumab is given as a liquid that is injected into a vein. You might hear your doctor call it pembro, for short.

Chemotherapy

Chemotherapy is a drug therapy that uses powerful chemicals to treat cancer. Chemotherapy kills fast-growing cells throughout the body, including cancer cells and normal cells. All chemotherapy drugs affect the instructions (genes) that tell cancer cells how and when to grow and divide.

Chemotherapy drugs used to treat advanced prostate cancer include:

- Docetaxel
- Cabazitaxel
- Mitoxantrone hydrochloride

The chemotherapy drugs used to treat prostate cancer are liquids that are injected into a vein. The drugs travel in the bloodstream to treat cancer throughout the body. Chemotherapy is given in cycles of treatment days followed by days of rest. This allows the body to recover before the next cycle. You will have tests before starting chemotherapy and during chemotherapy to see how well the treatment is working.

Docetaxel

Docetaxel is used to treat advanced prostate cancer. Docetaxel is an option for some men who are taking ADT for the first time. Docetaxel is also used to treat metastases after ADT fails to stop cancer growth.

Cabazitaxel

Cabazitaxel is an option if docetaxel doesn't work. However, the benefits of cabazitaxel are small and the side effects can be severe. You should not take cabazitaxel if your liver, kidneys, or bone marrow is not working well or if you have severe neuropathy, a nerve problem that causes pain, numbness, and tingling that starts in the hands and feet.

Mitoxantrone hydrochloride

Mitoxantrone hydrochloride may relieve symptoms caused by advanced cancer.

Bone-targeted therapy

Medicines that target the bones may be given to help relieve bone pain or reduce the risk of bone problems. Some medicines work by slowing or stopping bone breakdown, while others help increase bone thickness.

When prostate cancer spreads to distant sites, it may metastasize in your bones. This puts your bones at risk for injury and disease. Such problems include bone loss (osteoporosis), fractures, bone pain, and squeezing (compression) of the spinal cord. Some treatments for prostate cancer, like hormone therapy, can cause bone loss, which put you at an increased risk for fractures.

There are 3 drugs used to prevent bone loss and fractures:

- Denosumab
- Zoledronic acid
- Alendronate

There are 3 drugs used to treat bone metastases:

- Radium-223
- Denosumab
- Zoledronic acid

You will be screened for osteoporosis using a bone mineral density test. This measures how much calcium and other minerals are in your bones. It is also called a dual-energy x-ray absorptiometry (DEXA) scan and is painless. Bone mineral density tests look for osteoporosis and help predict your risk for bone fractures.

If you are at an increased risk for fracture, a baseline DEXA scan is recommended before starting hormone therapy. A follow-up DEXA scan after one year of hormone therapy is recommended.

Denosumab, zoledronic acid, and alendronate

Denosumab, zoledronic acid, and alendronate are used to prevent bone loss (osteoporosis) and fractures caused by hormone therapy. Denosumab and zoledronic acid are also used in those with castration-resistant prostate cancer who have bone metastases to help prevent fractures or spinal cord compression. You might have blood tests to monitor kidney function and calcium levels. A calcium and vitamin D supplement will be recommended by your doctor.

Let your dentist know if you are taking any of these medicines. Also, ask your doctor how these medicines might affect your teeth and jaw. Osteonecrosis, or bone tissue death of the jaw, is a rare, but serious side effect. Tell your doctor about any planned trips to the dentist. It will be important to take care of your teeth and to see a dentist before starting treatment with any of these drugs.

Radiopharmaceuticals

Radiopharmaceuticals are drugs that contain a radioactive substance. These drugs emit radiation to treat cancer and are different than contrast material used in imaging.

Radium-223 is a radiopharmaceutical used to treat prostate cancer that has metastasized in the bone, but has not spread to other organs (visceral metastases). It is used in patients whose prostate cancer is castration resistant. This is cancer that has not responded to

treatments that lower testosterone levels (hormone therapy). Radium-223 collects in bone and gives off radiation that may kill cancer cells. The radiation doesn't travel far so healthy tissue is spared. Radium-223 is given through a vein (intravenous). You will have blood tests before each dose.

Since radium-223 leaves the body through the gut, common side effects are nausea, diarrhea, and vomiting.

Radium-223 can be used with denosumab and zoledronic acid.

Hormone therapy

Hormone therapy is treatment that adds, blocks, or removes hormones. A hormone is a substance made by a gland in the body. Your blood carries hormones throughout your body.

The main male hormone or androgen is testosterone. It is made by the testicles. Most of the testosterone in the body is made by the testicles, but the adrenal glands that sit above your kidneys also make a small amount.

Luteinizing hormone-releasing hormone (LHRH) and gonadotropin-releasing hormone (GnRH) are hormones made by a part of the brain called the hypothalamus. These hormones tell the testicles to make testosterone.

Hormones can cause prostate cancer to grow. Hormone therapy will stop your body from making testosterone or it will block what testosterone does in the body. This can slow tumor growth or shrink the tumor for a period of time. Hormone therapy can be local like in the surgical removal of the testicles (orchiectomy) or it can be systemic (drug therapy). The goal is to reduce the amount of testosterone in your body. [See Guide 6.](#)

Guide 6

Hormone therapies

ADT

- Nilutamide, flutamide, or bicalutamide
- Goserelin, histrelin, leuprolide, or triptorelin
- Degarelix

Secondary hormone therapy

- Enzalutamide, apalutamide, or darolutamide
- Abiraterone with prednisone or methylprednisolone
- Ketoconazole (may be used alone or with hydrocortisone)
- Nilutamide, flutamide, or bicalutamide
- Hydrocortisone, prednisone, or dexamethasone
- DES or other estrogens

Surgery

- Orchiectomy

You might hear the term castration used when describing your prostate cancer or its treatment. Although this word might seem harsh, it is the medical term for some types of hormone therapy. Castration can be temporary, a short-term treatment, or permanent like in an orchiectomy. If you are unsure what your doctor is talking about, ask.

Hormone therapy is not used by itself in the treatment of prostate cancer.

There is one type of surgical hormone therapy:

- **Bilateral orchiectomy** is surgery to remove both testicles.

The following are systemic (medical) hormone therapies:

- **LHRH agonists** are drugs used to stop the testicles from making testosterone. LHRH agonists include goserelin acetate, histrelin acetate, leuprolide acetate, and triptorelin pamoate. LHRH agonists will shrink your testicles over time.
- **LHRH antagonists** are drugs that block or stop the pituitary gland (attached to the hypothalamus) from making LHRH. This causes the testicles to stop making testosterone. Degarelix is an LHRH antagonist.
- **Anti-androgens** are drugs that block receptors on prostate cancer cells from receiving testosterone. Anti-androgens include bicalutamide, flutamide, nilutamide, enzalutamide, apalutamide, and darolutamide.

- **Corticosteroids** are synthetic hormones made in a lab that can stop the adrenal glands and other tissues from making testosterone. Prednisone, methylprednisolone, hydrocortisone, and dexamethasone are corticosteroids.
- **Estrogen** can stop the adrenal glands and other tissues from making testosterone. One type of synthetic estrogen made in a lab is called diethylstilbestrol (DES). Estrogen can increase the risk for breast growth and tenderness as well as blood clots.
- **Androgen synthesis inhibitors** are drugs that block androgen production. Ketoconazole is an antifungal drug that stops the adrenal glands and other tissues from making testosterone. Abiraterone acetate is similar to ketoconazole. Abiraterone is stronger and less toxic.

Androgen deprivation therapy

Androgen deprivation therapy (ADT) is treatment to suppress or block the amount of male sex hormones in the body. It is the primary or main systemic therapy for regional and advanced disease. ADT might be used alone or in combination with radiation therapy, chemotherapy, steroids, or other hormone therapies.

The term “hormone therapy” can be confusing. Some people refer to all hormone therapy as ADT. However, only orchiectomy, LHRH agonists, and LHRH antagonists are a form of ADT.

Palliative ADT

Palliative ADT is given to relieve (palliate) symptoms of prostate cancer. Palliative ADT can be given to those with a life expectancy of 5 years or less and who have high-risk, very-high-risk, regional, or metastatic prostate cancer. Palliative ADT can also be given to those who will start or have started to develop symptoms during observation.

Combined androgen blockade

Combined androgen blockade (CAB) is a type of ADT. It combines medical or surgical castration with an anti-androgen drug to block androgen in the body.

CAB may stop the growth of cancer cells that need androgens to grow. Sometimes, anti-androgens are used with LHRH agonists or following an orchiectomy.

Side effects of hormone therapy

Hormone therapy has side effects. Many factors play a role in your risk for side effects. Such factors include your age, your health before treatment, how long or often you have treatment, and so forth.

Side effects differ between the types of hormone therapy. In general, ADT may reduce your desire for sex and cause erectile dysfunction. If you will be on long-term ADT, your doctor may consider intermittent treatment to reduce side effects. Intermittent treatment is alternating periods of time when you are on and off ADT treatment. It can provide similar cancer control to continuous hormone therapy, but gives your body a break from treatment.

The longer you take ADT, the greater your risk for thinning and weakening bones (osteoporosis), bone fractures, weight gain, loss of muscle mass, diabetes, and heart disease. Other side effects of ADT include hot flashes, mood changes, fatigue, and breast tenderness and growth. Talk to your care team about how to manage the side effects of hormone therapy.

Calcium and vitamin D3 taken every day may help prevent or control osteoporosis. NCCN experts recommend that men on ADT take calcium and vitamin D.

Before ADT, you should receive a dual-energy x-ray absorptiometry (DEXA) scan to measure your bone density. Denosumab, zoledronic acid, or alendronate are recommended if your bone density is low. One year after treatment has started, another DEXA scan is recommended.

Diabetes and cardiovascular disease are common in older men. ADT increases the risk for these diseases. Thus, screening and treatment to reduce your risk for these diseases is advised. Tell your primary care physician if you are being treated with ADT.

ADT has been known to increase the risk of death from heart issues in African-American men. Ask your doctor about the risks of ADT treatment for your prostate cancer.

Secondary hormone therapy

When prostate cancer advances despite the use of ADT, sometimes another hormone therapy is added to help keep testosterone levels low. This is called secondary hormone therapy.

Secondary hormone therapy can be one or a combination of the following:

- LHRH agonist
- LHRH antagonist
- Anti-androgen
- Androgen synthesis inhibitor
- Estrogen
- Corticosteroid

Corticosteroids

Corticosteroids are drugs created in a lab to act like hormones made by the adrenal glands. The adrenal glands are small structures found near the kidneys, which help regulate blood pressure and reduce inflammation (swelling). Corticosteroids are used alone or in combination with chemotherapy or hormone therapy. Corticosteroids are also called steroids.

The following steroids are used in prostate cancer:

- Prednisone
- Methylprednisolone
- Hydrocortisone
- Dexamethasone

Thermal ablation

Thermal ablation is a type of local treatment that uses extreme cold or extreme heat to destroy (ablate) cancer cells. It can destroy small tumors with little harm to nearby tissue. Cryosurgery and high-intensity focused ultrasound (HIFU) are two types of thermal ablation used to treat non-metastatic cancer that has returned (recurrence) after radiation therapy.

Cryosurgery

Cryosurgery is a procedure that damages prostate tumors through freezing. It is used to treat prostate cancer that has returned after radiation therapy. Cryosurgery is a treatment option if radiation therapy does not work.

Very thin needles will be inserted through your perineum into your prostate. The perineum is the space between your anus and scrotum. Imaging tests will be used to place the needles. Argon gas will flow through the needles and freeze your prostate to below-zero temperatures. Freezing kills the cancer cells. A catheter filled with warm liquid will be placed in your urethra to prevent damage to your urethra.

High-intensity focused ultrasound

High-intensity focused ultrasound (HIFU) uses high-energy sound waves that create heat to kill cancer cells. A probe is inserted into the rectum and the high-intensity sound waves are aimed directly at the cancer. HIFU (said high-foo) is a treatment option if radiation therapy does not work.

Clinical trials

Clinical trials study how safe and helpful tests and treatments are for people. Clinical trials find out how to prevent, diagnose, and treat a disease like cancer. Because of clinical trials, doctors find safe and helpful ways to improve your care and treatment of prostate cancer.

Clinical trials have 4 phases.

- **Phase I trials** aim to find the safest and best dose of a new drug. Another aim is to find the best way to give the drug with the fewest side effects.
- **Phase II trials** assess if a drug works for a specific type of cancer.
- **Phase III trials** compare a new drug to a standard treatment.
- **Phase IV trials** test drugs approved by the U.S. FDA (Food and Drug Administration) to learn more about side effects with long-term use.

To join a clinical trial, you must meet the conditions of the study. Patients in a clinical trial often are alike in terms of their cancer and general health. This helps ensure that any change is from the treatment and not because of differences between patients.

If you decide to join a clinical trial, you will need to review and sign a paper called an informed consent form. This form describes the study in detail, including the risks and benefits. Even after you sign a consent form, you can stop taking part in a clinical trial at any time.

Ask your treatment team if there is an open clinical trial that you can join. There may be clinical trials where you're getting treatment or at other treatment centers nearby. Discuss the risks and benefits of joining a clinical trial with your care team. Together, decide if a clinical trial is right for you.

NCCN experts encourage patients to join a clinical trial, when possible.



Finding a clinical trial

Search the National Institutes of Health (NIH) database for clinical trials. It includes publicly and privately funded clinical trials, who to contact, and how to enroll. Look for an open clinical trial for your specific type of cancer. Go to ClinicalTrials.gov.

The National Cancer Institute's Cancer Information Service (CIS) provides up-to-date information on clinical trials. You can call, email, or chat live. Call 1.800.4.CANCER (800.422.6237) or go to cancer.gov.

Review

- Observation looks for symptoms of cancer in order to treat the symptoms before they appear or get worse.
 - Active surveillance looks for signs of cancer in order to cure it before cancer progresses.
 - Surgery removes the tumor along with some normal-looking tissue around its edge called a surgical margin. The goal of surgery is a negative margin (R0).
 - A radical prostatectomy removes the prostate and the seminal vesicles. A pelvic lymph node dissection (PLND) removes lymph nodes near the prostate.
 - Immunotherapy activates your body's disease-fighting system to destroy prostate cancer cells.
 - Chemotherapy stops cancer cells from completing their life cycle so they can't increase in number.
 - Hormone therapy treats prostate cancer by either stopping testosterone from being made or stopping what testosterone does in the body. It is the main systemic therapy for regional and advanced disease
 - Radiopharmaceuticals are radioactive drugs used to treat bone metastases.
 - Radiation kills cancer cells or stops new cancer cells from being made.
 - Cryosurgery kills cancer cells by freezing them and high-intensity focused ultrasound (HIFU) kills cancer cells by heating them.
- A clinical trial is a type of research that 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.

6

Initial treatment by risk group

51	Risk groups
52	Very low risk
54	Low risk
56	Intermediate risk
56	Favorable intermediate risk
58	Unfavorable intermediate risk
61	High risk or very high risk
63	Regional cancer risk
65	After initial treatment
66	Review



Initial treatment options for men with prostate cancer are based on risk group. Together, you and your doctor will choose a treatment plan that is best for you.

Initial prostate cancer diagnosis is your first diagnosis. Your doctor might suspect prostate cancer based on an abnormal digital rectal exam or an elevated PSA. Biopsies of the prostate are needed to confirm prostate cancer. A TRUS-guided biopsy is the most common. It is usually performed by a urologist. A pathologist will assign a primary and secondary Gleason grade to the biopsy sample.

Risk groups

In addition to blood, imaging, and tissue tests, a family history will be taken. Your life expectancy will be estimated. You may have genetic testing. All of these factors will be used to place you into a risk group.

Initial risk groups are:

- Very low
- Low
- Intermediate favorable
- Intermediate unfavorable
- High
- Very high
- Regional

Life expectancy: 5 years or less

Sometimes, it is advised for those in certain risk groups to wait until symptoms appear before having tests or starting treatment.

If you do not have any symptoms, are expected to live 5 years or less, and are very low, low, or intermediate risk, then treatment and testing can wait.

Those who are high or very high risk and are expected to live 5 years or less should undergo bone imaging. If cancer is suspected in the lymph nodes, then you might have imaging of your abdomen and/or pelvis.

Very low risk

Very-low-risk group is for those who have all of the following:

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

NCCN experts are concerned about overtreatment of this early cancer. As a result, very-low-risk prostate cancer is not treated with hormone therapy or other types of systemic therapy. Options are based on life expectancy. [See Guide 7.](#)

Life expectancy: Less than 10 years

If your life expectancy is less than 10 years, then the option is:

- Observation

Observation

If your life expectancy is less than 10 years, then observation is recommended. This option is for those who have other more serious health problems and prostate cancer is not causing any symptoms. Observation consists of testing on a regular basis so that palliative ADT can be given if symptoms from the cancer are likely to start.

Tests during observation include:

- PSA no more than every 6 months or as needed
- Digital rectal exam no more than every 6 months or as needed

Guide 7

Initial therapy options by life expectancy: Very-low-risk group

Less than 10 years	Observation
10 to 20 years	Active surveillance
20 or more years	Active surveillance (preferred)
	EBRT or brachytherapy
	Radical prostatectomy → <div> If adverse features, then one from below: <ul style="list-style-type: none"> • EBRT • EBRT with 6 months of ADT • Observation </div>

Life expectancy: Between 10 and 20 years

If your life expectancy is between 10 and 20 years, the recommended option is:

- Active surveillance

Active surveillance

Active surveillance is advised if you have slow-growing disease and your life expectancy is between 10 and 20 years. Active surveillance consists of testing, including biopsies, on a regular basis so that treatment can be started when and if needed.

To see if you are a good candidate for active surveillance, your doctor should consider:

- mpMRI
- Prostate biopsy

Tests during active surveillance include:

- PSA no more than every 6 months or as needed
- Digital rectal exam no more than every 12 months or as needed
- Repeat prostate biopsy no more than every 12 months or as needed
- Repeat mpMRI no more than every 12 months or as needed

Life expectancy: 20 or more years

If your life expectancy is 20 or more years, then the options are:

- Active surveillance (preferred option)
- EBRT or brachytherapy
- Radical prostatectomy

Active surveillance

Active surveillance is the preferred option if you have slow-growing disease and your life expectancy is 20 or more years. Active surveillance consists of testing, including biopsies, on a regular basis so that treatment can be started when and if needed.

To see if you are a good candidate for active surveillance, your doctor should consider:

- mpMRI
- Prostate biopsy

Tests during active surveillance include:

- PSA no more than every 6 months or as needed
- Digital rectal exam no more than every 12 months or as needed
- Repeat prostate biopsy no more than every 12 months or as needed
- Repeat mpMRI no more than every 12 months or as needed

Radiation therapy

If you will likely live more than 20 years, you may want treatment now instead of active surveillance. In time, the cancer may grow outside your prostate, cause symptoms, or both. Since there is no way to know for sure, radiation therapy is an option. Very-low-risk cancers can be treated with EBRT or brachytherapy.

Radical prostatectomy

Surgery is an option if you will likely live more than 20 years and prefer this treatment over active surveillance. Your pelvic lymph nodes may also be removed if your risk for them having cancer is 2 percent (2%) or higher. Your doctor will determine your risk using a nomogram.

When your prostate is removed, a biopsy will be sent to a pathologist to see how much cancer there is in your prostate. After surgery, your PSA level will be tested. Radiation or systemic therapy might follow surgery.

If you opt for a radical prostatectomy, your doctor will look for signs of disease called adverse features during and after surgery.

Adverse features include:

- Positive margin(s) is found
- Cancer has spread to seminal vesicle(s)
- Cancer has broken through the outside layer of the prostate
- PSA is detected

If your prostate cancer has adverse features, then there are 3 treatment options:

- EBRT
- EBRT with 6 months of ADT
- Observation

EBRT or observation is an option for when there are high-risk features. EBRT will target areas where the cancer cells have likely spread. ADT might be added to EBRT. Treatment will be started after you've healed from the prostate operation.

If test results do not find high-risk features, then no more treatment is needed.

Follow-up tests

You will be monitored with these follow-up tests:

- PSA every 6 to 12 months for 5 years, then every year after that
- Digital rectal exam every 12 months

Low risk

Low-risk group is for those who have all of the following:

- T1 to T2a stage
- Grade Group 1
- PSA of less than 10 ng/mL

Treatment options are based on life expectancy. For treatment options for men at low risk of recurrence, [see Guide 8](#).

Life expectancy: Less than 10 years

If your life expectancy is less than 10 years, the option is:

- Observation

Observation

If your life expectancy is less than 10 years, then observation is recommended. This option is for those who have other more serious health problems and prostate cancer is not causing any symptoms. Observation consists of testing on a regular basis so that palliative ADT can be given if symptoms from the cancer are likely to start.

Tests during observation include:

- PSA no more than every 6 months or as needed
- Digital rectal exam no more than every 6 months or as needed

Life expectancy: 10 or more years

If your life expectancy is 10 or more years, the options are:

- Active surveillance (preferred)
- EBRT or brachytherapy
- Radical prostatectomy

Active surveillance

Active surveillance is the preferred option if you have slow-growing disease and your life expectancy is 10 or more years. Active surveillance consists of testing, including biopsies, on a regular basis so that treatment can be started when and if needed.

To see if you are a good candidate for active surveillance, your doctor should consider:

- mpMRI
- Prostate biopsy

Tests during active surveillance include:

- PSA no more than every 6 months or as needed
- Digital rectal exam no more than every 12 months or as needed
- Repeat prostate biopsy no more than every 12 months or as needed
- Repeat mpMRI no more than every 12 months or as needed

Radiation therapy

If you will likely live more than 10 years, you may want treatment now instead of active surveillance. In time, the cancer may grow outside your prostate, cause symptoms, or both. Since there is no way to know for sure, radiation therapy is an option. Low-risk cancers can be treated with EBRT or brachytherapy.

Radical prostatectomy

After a radical prostatectomy, you might have adjuvant therapy. Adjuvant therapy is treatment after surgery that helps to stop the cancer from returning. Options are based on the presence of high-risk (adverse) features and cancer (metastasis) in the lymph nodes. Cancer that has metastasized to nearby lymph nodes is called node-positive disease.

Adverse features include:

- Cancer in surgical margins
- Cancer outside the prostatic capsule
- Cancer in the seminal vesicle(s)
- PSA is detected after surgery

Guide 8

Initial therapy options by life expectancy: Low-risk group

Less than 10 years	Observation
10 or more years	Active surveillance (preferred)
	EBRT or brachytherapy
	Radical prostatectomy → If adverse features, then one from below: <ul style="list-style-type: none"> • EBRT • EBRT with 6 months of ADT • Observation

If your prostate cancer has adverse features, then there are 3 treatment options:

- EBRT
- EBRT with 6 months of ADT
- Observation

EBRT or observation is an option for when there are high-risk features and there is no cancer in lymph nodes. EBRT will target areas where the cancer cells have likely spread. ADT might be added to EBRT. Treatment will be started after you've healed from the prostate operation.

If test results do not find high-risk features, then no more treatment is needed.

Follow-up tests

You will be monitored with these follow-up tests:

- PSA every 6 to 12 months for 5 years, then every year after that
- Digital rectal exam every 12 months

Intermediate risk

Intermediate-risk group is for those who have:

- No high-risk group features
- No very-high-risk group features
- 1 or more of the following **intermediate risk factors**:
 - T2b or T2c stage
 - Grade Group 2 or 3
 - PSA 10 to 20 ng/mL

The intermediate-risk group is further divided into favorable and unfavorable. Treatment will be based on if your prostate cancer is:

- Favorable intermediate risk
- Unfavorable intermediate risk

Favorable intermediate risk

Favorable intermediate-risk group is for those who have all of the following:

- 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 9.](#)

Life expectancy: Less than 10 years

If your life expectancy is less than 10 years, there are 2 options:

- Observation (preferred)
- EBRT or brachytherapy alone

Observation

Observation is the preferred option for those with a life expectancy of less than 10 years and prostate cancer is unlikely to cause problems. Observation consists of testing on a regular basis so that palliative ADT can be given if symptoms from the cancer are likely to start.

Tests during observation include:

- PSA no more than every 6 months or as needed
- Digital rectal exam no more than every 6 months or as needed

Radiation therapy

A treatment option for some men with favorable-intermediate risk is radiation therapy. This may include EBRT or brachytherapy alone.

Life expectancy: 10 or more years

If your life expectancy is 10 or more years, there are 3 options:

- Active surveillance
- EBRT or brachytherapy alone
- Radical prostatectomy with or without PLND

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. Active surveillance is an option, but should be approached with caution.

To see if you are a good candidate for active surveillance, your doctor should consider:

- mpMRI
- Prostate biopsy

Tests during active surveillance include:

- PSA no more than every 6 months or as needed
- Digital rectal exam no more than every 12 months or as needed
- Repeat prostate biopsy no more than every 12 months or as needed
- Repeat mpMRI no more than every 12 months or as needed

Guide 9

Initial therapy options by life expectancy: Favorable intermediate-risk group

Less than 10 years	Observation (preferred)
	EBRT or brachytherapy alone
10 or more years	Active surveillance
	EBRT or brachytherapy alone
	<div>➔</div> Radical prostatectomy with or without PLND <div> If adverse feature(s) and no lymph node metastases, then one from below: <ul style="list-style-type: none"> • EBRT • EBRT with 6 months of ADT • Observation </div>
	<div>➔</div> Radical prostatectomy with or without PLND <div> If lymph node metastases, then one from below: <ul style="list-style-type: none"> • ADT • ADT with EBRT • Observation </div>

Radiation therapy

A treatment option for some men with favorable-intermediate risk is radiation therapy. This may include EBRT or brachytherapy alone.

Radical prostatectomy

If you are expected to live 10 or more years, a radical prostatectomy may be an option. Your pelvic lymph nodes may also be removed if their risk for cancer is 2 percent (2%) or higher. Your doctor will determine your risk using a nomogram.

When your prostate is removed, a sample will be sent to a pathologist to see how much cancer there is in your prostate. Your PSA will also be tested.

After a radical prostatectomy, you might have adjuvant therapy. Adjuvant therapy is treatment after surgery that helps to stop the cancer from returning. Options are based on the presence of high-risk (adverse) features and cancer (metastasis) in the lymph nodes. Cancer that has metastasized to nearby lymph nodes is called node-positive disease.

Adverse features include:

- Cancer in surgical margins
- Cancer outside the prostatic capsule
- Cancer in the seminal vesicle(s)
- PSA is detected

If your prostate cancer has adverse features and there are no lymph node metastases, the options are:

- EBRT
- EBRT with 6 months of ADT
- Observation

EBRT will target areas where the cancer cells have likely spread. ADT might be added to EBRT. Treatment will be started after you've healed from the prostate operation.

If test results do not find high-risk features or cancer in the lymph nodes, then no more treatment is needed. You may start observation.

If there are lymph node metastases, then the treatment options are:

- ADT
- ADT with EBRT
- Observation

ADT is used to suppress or block the amount of testosterone in the body. EBRT might be added to ADT. EBRT will target areas where the cancer cells have likely spread. Observation is an option if the cancer isn't causing symptoms.

Unfavorable intermediate risk

Unfavorable intermediate-risk group 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

[Guide 10](#) lists the treatment options for men in the unfavorable intermediate-risk group. Treatment options are based on life expectancy.

Life expectancy: Less than 10 years

If your life expectancy is less than 10 years, there are 5 options:

- Observation (preferred)
- EBRT
- EBRT with 4 months of ADT
- EBRT with brachytherapy
- EBRT with brachytherapy and 4 months of ADT

Observation

Observation is the preferred option for those with a life expectancy of less than 10 years. The cancer may not progress quickly enough to cause problems within 10 years. Observation consists of testing on a regular basis so that supportive care with palliative ADT can be given if symptoms from the cancer are likely to start. Tests during observation include PSA and digital rectal exam. Active surveillance is not recommended for patients in this risk group.

Guide 10**Initial therapy options by life expectancy: Unfavorable intermediate-risk group**

Less than 10 years	Observation (preferred)
	EBRT
	EBRT with 4 months of ADT
	EBRT with brachytherapy
	EBRT with brachytherapy and 4 months of ADT
10 or more years	Radical prostatectomy with or without PLND <div> ➔ If adverse feature(s) and no lymph node metastases, then one from below: <ul style="list-style-type: none"> • EBRT • EBRT with 6 months of ADT • Observation </div> <div> ➔ If lymph node metastases, then one from below: <ul style="list-style-type: none"> • ADT • ADT with EBRT • Observation </div>
	EBRT
	EBRT with 4 months of ADT
	EBRT with brachytherapy
	EBRT with brachytherapy and 4 months of ADT

Life expectancy: 10 or more years

If your life expectancy is 10 or more years, the options are:

- Radical prostatectomy with or without PLND
- EBRT
- EBRT with 4 months of ADT
- EBRT with brachytherapy
- EBRT with brachytherapy and 4 months of ADT

Radical prostatectomy

If you are expected to live 10 or more years, a radical prostatectomy is an option. Your pelvic lymph nodes may also be removed (PLND) if your risk for them having cancer is 2 percent (2%) or higher. Your doctor will determine your risk using a nomogram.

The tissue that will be removed from your body during the operation will be sent to a pathologist to see how far the cancer has spread within the tissue. After the operation, your PSA level will also be tested. You may receive more treatment after surgery. This is called adjuvant treatment.

Adjuvant treatment helps to stop the cancer from returning. Adjuvant is treatment given after a primary treatment like surgery in this case. Adjuvant options are based on high-risk or adverse features and lymph node metastasis. Adverse features suggest that not all of the cancer was removed during surgery.

Adverse features include:

- Cancer in the surgical margin
- Cancer outside the prostatic capsule
- Cancer in the seminal vesicle(s)
- PSA levels of 10 to 20 ng/mL

If test results find no adverse features, no lymph node metastases, and a low or undetectable PSA, then you may start observation.

If there are adverse features, but no lymph node metastases, then there are 3 adjuvant options:

- EBRT
- EBRT with 6 months of ADT
- Observation

EBRT will target areas where the cancer cells have likely spread. ADT might be added to EBRT. Treatment will be started after you've healed from the prostate operation. Observation is also an option to monitor your condition.

There are 3 options if cancer is found in lymph nodes:

- ADT
- ADT with EBRT
- Observation

If your PSA levels are undetectable, observation is an option. Treatment with ADT and radiation can be started if the levels rise.

Radiation therapy

A treatment option for all men with unfavorable intermediate risk is radiation therapy. LDR or HDR brachytherapy can be used with EBRT for intermediate-risk cancers. Your doctor may want to add ADT to your radiation therapy.

High risk or very high risk

High-risk group is for those who have one of the following:

- T3a stage
- Grade Group 4
- Grade Group 5
- PSA of more than 20 ng/mL

Very-high-risk group is for those who have one of the following:

- T3b to T4 stage
- Primary Gleason pattern 5
- More than 4 biopsy cores with Grade Group 4 or 5

Treatment for high-risk and very-high-risk prostate cancer is more aggressive. [See Guide 11.](#)

Treatment options are based on the following:

- Life expectancy of 5 years or less with no symptoms
- Life expectancy of more than 5 years or you have symptoms

Life expectancy: 5 years or less and no symptoms

There are 3 options when life expectancy is 5 years or less or there are no symptoms:

- Observation
- ADT
- EBRT

Guide 11

Initial therapy options by life expectancy: High-risk or very-high-risk group

5 years or less with no symptoms	Observation
	ADT
	EBRT
More than 5 years or has symptoms	EBRT with 18 months to 3 years of ADT
	EBRT and brachytherapy with 1 to 3 years of ADT
	<div> <div>➔</div> <div> <p>If adverse feature(s) and no lymph node metastases, then one from below:</p> <ul style="list-style-type: none"> • EBRT • EBRT with 6 months of ADT • Observation </div> </div>
	<div> <div>➔</div> <div> <p>If lymph node metastases, then one from below:</p> <ul style="list-style-type: none"> • ADT • ADT with EBRT • Observation </div> </div>

Observation

Observation is the option for most people. Observation consists of testing on a regular basis so that palliative ADT can be given if symptoms from the cancer are likely to start.

Tests during observation include:

- PSA no more than every 6 months or as needed
- Digital rectal exam no more than every 6 months or as needed

Hormone therapy

ADT can be considered. Androgen deprivation therapy can be surgical or medical castration. Surgery to remove the testicles is called an orchiectomy. Other forms of ADT are systemic therapies (drugs).

Radiation therapy

EBRT can be considered.

Life expectancy: More than 5 years or has symptoms

If your life expectancy is more than 5 years or you have symptoms, there are 3 options:

- EBRT with 18 months to 3 years of ADT (called long-term ADT)
- EBRT with brachytherapy and 1 to 3 years of ADT (called long-term ADT)
- Radical prostatectomy with PLND

Radiation therapy

Option 1 is EBRT to the prostate and pelvic lymph nodes and long-term ADT. If you will receive ADT, it will be given before, during, and after radiation therapy for 18 months to 3 years. ADT alone is not enough.

Option 2 is EBRT plus brachytherapy and long-term ADT. If you will receive ADT, it will be given before, during, and after radiation therapy for a total of 1 to 3 years. ADT alone is not enough.

Radical prostatectomy

If you are expected to live more than 5 years, a radical prostatectomy with the removal of your pelvic lymph nodes (PLND) is an option. Your age and overall health will be a factor in deciding if this is a good option.

The tissue that will be removed from your body during the operation will be sent to a pathologist to see how far the cancer has spread within the tissue. After the operation, your PSA level will also be tested. You may receive more treatment after surgery. This is called adjuvant treatment.

Adjuvant treatment helps to stop the cancer from returning. Options for adjuvant treatment after a prostatectomy are based on the presence of adverse (high-risk) features and cancer in the lymph nodes.

Adverse features may include:

- Cancer in surgical margins
- Cancer outside the prostatic capsule
- Cancer in the seminal vesicle(s)
- PSA is detected

If test results find no adverse features or cancer in the lymph nodes, no more treatment is needed. Your cancer will be monitored.

If test results find adverse features but no cancer in the lymph nodes, then there are 3 options:

- EBRT
- EBRT with 6 months of ADT
- Observation

EBRT will target areas where the cancer cells have likely spread. Treatment will be started after you've healed from the operation. ADT might be added to EBRT.

There are 3 options if cancer is found in lymph nodes:

- ADT
- ADT with EBRT
- Observation

The first option is to start ADT now. EBRT may be given with ADT. If your PSA levels are undetectable, starting observation is an option. Supportive care with ADT can be started if PSA levels rise.

Regional cancer risk

Regional cancer is sometimes referred to as nodal disease because it is prostate cancer that has spread or metastasized in nearby lymph nodes (N1). It has not spread to distant parts of the body. This is cancer that might be found during a radical prostatectomy, PLND, or during other tests. Treatment aims to prevent or delay cancer spreading to other areas of the body.

[See Guide 12.](#)

Treatment is based on the following:

- Life expectancy is 5 years or less AND you have no symptoms
- Life expectancy is more than 5 years OR you have symptoms

Guide 12

Initial therapy options by life expectancy: Regional risk group

5 years or less with no symptoms	Observation	<p>Treatment followed by:</p> <ul style="list-style-type: none"> • Physical exam with PSA every 6 months • Bone scan for symptoms of bone metastases and as often as every 6 to 12 months
	ADT	
More than 5 years or has symptoms	EBRT with ADT (preferred)	
	EBRT with ADT and abiraterone and prednisone	
	EBRT with ADT and abiraterone and methylprednisolone	
	ADT	
	ADT with abiraterone and prednisone	
	ADT with abiraterone and methylprednisolone	

Life expectancy: 5 years or less and no symptoms

If your life expectancy is 5 years or less and you have no symptoms, there are 2 options:

- Observation
- ADT

Observation

Observation consists of testing on a regular basis so that palliative ADT can be given if symptoms from the cancer are likely to start.

Tests during observation include:

- PSA no more than every 6 months or as needed
- Digital rectal exam no more than every 6 months or as needed

Hormone therapy

ADT is an option.

Life expectancy: More than 5 years or has symptoms

If your life expectancy is more than 5 years or you have symptoms caused by prostate cancer, then you have the following treatment options:

- EBRT with ADT (preferred option)
- EBRT with ADT and abiraterone and prednisone
- EBRT with ADT and abiraterone and methylprednisolone
- ADT
- ADT with abiraterone and prednisone
- ADT and abiraterone and methylprednisolone

Radiation therapy

The preferred treatment option is EBRT with ADT. EBRT is given to the primary tumor located in the prostate.

Radiation therapy

Radiation therapy uses high-energy radiation from x-rays, gamma rays, and other sources to kill cancer cells and shrink tumors. It is also used to treat pain.



Hormone therapy

Androgen deprivation therapy (ADT) can be surgical or medical castration. Surgery to remove the testicles is called an orchiectomy. Other forms of ADT are systemic therapies (drugs). Both methods work equally well. ADT may be used alone, with EBRT, and with other hormone therapies.

Monitoring

Treatment is followed by monitoring.

Monitoring includes:

- Physical exam with PSA every 6 months
- Bone scan for symptoms of bone metastases and as often as every 6 to 12 months

After initial treatment

After initial treatment is finished you will be monitored for cancer that returns called recurrence. Monitoring will depend on your initial treatment.

If your initial treatment was EBRT, EBRT with ADT that was limited to 4 or 6 months, or a radical prostatectomy, then you will have these follow-up tests:

- PSA every 6 to 12 months for 5 years, then every year after that
- Digital rectal exam every 12 months

If PSA is not detected, then the digital rectal exam might not be done. You might have a PSA more often.

If you have lymph node metastases (N1) and are on ADT, are on observation, or lymph node metastases are found after a radical prostatectomy, then you will have these follow-up tests:

- Physical exam with a PSA every 6 months
- Bone scan for symptoms of bone metastases and as often as every 6 to 12 months

If cancer returns, imaging and other tests will be done.

Review

- Observation is recommended for those with a life expectancy of 5 years or less.
- One option for very-low-, low-risk, and favorable intermediate-risk cancers is not to start treatment since the cancer might never cause problems. Otherwise, radiation therapy and surgery are options.
- For favorable intermediate-risk or unfavorable intermediate-risk cancer, treatment options include observation, radiation therapy, or surgery.
- Treatment for high-risk and very-high-risk cancer is more aggressive. It may be treated with radiation or surgery. For those who choose surgery, radiation therapy is often needed after surgery. Sometimes long-term hormone therapy is added to radiation therapy. Observation is also an option.
- Regional cancer may be treated with observation, hormone therapy, or radiation therapy.

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PSA persistence or recurrence

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In PSA persistence, PSA levels do not lower after surgery or radiation therapy. When PSA levels fall to zero, but cancer later returns, it is called recurrence. PSA persistence or recurrence that happens after surgery is treated differently than PSA persistence or recurrence after radiation therapy.

PSA levels should be almost undetectable after a radical prostatectomy or external beam radiation therapy (EBRT). When PSA levels don't fall to near zero after treatment, it is called **PSA persistence**.

When cancer returns after PSA levels fall to near zero, it is called **recurrence**. Cancer may come back in the same place or in a different area of the body. Recurrence after a radical prostatectomy is treated differently than cancer that returns after EBRT.

Sometimes, cancer progresses to metastatic disease without PSA persistence or recurrence. This is called castration-naïve prostate cancer.

Recurrence after prostatectomy

After a radical prostatectomy, your PSA level should fall to near zero since the whole prostate was removed. If this doesn't happen, it may be a sign of persistent cancer.

If your PSA level falls to zero or is undetectable, but later increases twice in a row, cancer may have returned (recurrence). The time it takes the PSA level to double will be calculated as PSA doubling time (PSADT).

Your doctor will consider the following tests for staging:

- PSADT
- Bone scan
- Chest CT
- CT of abdomen and pelvis or MRI of abdomen and pelvis
- PET/CT or PET/MRI
- Prostate bed biopsy

Treatment

Treatment will be based on if tests find distant metastases. [See Guide 13](#).

No metastases (M0)

If there are no distant metastases, then the treatment options are:

- EBRT
- EBRT with ADT
- Observation

Giving ADT with EBRT can prolong survival in certain patients. Intermittent ADT should be considered if you choose EBRT with ADT. If you are older and your PSADT is longer than 12 months, then observation is an option. Observation consists of testing on a regular basis so that palliative ADT can be given if symptoms from the cancer are likely to start.

ADT may include:

- LHRH agonist alone
- LHRH agonist with an anti-androgen
- LHRH antagonist

Distant metastases (M1)

If distant metastases are found, then the treatment options are:

- Observation
- Systemic therapy

Observation consists of testing on a regular basis so that palliative ADT can be given if symptoms from the cancer are likely to start.

ADT is a type of systemic therapy. ADT can be used alone or with one of the following:

- Docetaxel
- Abiraterone with prednisone
- Apalutamide
- Enzalutamide
- EBRT to the primary tumor for low-volume metastases
- Abiraterone with methylprednisolone

After treatment

After treatment, testing to monitor for disease progression will begin.

It should include:

- Bone scan
- Chest CT
- CT of abdomen and pelvis or MRI of abdomen and pelvis
- PET/CT or PET/MRI (as needed)

Guide 13

Treatment options for PSA persistence or recurrence after radical prostatectomy

No distant metastases

EBRT

EBRT with ADT

Observation



When cancer progresses,

- [See Chapter 8](#): castration-naïve prostate cancer
- [See Chapter 9](#): castration-resistant prostate cancer

Distant metastases

Observation

ADT alone or with one of the following:

- Docetaxel
- Abiraterone with prednisone
- Apalutamide
- Enzalutamide
- EBRT to the primary tumor for low-volume metastases
- Abiraterone with methylprednisolone



When cancer progresses,

- [See Chapter 8](#): castration-naïve prostate cancer
- [See Chapter 9](#): castration-resistant prostate cancer

Recurrence after radiation therapy

After radiation therapy, PSA levels usually fall to near zero. If your PSA level falls to near zero, but later increases by at least 2 ng/mL, cancer may have returned. Other PSA changes might also be a sign of recurrence. Signs of cancer may be found in a digital rectal exam. The time it takes the PSA level to double will be calculated as PSA doubling time (PSADT).

When PSA scores or a digital rectal exam suggest there's cancer, treatment is based on if there are distant metastases.

Your doctor will consider the following tests to look for recurrence:

- PSADT
- Bone scan
- TRUS biopsy
- Prostate MRI
- Chest CT
- CT of abdomen and pelvis or MRI of abdomen and pelvis
- PET/CT or PET/MRI
- Imaging studies will be done to look for distant metastases

Guide 14

Treatment options for PSA persistence or recurrence after radiation therapy

Local therapy is an option

If TRUS biopsy finds cancer:

- Observation
- Radical prostatectomy with PLND
- Cryotherapy
- HIFU
- Brachytherapy

TRUS biopsy doesn't find cancer:

- Observation
- ADT

When cancer progresses,

- [See Chapter 8](#): castration-naïve prostate cancer
- [See Chapter 9](#): castration-resistant prostate cancer

Local therapy is not an option

ADT (especially if bone scan shows bone metastases)

Observation

When cancer progresses,

- [See Chapter 8](#): castration-naïve prostate cancer
- [See Chapter 9](#): castration-resistant prostate cancer

Treatment

Treatment will be based on if you are a candidate for local therapy. Local therapy is treatment that focuses on the prostate. It includes radical prostatectomy with PLND, cryotherapy, high-intensity focused ultrasound (HIFU), and brachytherapy. [See Guide 14.](#)

Local therapy is an option for you if all of the following are true:

- Original clinical stage was T1–T2, NX (cancer in lymph nodes can't be assessed) or N0
- Life expectancy of more than 10 years
- PSA is now at less than 10 ng/mL

To confirm that local therapy is right for you, the following tests will be done:

- PSADT
- Bone scan
- Prostate MRI
- TRUS biopsy

A fast PSA doubling time suggests cancer that has spread outside the prostate. It will be used to find your risk level.

The following tests will be considered by your doctor:

- Chest CT
- CT of abdomen and pelvis or MRI of abdomen and pelvis
- PET/CT or PET/MRI

If cancer has returned to the prostate but has not spread to distant sites, you may have local therapy.

If local therapy is right for you, then there are 5 treatment options to consider:

- Observation
- Radical prostatectomy with PLND
- Cryotherapy
- HIFU
- Brachytherapy

Local therapy is not an option

Local therapy is not an option if it is likely your cancer has spread. A bone scan will be done to check for bone metastases.

There are 2 treatment options if it is likely your cancer has spread:

- ADT (especially if a bone scan shows metastases)
- Observation

After treatment

After treatment you will be monitored for disease progression. If disease progression is suspected, then tests to confirm that cancer has grown or spread should include:

- Bone scan
- Chest CT
- CT of abdomen and pelvis or MRI of abdomen and pelvis
- PET/CT or PET/MRI (as needed)

Review

- When PSA levels rise after prostate cancer treatment with surgery or radiation therapy, it is called PSA recurrence. This could mean that the cancer has returned (recurrence) or that the treatment did not succeed in reducing the amount of cancer in the body (persistence).
- Cancer that returns after a radical prostatectomy will be treated differently than cancer that returns after radiation therapy.
- Treatment is based on whether there are distant metastases and what type of treatment you had before.

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Castration-naïve prostate cancer

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If you are not taking ADT and your prostate cancer progresses or gets worse, it is called castration-naïve prostate cancer. You can have castration-naïve prostate cancer if your initial or first diagnosis was metastatic prostate cancer. Together, you and your doctor will choose a treatment plan that is best for you.

Systemic therapy

Castration-naïve prostate cancer is usually treated with hormone therapy. This helps to prevent the spread of cancer. Treatment options for castration-naïve prostate cancer are based on if the cancer has metastasized (M1) or hasn't metastasized (M0). [See Guide 15.](#)

No metastases (M0)

If there are no metastases, then there are 2 options:

- Observation (preferred)
- ADT

Observation

Observation is the preferred option for castration-naïve prostate cancer without metastases (M0). Observation consists of testing on a regular basis so that palliative care with ADT can be given if symptoms from the cancer are likely to start. Tests during observation include PSA and digital rectal exam.

Guide 15

Systemic therapy options for castration-naïve cancer with or without metastases

M0	<ul style="list-style-type: none"> • Observation (preferred) • ADT 	➔	Treatment followed by: <ul style="list-style-type: none"> • Physical exam with PSA every 3 to 6 months • Bone scan for symptoms of bone metastases and as often as every 6 to 12 months
M1	ADT alone or with one of the following: <ul style="list-style-type: none"> • Docetaxel • Abiraterone with prednisone • Apalutamide • Enzalutamide • EBRT to the primary tumor for low-volume metastases • Abiraterone with methylprednisolone 	➔	Treatment followed by: <ul style="list-style-type: none"> • Physical exam with PSA every 3 to 6 months • Bone scan for symptoms of bone metastases and as often as every 6 to 12 months

Hormone therapy

Surgical castration that removes both testes is called a bilateral orchiectomy. This surgery is a type of androgen deprivation therapy (ADT). This is a treatment option for both M0 and M1 cancers. An orchiectomy can be combined with other ADTs. Hormones such as an LHRH agonist or LHRH antagonist, or LHRH agonist with an anti-androgen are types of ADT used to treat this cancer.

Metastases (M1)

You will have tests to confirm metastases. Tests might include:

- Bone scan
- Chest CT
- CT of abdomen/pelvis or MRI of abdomen/pelvis with or without contrast
- PET/CT or PET/MRI
- Tumor testing and gene testing

Treatment options will be ADT alone or with one of the following:

- Docetaxel
- Abiraterone with prednisone
- Apalutamide
- Enzalutamide
- EBRT to the primary tumor for low-volume metastases
- Abiraterone with methylprednisolone

Hormone therapy

An orchiectomy is a type of ADT. It can be combined with docetaxel (a chemotherapy) or abiraterone (a secondary hormone therapy). Other forms of ADT are used alone or in combination with steroids, chemotherapy, and secondary hormone therapy to treat this cancer.

ADT can be toxic and cause side effects. To reduce side effects, intermittent ADT might be an option. Intermittent treatment alternates between periods of time when you are on and off ADT. It can provide similar cancer control to continuous hormone therapy, but gives your body a break from treatment.

Intermittent ADT often begins with continuous treatment that is stopped after about 1 year. Treatment is resumed when a certain PSA level is reached or symptoms appear. PSA levels that trigger restarting treatment may depend on rate of rise, time off therapy, PSA level at prior treatment, or other factors specific to the person. Intermittent ADT is an option for both M0 and M1 disease.

Intermittent ADT requires close monitoring of PSA and testosterone levels, especially during off-treatment periods.

LHRH agonists can cause an increase in testosterone for several weeks. This increase is called a “flare.” Flare can cause pain if bone metastases can be seen on imaging tests (overt metastases). The pain doesn’t mean the cancer is growing. You might be given a medicine to prevent flare.

Ask your doctor if you have concerns about the side effects of the ADT you are being prescribed and what might be done to prevent these side effects.

Radiation therapy

EBRT might be added to ADT to treat bone metastases or for symptoms caused by prostate cancer.

Monitoring

While on hormone therapy, your doctor will monitor treatment results. A rising PSA level suggests the cancer is growing. This increase is called a biochemical relapse. If PSA levels are rising, your testosterone levels should be tested to see if they are at castrate levels (less than 50 ng/dL). Castrate levels must be maintained.

Tests to monitor for disease progression include:

- Physical exam with PSA every 3 to 6 months
- Bone scan for symptoms of bone metastases and as often as every 6 to 12 months

If the above tests show that your cancer might be growing or spreading, then the following tests are recommended:

- Bone scan
- Chest CT
- CT of abdomen with pelvis or MRI of abdomen with pelvis
- Consider PET/CT or PET/MRI

Progression

If your castration-naïve prostate cancer is getting worse, by growing or spreading and not responding to treatment, then it might be castration-resistant prostate cancer. This is discussed in the next chapter.

Review

- Cancer that progresses when you are not on androgen deprivation therapy (ADT) is called castration-naïve prostate cancer. It can be metastatic (M1) or non-metastatic (M0).
- M1 castration-naïve prostate cancer is treated with ADT alone or with another therapy like EBRT, chemotherapy, or secondary hormone therapy.
- Surgery to remove the testicles (orchiectomy) is a form of ADT and is an option for both M0 and M1 castration-naïve prostate cancer.
- ADT might be used alone or with chemotherapy, radiation therapy, steroids, or other hormone therapies.
- Observation is the preferred option for M0 castration-naïve prostate cancer.
- During treatment you will have regular physical exams, PSA tests, and bone scans (if needed).
- If a test shows that your cancer may be progressing, then the next treatment will be based on if there are any metastases.

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Castration-resistant prostate cancer

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When prostate cancer stops responding to ADT, it is called castration-resistant prostate cancer or CRPC. Treatment is based on whether or not there are metastases. If there are metastases, treatment is based on the type of metastasis. Together, you and your doctor will choose a treatment plan that is best for you.

Overview

When prostate cancer progresses despite a testosterone castrate level of less than 50 ng/dL, it is called castration-resistant prostate cancer (CRPC). This means that prostate cancer has continued to grow even though testosterone levels are very low. Many early-stage prostate cancers need testosterone to grow, but castration-resistant prostate cancer does not.

Most men with advanced prostate cancer will stop responding to androgen deprivation therapy (ADT). As a result, another hormone therapy might be added to ADT. This is called secondary hormone therapy. As another option, ADT might be added to chemotherapy.

Treatment options are based on if there are:

- Metastases (M1) and the type of metastases
- No metastases (M0)

If there are no metastases, CRPC is written as M0 CRPC.

If there are metastases, it is written as M1 CRPC.

Even though cancer has returned during ADT, it is important to keep taking this therapy. To treat CRPC, testosterone levels need to stay at castrate levels (less than 50 ng/dL). You might stay on your current treatment or your doctor might switch the type of hormone therapy.

Imaging tests might be needed to look for signs of distant metastases.

Systemic therapy for M0 CRPC

M0 CRPC is castration-resistant prostate cancer without signs of distant metastases. [See Guide 16.](#)

Treatment

You will continue to have imaging tests to watch for distant metastases and blood tests to monitor PSA levels. In addition, you will stay on ADT to keep testosterone levels at less than 50 ng/dL. The goal of treatment is to delay the spread of prostate cancer and limit the side effects of treatment.

PSA doubling time (PSADT) will be measured. PSADT is the time it takes for the PSA level to double. Treatment options will be based on PSADT.

PSADT of 10 or more months

If it takes more than 10 months for your PSA to double, then there are 2 treatment options:

- Observation
- Other secondary hormone therapy

PSADT of 10 months or less

If it takes 10 months or less for your PSA to double, then these are your hormone therapy options:

- Apalutamide
- Darolutamide
- Enzalutamide
- Other secondary hormone therapy

If your PSA level increases with any of the above treatments, then the next steps will be based on whether or not there are metastases.

No metastases (M0)

If there are no metastases, then your doctor will change or keep your current hormone treatment and continue monitoring your cancer. Your doctor will look for signs that your cancer might be getting worse. If your cancer is not getting worse, it may be a sign that the current treatment is keeping your cancer stable.

Metastases (M1)

The following workup will be done to confirm metastases:

- Bone imaging
- Chest CT
- CT of abdomen/pelvis or MRI of abdomen/pelvis with or without contrast
- Consider PET/CT or PET/MRI

Guide 16

Systemic therapy options for M0 CRPC

PSADT more than 10 months	<ul style="list-style-type: none"> • Observation • Other secondary hormone therapy 	<p>➔</p> <p>If PSA increasing, then imaging to look for metastases should include:</p> <ul style="list-style-type: none"> • Bone scan • Chest CT • CT of abdomen and pelvis or MRI of abdomen and pelvis • Consider PET/CT or PET/MRI 	<p>➔</p> <p>If no metastases, then change or keep current treatment</p> <p>If metastases, see M1 CRPC</p>
PSADT 10 months or less	<ul style="list-style-type: none"> • Apalutamide • Darolutamide • Enzalutamide • Other secondary hormone therapy 	<p>➔</p> <p>If PSA not increasing, then continue current treatment and continue monitoring</p>	

There are different types of metastases:

- Bone
- Lymph and soft tissue
- Visceral

Low-volume and high-volume are terms used to describe metastases.

- **Low-volume metastatic (M1) disease** includes visceral metastases and/or 3 or fewer bone metastases.
- **High-volume metastatic (M1) disease** includes visceral metastases and/or 4 or more bone metastases with 1 or more bone metastasis outside the spine or pelvis.

The next section describes systemic treatment options for castration-resistant prostate cancer with metastases (M1 CRPC). These options for metastatic CRPC are based on whether the cancer is or isn't in the internal (visceral) organs.

Systemic therapy for M1 CRPC

Treatment for M1 CRPC will be based on the type of metastases. You will continue androgen deprivation therapy (ADT) to maintain castrate levels of less than 50 ng/dL.

Other options include:

- Bone therapy
- Immunotherapy with sipuleucel-T
- Palliative radiation therapy for painful bone metastases

Treatment for M1 CRPC should include best supportive care. Supportive care (also known as palliative care) is health care that relieves symptoms caused by cancer and improves quality of life. It is not cancer treatment. It might include pain relief, emotional or spiritual support, or family counseling. Best supportive care is always an option. Best supportive care is treatment to improve quality of life and relieve discomfort. [See Guide 17.](#)

Guide 17 Treating M1 CRPC

- Continue ADT to maintain castrate levels of less than 50 ng/dL
- Bone therapy with denosumab (preferred) or zoledronic acid if bone metastases are present
- Immunotherapy with sipuleucel-T
- Palliative radiation therapy for painful bone metastases
- Best supportive care



If adenocarcinoma with no visceral metastases, [see Guide 19](#)

If adenocarcinoma with visceral metastases, [see Guide 22](#)

If small cell or neuroendocrine prostate cancer, then [see Guide 18](#)

Imaging tests will be done to confirm bone metastases.

The following tests will be considered:

- Metastatic lesion biopsy
- Tumor testing for MSI-H or dMMR
- Genetic counseling and germline testing

If tests find small cell or neuroendocrine prostate cancer, then treatment options are found in [Guide 18](#).

Guide 18 Options for small cell and neuroendocrine prostate cancer

Chemotherapy options:

- Cisplatin with etoposide
- Carboplatin with etoposide
- Docetaxel with carboplatin

Clinical trial

Best supportive care

No visceral metastases

This is treatment for metastatic castration-resistant prostate cancer (CRPC). It is cancer that has spread to bones, but not internal (visceral) organs. It is possible to try all treatment options listed. Best supportive care is always an option. Radium-223 is not approved to be used with docetaxel or any other chemotherapy such as cabazitaxel. Chemotherapy is typically used for those who have symptoms or whose cancer shows signs of rapid progression.

First-line treatment

The first-line systemic therapy options for M1 CRPC without visceral metastases are listed in [Guide 19](#). It is possible to try all treatment options listed. Best supportive care is always an option.

Workup for progression should include:

- Chest CT
- Bone imaging
- Abdominal with pelvic CT or abdominal with pelvic MRI

Guide 19 First-line therapy options for M1 CRPC

Abiraterone with prednisone

Docetaxel

Enzalutamide

Radium-223 for bone metastases that are causing symptoms

Abiraterone with methylprednisolone

Clinical trial

Other secondary hormone therapy

Guide 20

Second-line options for M1 CRPC

Options after enzalutamide or abiraterone

Docetaxel

Radium-223 for bone metastases that are causing symptoms (preferred)

Pembrolizumab for MSI-H or dMMR

One from below if not taken before:

- Abiraterone with prednisone
- Abiraterone with methylprednisolone
- Enzalutamide
- Sipuleucel-T
- Clinical trial
- Other secondary hormone therapy
- Best supportive care

Options after docetaxel

Abiraterone with prednisone

Cabazitaxel

Enzalutamide

Radium-223 for bone metastases that are causing symptoms

Abiraterone with methylprednisolone

Pembrolizumab for MSI-H or dMMR

One from below if not taken before:

- Sipuleucel-T
- Clinical trial
- Consider docetaxel rechallenge
- Mitoxantrone with prednisone
- Other secondary hormone therapy
- Best supportive care

Possible tests include:

- Biopsy of metastasis
- AR-V7 testing

Tumors in M1 CRPC may have a specific gene mutation called androgen receptor splice variant 7 (AR-V7). Circulating tumor cells (CTCs) are tested for AR-V7. The results can help guide treatment options when cancer progresses after a first-line treatment of abiraterone or enzalutamide in M1 CRPC.

Second-line treatment

The next or second-line therapy is based on whether the first therapy was:

- Enzalutamide or abiraterone
- Docetaxel

If you were treated with a systemic therapy for non-visceral metastases, then you will try a different therapy than before. It is possible to try all treatment options listed. Best supportive care is always an option. [See Guide 20.](#)

Radium-223

Radium-223 is an option for metastases that occur mostly in the bones and not in the internal (visceral) organs. It is used to help with symptoms caused by bone metastases.

Sipuleucel-T

Sipuleucel-T is an immunotherapy created from your own immune cells. It is used to treat metastatic CRPC where the metastases are in the bone and not in soft tissue, lymph nodes, or visceral organs.

For treatments other than sipuleucel-T, a drop in PSA levels or improvement in imaging tests occurs if treatment is working. This doesn't usually happen right away with sipuleucel-T.

Don't be discouraged if your test results don't improve.

When M1 CRPC progresses

If castration-resistant prostate cancer without visceral metastases progresses, the possible treatment options are listed in [Guide 21](#).

- If docetaxel fails, your doctor may want to try docetaxel again. This is called docetaxel rechallenge.
- Everyone with CRPC should receive best supportive care.
- Joining a clinical trial is strongly supported at any stage of disease.
- Talk with your doctor about what you want from treatment. You can always decide not to continue with systemic therapy.

Guide 21 Options for when M1 CRPC progresses

One from below if not taken before:

- Abiraterone with prednisone
- Enzalutamide
- Cabazitaxel
- Radium-223 for bone metastases that are causing symptoms
- Abiraterone with methylprednisolone
- Mitoxantrone with prednisone
- Pembrolizumab for MSI-H or dMMR

Clinical trial

Docetaxel rechallenge

Other secondary hormone therapy

Best supportive care

Visceral metastases

Visceral metastases are found in the liver, lung, adrenal gland, peritoneum, or brain. The peritoneum lines the abdominal wall and covers most of the organs in the abdomen. Lymph nodes and soft tissues like muscle or blood vessels are not considered visceral.

First-line treatment

The first-line systemic therapy options for M1 CRPC with visceral metastases are found in [Guide 22](#). It is possible to try all treatment options listed. Best supportive care is always an option.

Guide 22 First-line options for M1 CRPC with visceral metastases

Docetaxel

Enzalutamide

Abiraterone with prednisone

Abiraterone with methylprednisolone

Clinical trial

Mitoxantrone with prednisone

Other secondary hormone therapy

Workup for progression should include:

- Chest CT
- Bone imaging
- Abdominal with pelvic CT or abdominal with pelvic MRI

Possible tests include:

- Biopsy of metastasis
- AR-V7 testing

Tumors in M1 CRPC often have a specific gene mutation called androgen receptor splice variant 7 (AR-V7). Circulating tumor cells (CTCs) are tested for AR-V7. The results can help guide treatment options when cancer progresses (grows or spreads) after a first-line treatment of abiraterone or enzalutamide in M1 CRPC.

Second-line treatment

The next or second-line therapy options are listed in [Guide 23](#). Treatment is based on whether the first therapy was:

- Enzalutamide or abiraterone
- Docetaxel

If you were treated with a systemic therapy for non-visceral metastases, then you will try a different therapy than before. It is possible to try all treatment options listed. Best supportive care is always an option.

Guide 23**Second-line therapy options for M1 CRPC with visceral metastases****Options after enzalutamide or abiraterone**

Docetaxel

One from below if not taken before:

- Abiraterone with prednisone
- Abiraterone with methylprednisolone
- Enzalutamide
- Cabazitaxel

Pembrolizumab for MSI-H or dMMR

Clinical trial

Other secondary hormone therapy

Best supportive care

Options after docetaxel

Abiraterone with prednisone

Enzalutamide

Cabazitaxel

Abiraterone with methylprednisolone

Pembrolizumab for MSI-H or dMMR

Clinical trial

Docetaxel rechallenge

Mitoxantrone with prednisone

Other secondary hormone therapy

Best supportive care

When M1 CRPC with visceral metastases progresses

If castration-resistant prostate cancer with visceral metastases progresses, the possible treatment options are listed in [Guide 24](#).

- If docetaxel fails, your doctor may want to try docetaxel again. This is called docetaxel rechallenge.
- Everyone with CRPC should receive best supportive care.
- Joining a clinical trial is strongly supported at any stage of disease.

Talk with your doctor about what you want from treatment. You can always decide not to continue with systemic therapy.

Guide 24

Options for when M1 CRPC with visceral metastases progresses

One from below if not taken before:

- Enzalutamide
- Cabazitaxel
- Abiraterone with prednisone
- Abiraterone with methylprednisolone
- Mitoxantrone with prednisone
- Pembrolizumab for MSI-H or dMMR

Clinical trial

Docetaxel rechallenge

Other secondary hormone therapy

Best supportive care

Review

- Advanced disease is often first treated with androgen deprivation therapy (ADT).
- Castration-resistant prostate cancer (CRPC) is prostate cancer that grows despite very-low-testosterone levels. It can be metastatic (M1 CRPC) or non-metastatic (M0 CRPC).
- Many early-stage prostate cancers need testosterone to grow, but castration-resistant prostate cancer does not.
- The goal of treatment for M0 CRPC is to delay the spread of prostate cancer and limit the side effects of treatment.
- Treatment for M1 CRPC is based on whether there are visceral (internal organ) metastases.
- Observation consists of testing on a regular basis so that palliative ADT can be given if symptoms from the cancer are likely to start.
- Treatment options for M1 CRPC without visceral metastases include chemotherapy, immunotherapy, hormone therapy, clinical trial, and bone-targeted therapy.
- Treatment options for M1 CRPC with visceral metastases include chemotherapy, hormone therapy, and clinical trial.
- Radium-233 is used to help with symptoms caused by bone metastases.
- Sipuleucel-T is used to treat metastatic CRPC where the metastases are in the bone and not in soft tissue, lymph nodes, or visceral organs.
- Everyone with CRPC should receive best supportive care.

10

Making treatment decisions

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Choosing which cancer treatment is best for you can be difficult. It is important to ask questions and engage in shared decision-making with your doctor.

It's your choice

In shared decision-making, you and your doctors share information, discuss the options, and agree on a treatment plan. Your doctors know the science behind your plan, but might not know what is important to you. Tell your doctors your goals and concerns about treatment. By working together, you can decide on a plan that works best for you when it comes to your personal and health needs.

Second opinion

After finding out you have cancer, it is normal to want to start treatment as soon as possible. While cancer can't be ignored, there is time to have another doctor 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!

Even if you like and trust your doctor, get a second opinion. If the new doctor offers other advice, make an appointment with your first doctor to talk about the differences. Do whatever you need to feel confident about your diagnosis and treatment plan. Ask questions and take notes during doctor visits. Bring someone with you to appointments, when possible.

Things you can do to prepare:

- Check with your insurance company about its rules on second opinions. You want to know about out-of-pocket costs for doctors 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. If you run into trouble having records sent, pick them up and bring them with you.

Support groups

Support groups often include people at different stages of treatment. Some may be in the process of deciding while others may be finished with treatment. At support groups, you can ask questions and hear about the experiences of other people with prostate cancer. If your hospital or community doesn't have support groups for people with prostate cancer, check out the websites in this book.

You can also reach out to a social worker or a counselor. They can help you find ways to cope or refer you to support services. These services may also be available to your family, friends, and those with children, so they can connect and get support. Seek out supportive care services by asking your care team.

Questions to ask your doctors

Possible questions to ask your doctors are on the following pages. Feel free to use these questions or come up with your own. Be clear about your goals for treatment and find out what you should expect from treatment.

Questions to ask about testing and staging

1. What tests will I have?
2. When will I have a biopsy? Will I have more than one? What are the risks?
3. Will I have any genetic tests?
4. How soon will I know the results and who will explain them to me?
5. Who will talk with me about the next steps? When?
6. What will you do to make me comfortable during testing?
7. Would you give me a copy of the pathology report and other test results?
8. What is the cancer stage? What does this stage mean in terms of survival?
9. What is the grade of the cancer? Does this grade mean the cancer will grow and spread fast?
10. Can the cancer be cured? If not, how well can treatment stop the cancer from growing?

Questions to ask about treatment

1. What are my treatment choices? What are the benefits and risks?
2. Which treatment do you recommend and why?
3. How long do I have to decide about treatment?
4. When will I start treatment? How long will treatment take?
5. How do my age, health, and other factors affect my options?
6. When will I start treatment? How long will treatment take?
7. How much will the treatment cost? How much will my insurance pay for?
8. What are the chances my cancer will return? How will it be treated if it returns?
9. I would like a second opinion. Is there someone you can recommend?
10. Which treatment will give me the best quality of life?

Questions to ask your doctors about surgery

1. What kind of surgery will I have?
2. What will be removed during surgery?
3. How long will it take me to recover from surgery?
4. How much pain will I be in? What will be done to manage my pain?
5. How will surgery affect my bladder? How long will I need the catheter?
6. What will you do to help with the discomfort of the catheter?
7. How will surgery affect my ability to get and maintain an erection?
8. What are my risks for long-term urinary issues?
9. What other side effects can I expect from surgery?
10. What treatment will I have before, during, or after surgery?

Questions to ask your doctors about side effects

1. What are the side effects of treatment?
2. What are my chances of experiencing urinary retention, urinary incontinence, bowel problems, or erectile dysfunction from prostate cancer or its treatment?
3. How long will these side effects last?
4. When should I call the doctor about my side effects?
5. What medicines can I take to prevent or relieve side effects?
6. What can I do to help with pain and other side effects?
7. Will you stop treatment or change treatment if I have side effects?
8. What side effects should I watch for? When should I call?

Questions to ask your doctors about clinical trials

1. What clinical trials are available for my type and stage of prostate cancer?
2. What are the treatments used in the clinical trial?
3. What does the treatment do?
4. Has the treatment been used before? Has it been used for other types of cancer?
5. What are the risks and benefits of this treatment?
6. What side effects should I expect? How will the side effects be controlled?
7. How long will I be on the clinical trial?
8. Will I be able to get other treatment if this doesn't work?
9. How will you know the treatment is working?
10. Will the clinical trial cost me anything? If so, how much?

Websites

American Cancer Society

cancer.org/cancer/prostatecancer/index

California Prostate Cancer Coalition (CPCC)

prostatecalif.org

Malecare Cancer Support

malecare.org

cancergraph.com

National Alliance of State Prostate Cancer Coalitions (NASPCC)

naspcc.org

National Coalition for Cancer Survivorship

[Canceradvocacy.org/toolbox](https://canceradvocacy.org/toolbox)

National Prostate Cancer Awareness Foundation (PCaAware)

pcaaware.org

Nomograms

nomograms.mskcc.org/Prostate/index.aspx

Prostate Cancer Foundation

pcf.org

Prostate Conditions Education Council (PCEC)

prostateconditions.org

Prostate Health Education Network (PHEN)

prostatehealthed.org

Urology Care Foundation

urologyhealth.org

Us TOO International Prostate Cancer Education and Support Network

ustoo.org/Home

Veterans Prostate Cancer Awareness

vetsprostate.org

ZERO - The End of Prostate Cancer

zerocancer.org



Words to know

active surveillance

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

androgen deprivation therapy (ADT)

A treatment that removes the testes or stops them from making testosterone. Can be achieved through surgery or drugs.

anti-androgen

A drug that stops the action of the hormone testosterone.

best supportive care

Treatment to improve quality of life and relieve discomfort.

bilateral orchiectomy

An operation that removes both testicles.

biopsy

A procedure that removes fluid or tissue samples to be tested for a 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 in order to keep testosterone levels low or close to zero.

castration-naïve prostate cancer

A worsening of prostate cancer when not on androgen deprivation therapy (ADT).

castration-resistant prostate cancer (CRPC)

A worsening of prostate cancer despite treatment that lowered testosterone.

combined androgen blockade (CAB)

A cancer treatment that stops the making and action of testosterone.

computed tomography (CT)

A test that uses x-rays from many angles to make a picture of the insides of the body.

cryosurgery

A treatment that kills cancer cells by freezing them. Also called cryoablation.

digital rectal exam

A study of the prostate by feeling it through the wall of the rectum.

dual energy X-ray absorptiometry (DEXA)

A test that uses small amounts of radiation to make a picture of bones. Also called bone densitometry.

erectile dysfunction

A lack of blood flow into the penis that limits getting or staying hard.

external beam radiation therapy (EBRT)

A cancer treatment with radiation received from a machine outside the body.

flare

An increase in testosterone after starting treatment to reduce its level.

Gleason grade

A rating of how much prostate cancer cells look like normal cells. A score from 1 (best) to 5 (worst) made by a pathologist based on the ability of prostate cells to form glands. The primary grade is the most common pattern, and the secondary grade is the second most common pattern. The two grades are summed to give a Gleason score.

high-dose rate (HDR) brachytherapy

Treatment with radioactive objects that are removed at the end of the treatment session.

high-intensity focused ultrasound (HIFU)

Treatment using high-intensity sound waves that make heat to kill the cancer cells.

hormone therapy

A cancer treatment that stops the making or action of hormones. Also called endocrine therapy when used for women's cancer. Also called androgen deprivation therapy when used for men's cancers.

image-guided radiation therapy (IGRT)

A treatment with radiation that is aimed at tumors using imaging tests during treatment.

intensity-modulated radiation therapy (IMRT)

Treatment with radiation that uses small beams of different strengths.

intermittent treatment

Alternating periods of time on and off treatment.

life expectancy

The number of years a person is likely to live.

low-dose rate (LDR) brachytherapy

Treatment with radioactive objects that are placed in the tumor and left to decay.

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.

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 first tumor to a new site.

multi-parametric magnetic resonance imaging (mpMRI)

A test that makes pictures that show many features of body tissue.

nerve-sparing radical prostatectomy

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

nomogram

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

observation

A period of testing for changes in cancer status while not receiving treatment.

orchiectomy

An operation that removes one or both testicles.

pelvic lymph node dissection (PLND)

An operation that removes lymph nodes between the hip bones.

perineum

The body region in men between the scrotum and anus.

persistent cancer

Cancer that is not fully treated.

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 mostly made by the prostate. Measured in nanograms per milliliter of PSA.

prostate-specific antigen density (PSAD)

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

prostate-specific antigen doubling time (PSADT)

The time during which the level of PSA—a prostate-made protein—doubles.

prostate-specific antigen (PSA) velocity

How much the level of PSA—a prostate-made protein—changes over time.

radical perineal prostatectomy

An operation that removes the prostate through one cut made between the scrotum and anus.

radical retropubic prostatectomy

An operation that removes the prostate through one large cut made below the belly button.

radiopharmaceutical

A drug that contains a radioactive substance.

recurrence

The return of cancer after a disease-free period.

seminal vesicle

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

supportive care

Health care that includes symptom relief but not cancer treatment. Also called palliative care.

surgical margin

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

testosterone

A hormone that helps the sexual organs in men to work.

three-dimensional conformal radiation therapy (3D-CRT)

A treatment with radiation that uses beams matched to the shape of the tumor.

transrectal ultrasound (TRUS)

A test that sends sound waves through the rectum to make pictures of the prostate.

ultrasound (US)

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

urethra

A tube-shaped structure that carries urine from the bladder to outside the body; it also expels semen in men.

urinary incontinence

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

urinary retention

A health condition in which urine can't be released from the bladder.

visceral disease

The spread of cancer from the first tumor to the organs within the belly.

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NCCN Cancer Centers

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

Fred & Pamela Buffett Cancer Center
Omaha, Nebraska
800.999.5465
nebraskamed.com/cancer

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

City of Hope National Medical Center
Los Angeles, California
800.826.4673
cityofhope.org

Dana-Farber/Brigham and
Women's Cancer Center
Massachusetts General Hospital
Cancer Center
Boston, Massachusetts
877.332.4294
dfbwcc.org
massgeneral.org/cancer

Duke Cancer Institute
Durham, North Carolina
888.275.3853
dukecancerinstitute.org

Fox Chase Cancer Center
Philadelphia, Pennsylvania
888.369.2427
foxchase.org

Huntsman Cancer Institute
at the University of Utah
Salt Lake City, Utah
877.585.0303
huntsmancancer.org

Fred Hutchinson Cancer
Research Center/Seattle
Cancer Care Alliance
Seattle, Washington
206.288.7222 • seattlecca.org
206.667.5000 • fredhutch.org

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

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

Mayo Clinic Cancer Center
Phoenix/Scottsdale, Arizona
Jacksonville, Florida
Rochester, Minnesota
800.446.2279 • Arizona
904.953.0853 • Florida
507.538.3270 • Minnesota
mayoclinic.org/departments-centers/mayo-clinic-cancer-center

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

Moffitt Cancer Center
Tampa, Florida
800.456.3434
moffitt.org

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

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

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
888.226.4343 • stjude.org
901.683.0055 • westclinic.com

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

UC San Diego Moores Cancer Center
La Jolla, California
858.657.7000
cancer.ucsd.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

The University of Texas
MD Anderson Cancer Center
Houston, Texas
800.392.1611
mdanderson.org

University of Wisconsin
Carbone Cancer Center
Madison, Wisconsin
608.265.1700
uwhealth.org/cancer

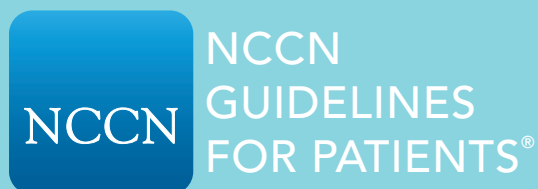
Vanderbilt-Ingram Cancer Center
Nashville, Tennessee
800.811.8480
vicc.org

Yale Cancer Center/
Smilow Cancer Hospital
New Haven, Connecticut
855.4.SMILOW
yalecancercenter.org

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