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FOR PATIENTS®

2018

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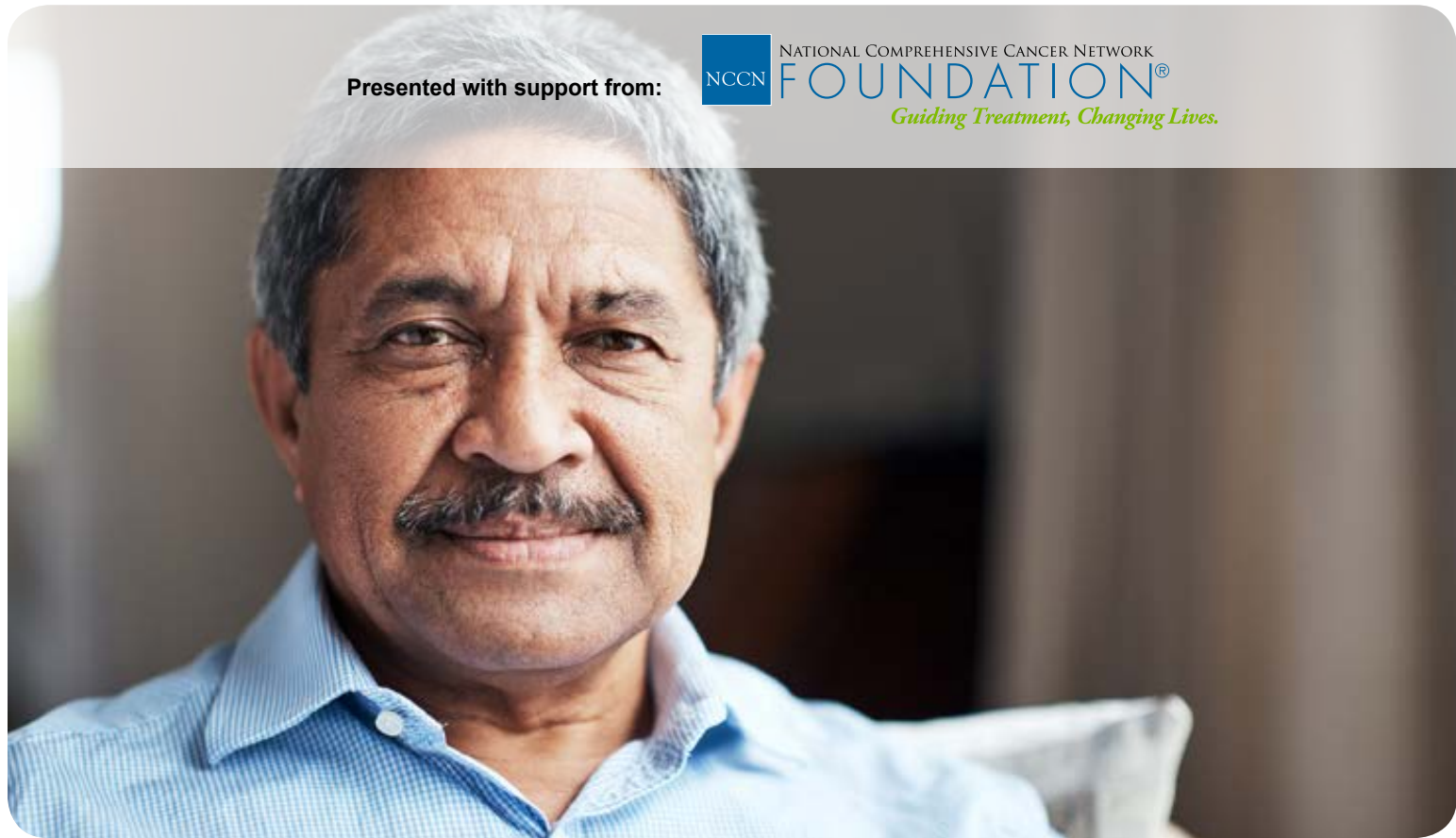
Prostate Cancer

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NATIONAL COMPREHENSIVE CANCER NETWORK
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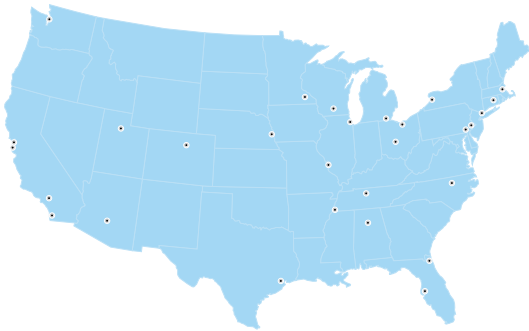
LEARNING that you have cancer can be overwhelming.

Prostate cancer is the most common type of cancer in men living in the United States. Learning that you have prostate cancer can feel overwhelming. The goal of this book is to help you get the best cancer treatment. This book presents which cancer tests and treatments are recommended by experts in prostate cancer.

The National Comprehensive Cancer Network® (NCCN®) is a not-for-profit alliance of 28 of the world's leading cancer centers. Experts from NCCN have written treatment guidelines for prostate cancer doctors. These treatment guidelines suggest what the best practice is for cancer care. The information in this patient book is based on the guidelines written for doctors.

This book focuses on the treatment of prostate cancer. Key points of the book are summarized in the related [NCCN Quick Guide™](#). NCCN also offers patient books on colon and lung cancers, as well as other cancer types. Visit [NCCN.org/patients](https://www.nccn.org/patients) for the full library of patient books, summaries, and other resources.

About



These patient guidelines for cancer care are produced by the National Comprehensive Cancer Network® (NCCN®).

The mission of NCCN is to improve cancer care so people can live better lives. At the core of NCCN are the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®). NCCN Guidelines® contain information to help health care workers plan the best cancer care. They list options for cancer care that are most likely to have the best results. The NCCN Guidelines for Patients® present the information from the NCCN Guidelines in an easy-to-learn format.

Panels of experts create the NCCN Guidelines. Most of the experts are from NCCN Member Institutions. Their areas of expertise are diverse. Many panels also include a patient advocate. Recommendations in the NCCN Guidelines are based on clinical trials and the experience of the panelists. The NCCN Guidelines are updated at least once a year. When funded, the patient books are updated to reflect the most recent version of the NCCN Guidelines for doctors.

For more information about the NCCN Guidelines, visit NCCN.org/clinical.asp.

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NCCN Foundation was founded by NCCN to raise funds for patient education based on the NCCN Guidelines. NCCN Foundation offers guidance to people with cancer and their caregivers at every step of their cancer journey. This is done by sharing key information from leading cancer experts. This information can be found in a library of NCCN Guidelines for Patients® and other patient education resources. NCCN Foundation is also committed to advancing cancer treatment by funding the nation's promising doctors at the center of cancer research, education, and progress of cancer therapies.

For more information about NCCN Foundation, visit NCCNFoundation.org.

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Endorsed by

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.

pcaaware.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 provides 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

The 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

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 the NCCN for providing this valuable tool to use as guidance on the journey through prostate cancer.

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

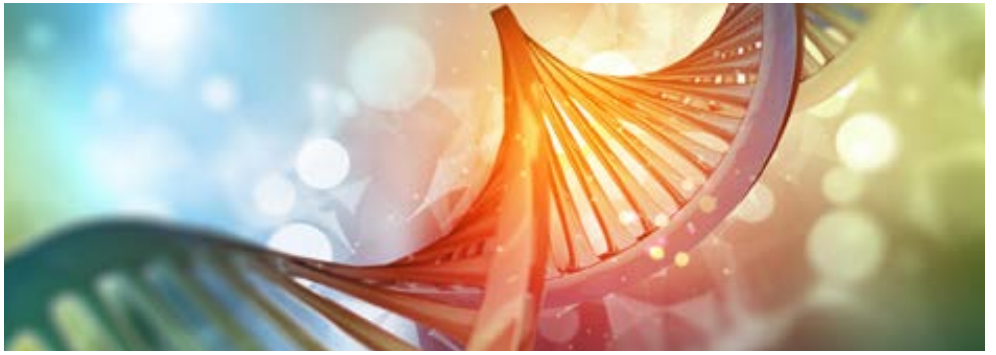
Prostate Conditions Education Council (PCEC)

Having a tool that helps to provide an overview of all the treatment options available to patients is critical in winning the fight against prostate cancer. The NCCN guidelines aid in this important step.

prostateconditions.org

With generous support from

Pamela Becker In Honor of Dr. Stanley Becker.



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Who should read this book?

This book is about treatment for adenocarcinoma of the prostate. About 98 out of 100 men with prostate cancer have an adenocarcinoma. Women don't get prostate cancer because they don't have a prostate. Patients and those who support them—caregivers, family, and friends—may find this book helpful. It may help you discuss and decide with doctors what care is best.

Are the book chapters in a certain order?

Yes, early chapters may help you with treatment options found in later chapters. Starting with **Part 1** may be helpful. It explains what prostate cancer is. Knowing more about prostate cancer may help you better understand its treatment. To learn how doctors plan treatment, read **Parts 2 and 3**.

Parts 4 through 7 address prostate cancer treatment. **Part 4** briefly describes the treatments. **Parts 5 through 7** are guides to treatment options. **Part 8** gives tips for making treatment decisions.

Does this book include all options?

This book includes information for many situations. Thus, you will likely not get every test and treatment listed. Your treatment team can help with options. They can point out what sections apply to you. They can also give you more information. As you read this book, you may find it helpful to make a list of questions to ask your doctors.

NCCN experts base the recommendations in this book on science and experience. However, these recommendations may not be right for your situation. Your doctors may suggest other tests and treatments based on your health and other factors. If other recommendations are given, feel free to ask your treatment team questions.

Help! What do the words mean?

In this book, many medical words are included. These are words you will likely hear from your treatment team. Most of these words may be new to you, and it may be a lot to learn.

Don't be discouraged as you read. Keep reading and review the information. Feel free to ask your treatment team to explain a word or phrase that you don't understand.

Words that you may not know are defined in the text or in the *Dictionary*. *Acronyms* are also defined when first used and in the Glossary. One example is PSA for **prostate-specific antigen**.

1

Prostate cancer basics

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- 8 The prostate

 - 8 A disease of cells

 - 10 Cancer's threat

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You've learned that you have prostate cancer. It's common to feel shocked and confused. Part 1 may help you learn more about how this cancer starts in the body. Once you know about prostate cancer, your doctor and you can talk about tests and treatment options.

The prostate

The prostate is a gland that makes a white-colored fluid. Sperm mixes with this fluid and other fluids to form semen. Semen is ejected from the body through the penis during ejaculation. The fluid from the prostate protects sperm from the acid inside a woman's vagina.

As shown in **Figure 1**, the prostate is located below the bladder near the base of the penis. Urine from the bladder travels through the urethra, which passes through the prostate and into the penis. 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.

Inside the prostate, 30 to 50 small sacs make and hold the white-colored fluid. The fluid travels in ducts to the urethra during ejaculation. Around the sacs and ducts is connective tissue.

The prostate begins to form while a baby is inside his mother's womb. After birth, the prostate keeps growing and reaches nearly full size during puberty. At this point, it is about the size of a walnut. Testosterone causes the prostate to grow slowly in most men. However, the prostate may grow to a large size in some men and cause problems passing urine.

A disease of cells

Cancer is a disease of cells. Inside of cells are coded instructions for building new cells and controlling how cells behave. These instructions are called genes. Genes are a part of DNA (**d**eoxyribonucleic **a**cid), which is grouped together into bundles called chromosomes. **See Figure 2.** Prostate cancer occurs when normal cells begin to grow faster or die slower. Either pattern causes a tumor to form. Some prostate cancers occur from abnormal changes, called mutations, in genes.

Doctors have learned that certain risk factors can be seen with these cancers. A risk factor is anything that increases your chances of having a disease like cancer. Doctors are still learning what may cause prostate cancer. Some risk factors for prostate cancer are listed below:

- Aging, being of African-American descent, and having family members with prostate cancer have been linked to a higher chance of getting prostate cancer.
- Contact with Agent Orange, obesity, smoking, and poor diet have been linked with prostate cancer. Not all men with these conditions get prostate cancer.
- Prostate cancer is common among older men. However, prostate cancer in older men often doesn't become a problem.

Almost all prostate cancers are adenocarcinomas. Adenocarcinomas are cancers that start in cells that line glands and, in the case of prostate cancer, make semen. Adenocarcinomas of the prostate are the focus of this book.

Figure 1. The prostate

The prostate gland makes a fluid that is part of semen.

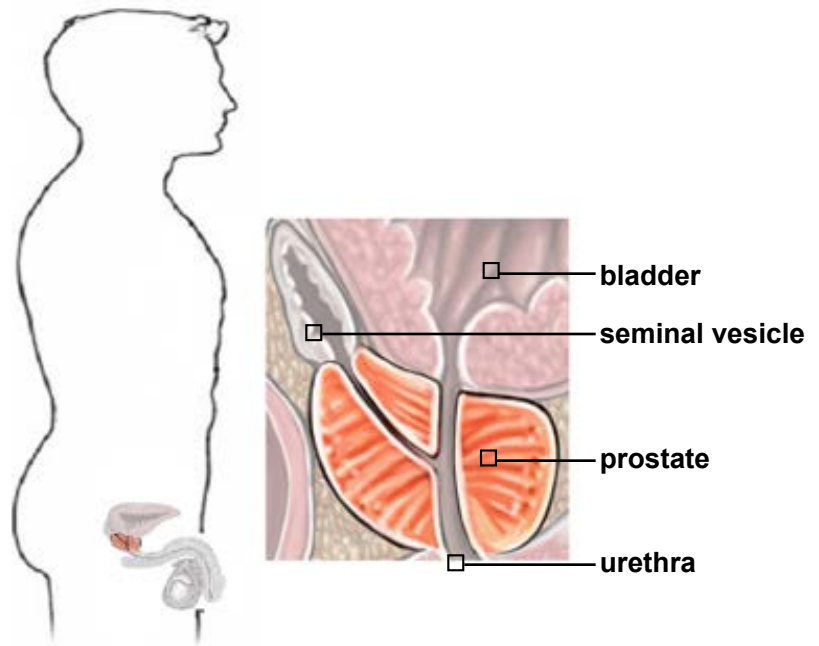


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Figure 2. Genetic material in cells

Most human cells contain the “blueprint of life”—the plan by which our bodies are made and work. The plan is found inside of chromosomes, which are long strands of DNA. Genes are small pieces of DNA. Humans have about 24,000 genes. Some prostate cancers occur from abnormal changes in genes called mutations.

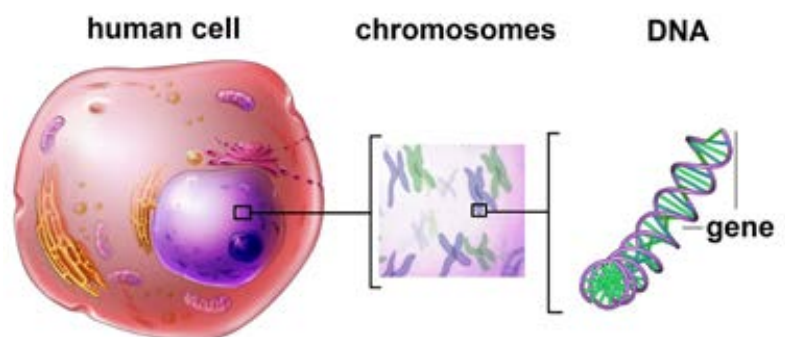


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What to know about prostate cancer

- ✓ Most men with prostate cancer will not die of this disease. However, prostate cancer is the second most common cause of death from cancer in men.
- ✓ Most prostate cancers grow slowly but some grow and spread quickly. Cancer that spreads quickly is called aggressive cancer.
- ✓ Why some prostate cancers grow fast is unknown and is being studied by researchers.

Cancer's threat

Cancer cells don't behave like normal cells in three key ways. First, prostate cancer cells grow more quickly and live longer than normal cells. Normal cells grow and then divide to form new cells when needed. They also die when old or damaged as shown in **Figure 3**. In contrast, cancer cells make new cells that aren't needed and don't die quickly when old or damaged. Over time, cancer cells form a mass called the primary tumor.

The second way cancer cells differ from normal cells is that they can grow into (invade) other tissues. If not treated, the primary tumor can grow large and take over most of the prostate. It can also grow beyond the prostatic capsule and invade nearby tissues. This growth is called extracapsular extension.

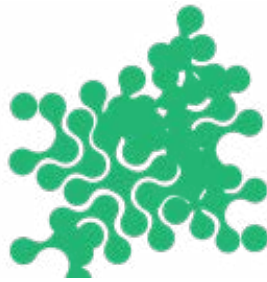
Third, unlike normal cells, cancer cells can leave the prostate. This process is called metastasis. In this process, cancer cells break away from the tumor and merge with blood or lymph. Lymph is a clear fluid that gives cells water and food and contains germ-fighting blood cells. Then, the cancer cells travel in blood or lymph through vessels to other sites. In other sites, the cancer cells may form secondary tumors, called metastases, and replace many normal cells or interfere with function, which can cause major health problems.

Figure 3.
Key differences between
normal cells and cancer cells



Normal cells

- ✓ **Make new cells as needed; die if old/damaged**
- ✓ **Stop when they get too close to other cells**
- ✓ **Stay where they belong in the body**



Cancer cells

- **Grow out of control, forming a tumor over time**
- **Ignore other cells and invade nearby tissues**
- **Can spread and make new tumors**

Review

- The prostate makes a fluid that is part of semen.
- Prostate cancer often starts in the cells that make fluid.
- Cancer cells may form a tumor since they don't die as normal cells do.
- Cancer cells can spread to other body parts through lymph or blood.
- Most men with prostate cancer will not die from it.
- Some men have prostate cancer that grows fast.

2

Cancer staging

13 Prostate-specific antigen

14 Digital rectal exam

14 Imaging tests

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23 Review



Part 2 discusses the tests and scoring system used for staging prostate cancer. A cancer stage is a rating by your doctors of how far the cancer has grown and spread. There are 4 stages of prostate cancer. Staging is based on test results. The test results help your doctor and you decide on a treatment plan.

Prostate-specific antigen

PSA (prostate-specific antigen) 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. PSA is made mostly by prostate cancer cells and normal prostate cells. However, a small amount of PSA is made by all cells, even in women.

PSA can be measured using a blood sample, since some of it enters the bloodstream. PSA values are used for cancer staging, treatment planning, and checking treatment results. PSA values discussed in this book include the following:

- PSA level is the number of nanograms of PSA per milliliter (ng/mL) of blood.
- PSA density is the PSA level in comparison 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 DRE (digital rectal exam) of the prostate, or by using TRUS (transrectal ultrasound), or an MRI (magnetic resonance imaging) scan of the prostate.

- PSA velocity is how much PSA levels change within a period of time.
- PSA doubling time is the time it takes for the PSA level to double.

The larger the prostate, the more PSA it can make. Large prostates can be a result of cancer or other health problems of the prostate. Some medicines 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 for 3 days before a PSA test. This will allow the PSA test to be more exact.

Digital rectal exam

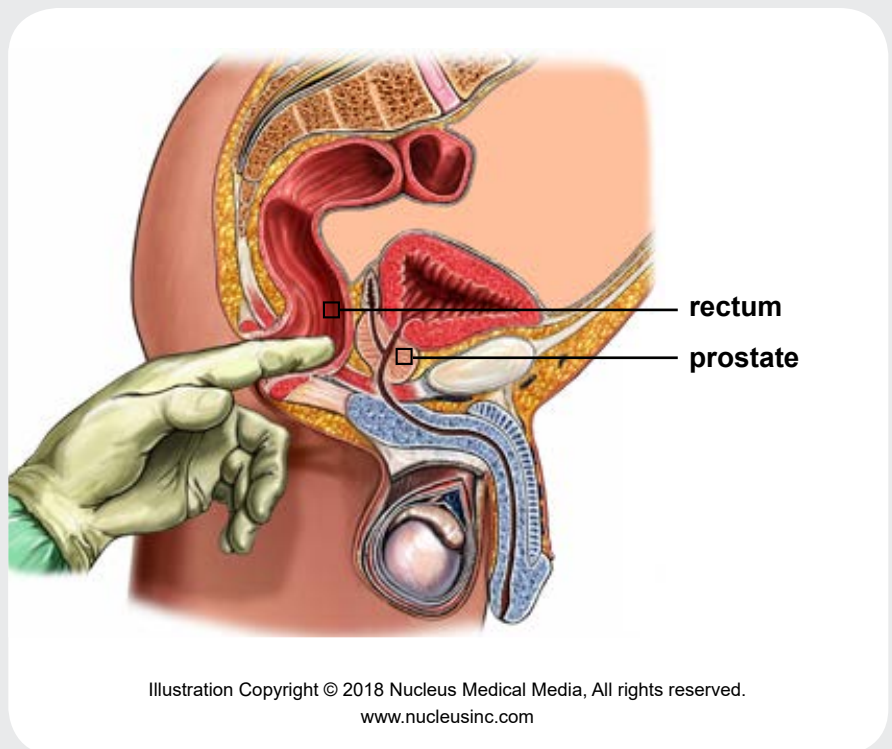
Doctors use a DRE to screen for cancer, rate the cancer stage, and assess treatment results. For this exam, your doctor will put a glove on his or her hand and then put lubricant on his or her index finger (**See Figure 4**). Next, your doctor will insert a finger into your rectum to feel your prostate as shown in Figure 4. Your prostate can be felt since it is on the other side of the rectal wall. Bear in mind that not all parts of the prostate can be felt on this exam.

Imaging tests

Imaging tests are used to take pictures (images) of the inside of your body. Imaging can be used to see if there is cancer in the body. Your doctor will want to check the primary tumor, or original site of the tumor. MRI, CT (computed tomography) scans, and bone scans are the recommended imaging tests for staging prostate cancer. Each imaging test has a purpose and may occur at different times in your care plan. Many people with prostate cancer do not need imaging at diagnosis, but can go directly to treatment after biopsy.

Figure 4. 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.



MRI scan

Imaging tests make pictures (images) of the insides of your body. MRI uses a magnetic field and radio waves to make images. A 3T, multi-parametric MRI of your prostate may help pinpoint where the cancer is in the prostate and assess features of the cancer. The short name for this test is mpMRI.

Prostate MRI can be used at many points of care. It is sometimes used for biopsies as discussed next. Prostate MRI may also be used to help decide whether to start and continue active surveillance. Active surveillance is briefly described in Part 4 on page 31. A prostate MRI also examines lymph nodes within your pelvis to see if the cancer has spread (metastasized). It does this as well as a CT scan. Another use for prostate MRI is to assess if you have cancer when other tests, given after treatment, suggest there's cancer. Read Part 6 for more information.

For the MRI, you will need to lie on a table and be fitted with coil devices that emit radio waves. An endorectal coil may be used. However, the need for endorectal coil is debated among experts. Instead of using a coil, newer methods to improve images are being tested. An endorectal coil is a thin wire that is inserted into your rectum. To prepare for endorectal MRI, you may be asked to eat less and clean your bowel with an enema. A cover will be placed over the coil and gel will be applied before insertion. Once inserted, the device will be inflated to hold it in place.

During the MRI, you will be inside the MRI machine. Straps may be used to help you stay in place. You may be given a sedative beforehand if you feel nervous about the test. The machine will make loud noises, but you can wear earplugs. After the MRI you will be able to resume your activities right away unless you took a sedative.



Early detection of prostate cancer

- ✓ NCCN experts recommend PSA testing and a DRE for men who are healthy and aware of the tests being used. For some men, testing can start at age 45 and continue until age 75.
- ✓ The recommended age to start screening and how often the tests occur may vary. Doctors are still doing research to know how to best screen for prostate cancer.
- ✓ If you have an abnormal DRE and/or an elevated PSA level, you may have repeat tests or a prostate biopsy to check for cancer.
- ✓ To confirm cancer, your doctor will perform a biopsy of the prostate. This is usually a TRUS-guided biopsy.

To learn more about early detection, visit the *NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) Prostate Cancer Early Detection*, available at www.NCCN.org.



What to know about imaging tests

- ✓ Imaging tests can see if the cancer is in more than one part of the body.
- ✓ These tests are used during treatment to see how the disease is responding.
- ✓ The tests can be used after treatment to check for signs of disease (recurrence).
- ✓ You may not learn of the results of your imaging tests for a few days since a radiologist needs to see the pictures.
- ✓ A radiologist is a doctor who's an expert in reading the pictures from imaging tests.
- ✓ A nuclear medicine specialist is a doctor who's an expert in imaging tests that use radioactive substances.

CT scan

A CT scan uses x-rays to take pictures of the inside of the body. It takes many x-rays of the same body part from different angles. All the x-ray pictures are combined to make one detailed picture of the body part. 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). A CT scan is not the best option for taking pictures of the prostate gland. An MRI is preferred for viewing this area.

Getting a CT scan is like getting an MRI scan. Before CT, you may need to drink enough liquid to have a full bladder. A full bladder helps to keep the bowel away so the prostate can be better seen. You may also be given a contrast dye to make the pictures clearer. You may drink the dye, have it injected into your vein, or both. It may cause you to feel flushed or get hives. Rarely, serious allergic reactions occur. Tell your doctors if you have had bad reactions in the past.

Bone imaging

A bone scan is an imaging test that can show if cancer has spread to your bones. This test is only used if you have certain symptoms such as bone pain or high levels of ALP (alkaline phosphatase) in your blood. These symptoms may signal that the cancer has spread to your bones.

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 thus show up as bright spots on the pictures. Bone damage can be caused by cancer or other health problems.

If you have a higher Gleason score, higher tumor stage, or higher PSA level, your doctor may consider using a bone scan for staging disease. If the results show disease, other tests like CT, MRI, or PET/CT (**p**osition **e**mission **t**omography/**c**omputed tomography) or PET/MRI (**p**osition **e**mission tomography/**m**agnetic resonance imaging) may be used to assess for metastatic disease. More research is needed to understand the role of PET/CT scans for prostate cancer. See Part 3 on page 24.

Prostate biopsy

Rising PSA levels and abnormal DRE findings 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 using a microscope. A biopsy removes small samples of tissue for testing. Biopsies can also help your doctor assess how far the cancer has grown. A prostate biopsy is a type of biopsy that removes tissue from the prostate.

Before the biopsy

To prepare for the biopsy, your doctor may say to stop taking some medicines and start taking others. Medicines to stop taking include blood thinners like warfarin (Coumadin®) or antiplatelet drugs like aspirin or Plavix®. Your doctor may prescribe antibiotics to try to prevent an infection from the biopsy.

Right before the biopsy, local anesthesia may be given to numb the area. You'll feel a small needle stick and a little burning with some pressure for less than a minute. A numbing gel may also be applied to the area. You may feel pressure and discomfort during the biopsy, but there is often little to no pain.

Types of biopsies

The most common type of prostate biopsy is the transrectal method. To make sure the best samples are removed, a TRUS probe will be inserted into your rectum. The TRUS uses sound waves to make a picture of your prostate that is seen by your doctor on a screen.

A newer method uses MRI along with TRUS. Before the biopsy, images will be made with MRI. These images will then be combined with TRUS during 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.

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 when it's there. If no cause for the high PSA is found, your doctor may order more biopsies.

Prostate biopsies often occur with no problems. However, side effects are possible. Some people have allergic reactions to anesthesia. Tell your doctor if you've had any problems with anesthesia in the past. The prostate biopsy may cause:

Often

- Blood in your semen (hematospermia) or urine (hematuria)
- Rectal bleeding

Sometimes

- Infection

Rarely

- Swelling of your prostate (prostatitis) or epididymis (epididymitis)
- Inability to empty your bladder (urinary retention)
- Require an overnight stay in the hospital

Gleason score

One grading system for prostate cancer is called the Gleason score. The Gleason score is used by doctors to plan treatment. Results from the biopsy are used for scoring.

First, the cancer is assigned two Gleason grades. The primary grade is the most common Gleason pattern. The secondary grade is the second most common Gleason pattern.

Gleason grades are depicted in **Figure 5**. Glands comprised of cells with a grade of 1 or 2 may not be able to be scored on a prostate biopsy. Therefore, Gleason grades range from 3 for glands made of

cancer cells that look almost normal to 5 for very abnormal cells that aren't able to form glands.

The primary and secondary grades are added together to get the Gleason score. Gleason scores range from 2 to 10, but most prostate cancers are scored 6 to 10. [Guide 1](#) briefly describes what the scores mean. Higher Gleason scores mean the cancer is more likely to grow and spread.

Another factor used in regard to the Gleason score is Grade Groups. The Gleason scores have been divided into groups ranging from 1 to 5. The Gleason score and Gleason pattern determine the group. Doctors use Gleason scores and groups to select the most appropriate treatment.

Grade Group

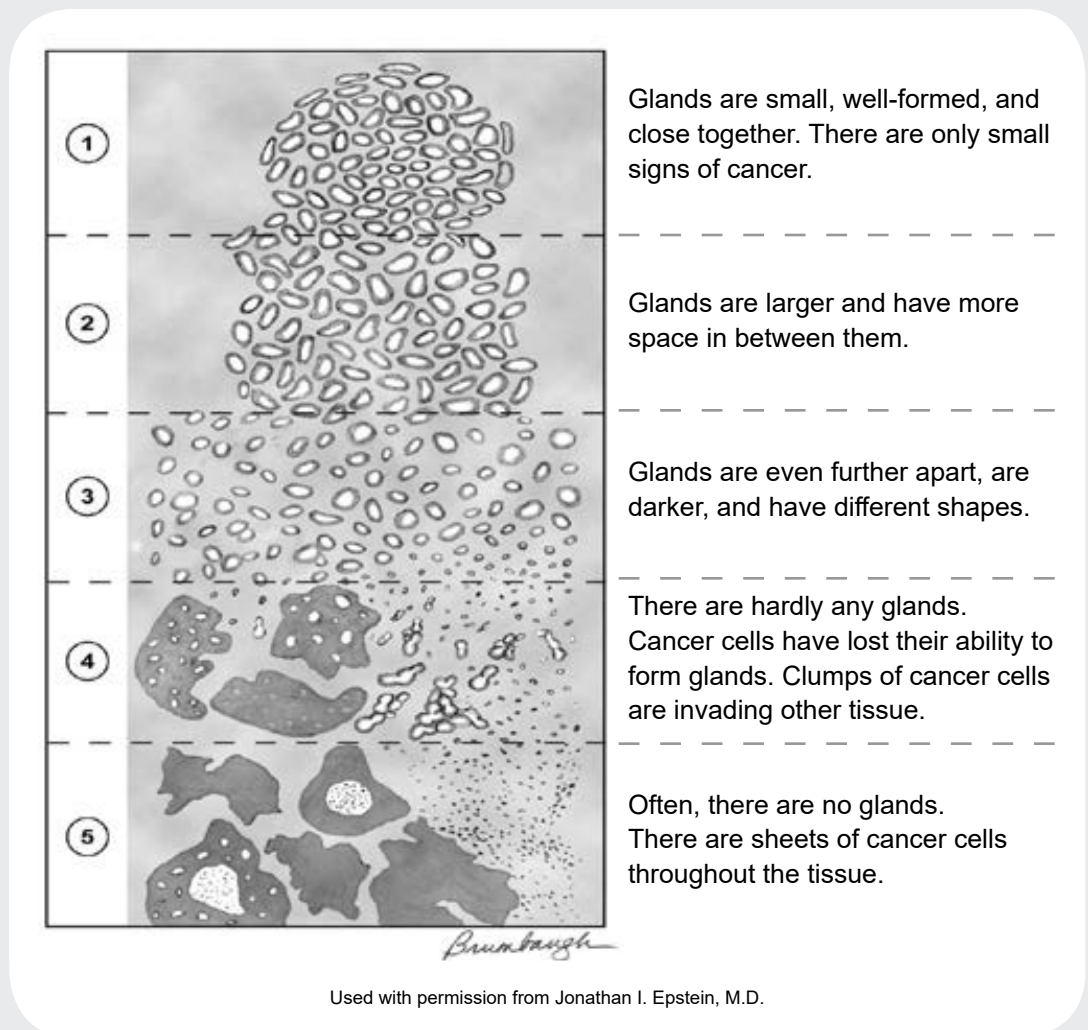
- **1** is Gleason score =6 and Gleason pattern =3+3
- **2** is Gleason score 7 and Gleason pattern 3+4
- **3** is Gleason score 7 and Gleason pattern 4+3
- **4** is Gleason score 8 and Gleason pattern 4+4, 3+5, 5+3
- **5** is Gleason score 9 or 10 and Gleason pattern 4+5, 5+4, 5+5

Guide 1. Gleason score summary

Gleason score	What does the score mean?
2–6	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.
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.
8–10	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.

Figure 5. Gleason grades

To obtain a Gleason score, doctors first assign the cancer two Gleason grades. The grades are combined to obtain a Gleason score. Gleason grades range from 1 to 5.





What to know about test results

- ✓ The results from the PSA test, DRE, imaging tests, and prostate biopsy will help your doctor determine your next steps of care.
- ✓ These results help doctors learn the cancer stage, and how well or aggressively the cancer may behave. The cancer stage is based on how far the cancer has grown and spread in the body. How aggressive the cancer may be or the risk level is based on a combination of 3 factors: the stage, the PSA level, and the Gleason grade.
- ✓ Once your doctors know more about your diagnosis, they can talk to you about what to expect. Talking with your doctor about the risk level may help with treatment planning.
- ✓ Your treatment team will come together and decide on a treatment plan. A treatment plan is a written course of action that covers every aspect of the treatment process.

TNM scores

The AJCC (**A**merican **J**oint **C**ommittee on **C**ancer) staging system is used to stage prostate cancer. In this system, the letters **T** (**t**umor), **N** (**n**ode), and **M** (**m**etastasis) describe a different location of cancer growth. Your doctors will assign a score to each letter. These scores will be combined to assign a cancer stage.

There are four cancer stages—I, II, III, and IV for each type of prostate cancer.

In this staging system, the letters **T**, **N**, and **M** describe a different area of cancer growth. The **T**, **N**, and **M** scores are combined to assign the cancer a stage.

- **T** score describes the growth of the primary tumor.
- **N** score describes spread of cancer growth to lymph nodes.
- **M** score tells if the cancer has spread to distant sites.

NCCN experts decide options for initial treatment partly based on these scores. See Part 5 on page 47.

T = Tumor

The **T** score is a rating of the size and extent of the primary tumor. **TX** means the primary tumor cannot be assessed. **T0** means there is no evidence of a primary tumor. **T1** tumors can't be felt or seen with imaging tests. They are found in tissue removed by biopsies or surgical treatment. For example, prostate cancer may be found in men who had an abnormal PSA level or who had an operation for urinary problems caused by an enlarged prostate. Prostate cancer discovered as a result of an operation for voiding problems is called an incidental finding.

- **T1a** means that incidental cancer was found in 5% or less of the removed tissue.
- **T1b** means that incidental cancer was found in more than 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 DRE. They also may be seen with an imaging test. T2 scores are based on cancer growth within the lobes—the left and right halves of the prostate. T2 tumors haven't grown outside the prostate gland.

- **T2a** tumors haven't grown beyond half of one lobe.
- **T2b** tumors have grown beyond half of one lobe but not to the other lobe.
- **T2c** tumors have grown into both lobes.

T3 tumors have grown outside the prostate. They have reached the connective tissue around the prostate, the seminal vesicles, or the neck of the bladder. **See Figure 6** on the next page.

- 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 are fixed to or have invaded other nearby tissues. Such tissues include the external sphincter, rectum, bladder, levator muscles, and/or pelvic wall.

- T4 tumors are fixed to or have grown into nearby tissues other than seminal vesicles.

N = Nodes

Lymph drains from around prostate cells into vessels that transport it to the bloodstream. As lymph travels, it passes through small, oval-shaped structures called lymph nodes. Lymph nodes remove germs from lymph. As shown in **Figure 7** on the next page, lymph nodes and vessels are found throughout the body. The **N** category reflects if cancer cells have spread through lymph to nearby lymph nodes. 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. N scores for prostate cancer include:

- NX means it is unknown if there is cancer in lymph nodes.
- N0 means that there is no cancer within the nearby lymph nodes.
- N1 means that the cancer has spread into the nearby lymph nodes.

M = Metastasis

The **M** category tells you if the cancer has spread to distant sites. Para-aortic, common iliac, inguinal, supraclavicular, scalene, and cervical lymph nodes are distant from the prostate. Prostate cancer tends to metastasize to bone then the lungs and liver. M scores for prostate cancer include:

- M0 means that there is no growth to distant sites.
- M1 means that the cancer has spread to distant sites.
 - M1a is cancer that has spread to distant lymph nodes.
 - M1b is cancer that has spread to bone(s).
 - M1c is cancer that has spread to distant organs.

Figure 6.
Areas of tumor growth outside the prostate

The primary tumor may grow through the prostate and into nearby organs.

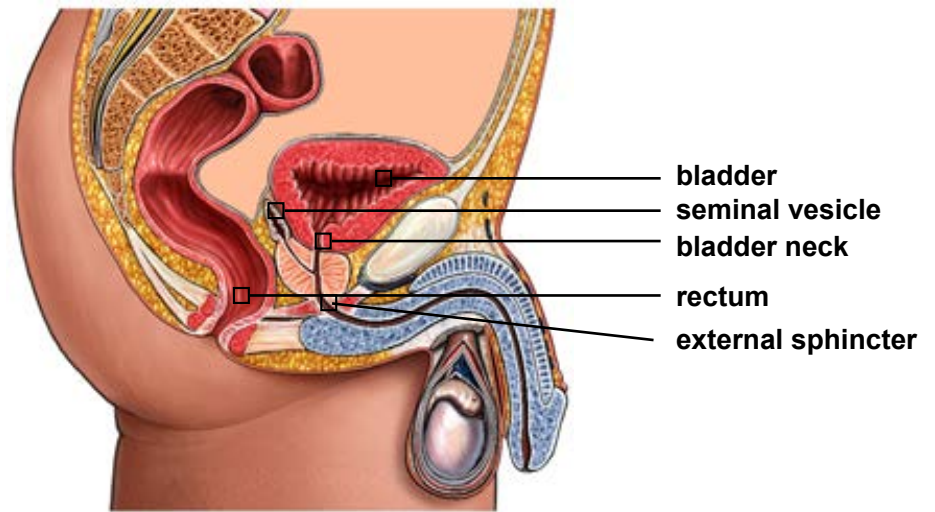


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Figure 7.
Cancer spread to lymph nodes

Throughout your body is a network of vessels that transport lymph to the bloodstream. Lymph is a clear fluid that contains germ-fighting blood cells. As lymph travels in vessels, it passes through lymph nodes, which remove germs from lymph. Prostate cancer can spread to lymph nodes near to and distant from the prostate.

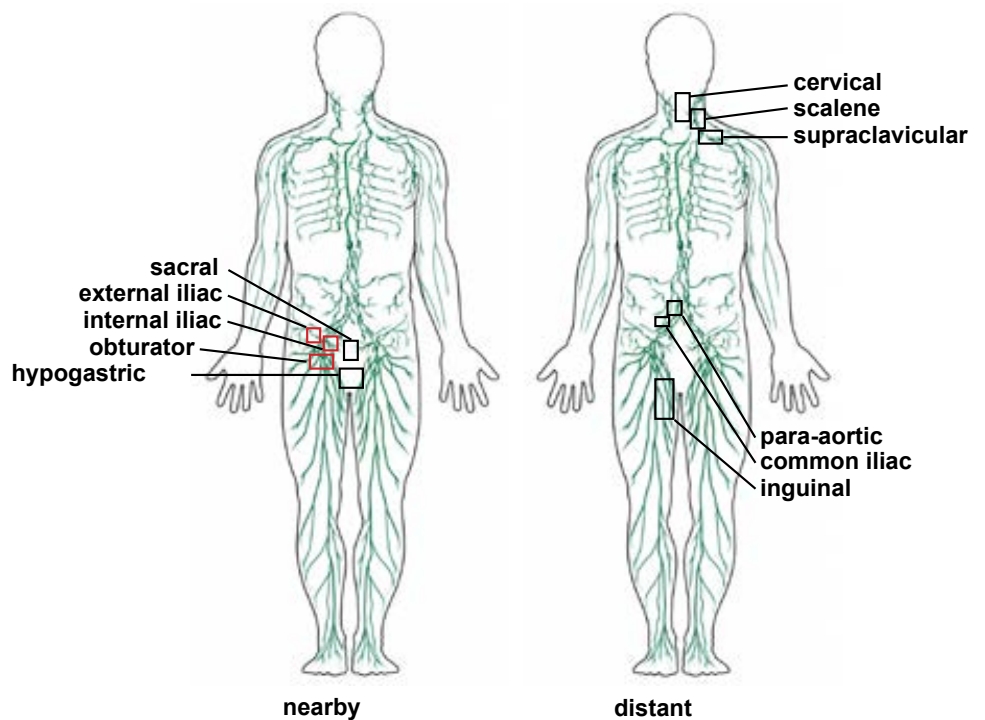


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Review

- ▶ Prostate cancer is grouped into 4 stages.
- ▶ Cancer stages are defined by the growth and spread of the tumor.
- ▶ PSA, DRE, and a prostate biopsy can help doctors assess the size of a tumor.
- ▶ The Gleason score is a grading system for how much prostate cancer cells retain their ability to form glands.
- ▶ Doctors rate the extent of prostate cancer with T, N, and M scores. The T score is a rating of size and extent of the primary tumor. The N score reflects if the cancer has spread to nearby lymph nodes. The M score reflects if the cancer has spread to distant sites.

Your medical records:

- ✓ Your doctors will order tests and schedule visits to talk about your care plan.
- ✓ It is helpful to keep track of your test results at all times. Ask your doctors questions about the results.
- ✓ Your treatment team will go over your test results and suggest treatment options.

3

Treatment planning

- 25 Life expectancy
- 25 Risk assessment
- 26 Imaging for metastases
- 29 Review



Part 3 includes a few more sources of information your doctor uses to plan treatment. Other sources include test results, as well as the grading and staging systems that were described in Part 2. Your personal needs are also an important factor when it comes to your plan. It is helpful to talk to your treatment team about your treatment options.

Life expectancy

To help assess what tests and treatments you will need, your doctor may determine the number of years you will likely live. These years are called your life expectancy. It may be hard to talk with your doctor about how long you might live. However, this information is very important for your health care.

Prostate cancer often grows slowly. If you're likely to die of other causes, having more tests and cancer treatment may have little or no benefit. Likewise, if the cancer isn't causing symptoms, there may be no benefit to having more tests.

How many years you may live is estimated with two sources of information. First, research on the general population tells how long the average man may live based on his age. See Part 8 on page 81 for more information. The second source is your general health.

If you're in excellent health, the number of life years from the general population research is increased by half. If you're in poor health, the number of years is decreased by half. If you are of average health, no change is made.

This method may correctly predict length of life for a large group of men, but it can't predict without a doubt what will happen to you. Even so, it gives a starting point for suggesting treatment options.

Risk assessment

To plan the best treatment for you, your doctors will like to know:

- If and how far the cancer has spread
- How fast the cancer will grow
- How the cancer will respond to treatment
- Whether cancer will re-appear on tests after treatment (called a recurrence)

However, this information often can only be known over time or after cancer treatment has started. As such, your doctors will assess your chances (also called risk) for such events. Risk groups and nomograms are two tools that doctors use. Molecular testing is a newer tool that needs more research.

Prostate cancer growth

Most prostate cancers diagnosed in the United States are found using PSA and are slow growing. Growth of prostate cancer can be estimated with tests. You and your doctor should begin talking about prostate cancer by comparing your life expectancy versus the threat to you by the prostate cancer.

Risk groups

Risk groups divide people with cancer into smaller subsets based on their chances of an event. Some risk groups are based on one piece of information while others use multiple pieces of information. In Part 5 on page 47, treatment options are presented by risk groups for prognosis. Risk is based on TNM scores, Gleason score, and PSA values. NCCN experts recommend that these risk groups be used as a foundation to start talking about treatment options.

Nomograms

A nomogram uses data from a large number of men and complex math to predict risk. It can predict one person's risk better than a risk group. A nomogram predicts an event by taking into account similarities and differences among pieces of information. In this book, test and treatment recommendations are sometimes based on nomograms that predict how likely the cancer has spread to lymph nodes. Also, NCCN experts advise that nomograms be used in addition to risk groups to better plan treatment. Websites with information on nomograms are listed in Part 8 on page 88.

Molecular testing

Any of your body's molecules that can be measured to assess your health are called biomarkers. An example of a biomarker is PSA for detecting prostate cancer. There are also biomarkers for predicting how fast cancer will grow and treatment results. Molecular (or biomarker) testing assesses for such biomarkers.

There are several molecular tests that may help assess how aggressive localized prostate cancer is. Localized cancer includes tumors that have not grown through the prostate and into nearby structures. There is also no spread to nearby lymph nodes or distant sites. For some men with low or favorable intermediate risk disease, doctors may consider using the following molecular tests to better predict how a cancer will behave.

These tests include Decipher, Oncotype DX Prostate, Prolaris, and ProMark.

Molecular testing is performed on prostate tissue removed by biopsy for diagnosis. It can be considered when active surveillance is an option. Molecular tests should be used with standard tests, including PSA, Gleason grade, cancer stage, and imaging.

Molecular tests of prostate cancer have not been assessed in randomized clinical trials. Such clinical trials would assign men to research groups by chance. Also, molecular testing would be done first and then outcomes would be assessed over time. Without such studies, there are major limits to how useful molecular tests are for making treatment decisions. Still, more research is needed for these molecular tests.

Imaging for metastases

Imaging tests can help show if the cancer has spread to the lymph nodes or bones. If your life expectancy is more than 5 years or you have cancer symptoms, testing for metastases may help with treatment planning. Signs of metastases are listed in [Guide 2](#). If you have these signs, you may get a 1) bone scan or 2) CT or MRI scan of your pelvis and possibly your abdomen. Imaging tests for metastatic disease should not be performed if you have very-low-risk or low-risk features. Your doctor may change his or her rating of the cancer stage based on these test results.

Most men have minor, if any, problems with imaging tests. There are usually no side effects. Depending on the test, you may need to stop taking some medicines, stop eating and drinking for a few hours, and take off any metal objects from your body. After an imaging test, you will be able to resume your activities right away unless you took a sedative.

Guide 2. Deciding factors for imaging tests

Disease status		Imaging tests
<ul style="list-style-type: none"> • T2b-T2c or • Gleason score 3+4=7/grade group 2 or • PSA 10–20 ng/mL and • Percentage of positive biopsy cores <50% 	→	<ul style="list-style-type: none"> • Get a CT or MRI of the pelvis ± abdomen if nomogram predicts >10% probability of pelvic lymph node involvement
<ul style="list-style-type: none"> • T2b-T2c or • Gleason score 3+4=7/grade group 2 or Gleason score 4+3=7/grade group 3 or • PSA 10–20 ng/mL or • Percentage of positive biopsy cores ≥ 50% 	→	<ul style="list-style-type: none"> • Get a bone scan if T2 and PSA >10 ng/mL • Get a CT or MRI of the pelvis ± abdomen if nomogram predicts >10% probability of pelvic lymph node involvement
<ul style="list-style-type: none"> • T3a or • Gleason score 8/grade group 4 or Gleason score 4+5=9/grade group 5 or • PSA >20 ng/mL 	→	<ul style="list-style-type: none"> • Get a bone scan • Get a CT or MRI of the pelvis ± abdomen if nomogram predicts >10% probability of pelvic lymph node involvement
<ul style="list-style-type: none"> • T3b-T4 or • Primary Gleason pattern 5 or • >4 cores with Gleason score 8–10/ grade group 4 or 5 	→	<ul style="list-style-type: none"> • Get a bone scan • Get a CT or MRI of the pelvis ± abdomen if nomogram predicts >10% probability of pelvic lymph node involvement

Bone imaging

Bone imaging is advised if you have signs or symptoms of bone metastases. For a bone scan, a radiotracer will be injected into your vein. Areas of bone repair take up more of the radiotracer than healthy bone and thus show up as bright or “hot” spots in the pictures. However, other health conditions besides cancer can cause bone repair. A radiologist can often tell what is and is not cancer on an abnormal bone scan.

Figure 8 shows a bone scan machine that is used to take the pictures. You will need to lie still on the padded table to complete the pictures. Prostate cancer in bone can damage the bone causing the bone to struggle to repair itself.

CT or MRI

A CT or MRI of your abdomen and/or pelvis may show if your lymph nodes are enlarged. It can also show if there is other disease in the area. Both scans were described in Part 2 on pages 15 and 16. MRI images are made with a magnetic field and radio waves. A CT scan takes many pictures of a body part from different angles using x-rays. A computer combines all the x-rays to make detailed pictures.

If the CT or MRI scan suggests that the cancer has spread into your lymph nodes, an FNA (fine-needle aspiration) can confirm if cancer is present. An FNA is a type of biopsy. It uses a very thin needle to remove very small pieces of tissue. A CT scan, MRI, or ultrasound machine is used to guide the needle into the lymph node. With a local anesthetic, this test causes little discomfort and doesn't leave a scar.

Figure 8.
Bone scan machine

Doctors use bone scans to assess if cancer has spread to the bones.



Gamma Camera by Brendaicm available at commons.wikimedia.org/wiki/File:Gamma_camera.jpg under a Creative Commons Attribution-Share Alike 3.0 Unported.





Newer tests

- ✓ Doctors are still learning about newer tests for imaging the bones and lymph nodes.
- ✓ Some of the newer tests that are under study may include a PET/CT or PET/MRI scan using different radiotracers such as 18F-NaF (sodium fluoride), 68 Ga PSMA (prostate-specific membrane antigen), F-18 fluorodihydrotestosterone, or C-11 acetate.
- ✓ These newer tests appear to detect prostate cancer in certain cases. However, more research is needed to learn the best way to use the information from these tests.

A biopsy of the bone is sometimes recommended. Cancer cells don't change how they look when they move to a new location in the body, so a pathologist can look at the biopsy and determine whether there are prostate cancer cells in the biopsy. They can also check if the abnormal cells are another kind of cancer or not cancer (benign).

Review

- Doctors plan treatment using many sources of information.
- Life expectancy is the number of years you will likely live. It is sometimes used to plan treatment.
- Risk groups can be used to start talking about initial treatment options.
- Nomograms predict one person's risk better than risk groups and might also be useful in planning treatment.
- Imaging tests may be used to see if the cancer has spread beyond the prostate.
- An FNA may be done to test for cancer in lymph nodes.

4

Overview of cancer treatments

31	Active surveillance	41	Immunotherapy
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35	Radiation therapy	43	Radiopharmaceuticals
38	Cryosurgery	43	Clinical trials
38	High-intensity focused ultrasound	44	Understudied treatments
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Part 4 briefly describes the main types of treatment for prostate cancer. Knowing what a treatment is will help you understand your treatment options listed in Parts 5 through 7. Not every man with prostate cancer will receive every treatment listed here. Before any treatment, it is helpful to talk with your doctor about sperm banking if you plan to have children.

Active surveillance

Small prostate tumors often have been found with PSA screening tests. They have also been found in prostates removed because of benign prostatic hyperplasia. If small tumors grow slowly, they may not ever cause health problems, especially if you're older. Thus, some men would suffer needlessly from treatment side effects if all men with prostate cancer were treated. Another option is active surveillance. Active surveillance involves ongoing testing until cancer treatment is needed. More information about this option can be found in the next chapter.

Surgical treatment

Surgical treatment may be an option if you are healthy enough to have an operation. The goal of an operation is to remove all the cancer from your body. To do so, the tumor will be removed along with some normal-looking tissue around its rim. The normal-looking tissue is called the surgical margin. Other tissue may be removed along with your prostate as described next.

Radical prostatectomy

A radical prostatectomy is an operation that removes the entire prostate, seminal vesicles, and sometimes other tissue. It is often used when the tumor appears not to have grown outside the prostate—T1 and T2 tumors.

Results of a prostatectomy may be related to the experience of the surgeon. Surgeons who are experienced have better results. When choosing your surgeon, ask how many of these operations he or she has done. Going to a surgeon who has and continues to do many radical prostatectomies may result in a better outcome. It may be helpful to talk to other men with prostate cancer about their experiences.

There are a few steps to prepare for an operation. You may need to stop taking some medications to reduce the risk of severe bleeding. You will need to eat less, change to a liquid diet, or use enemas or laxatives to empty your bowel. Right before the operation, you will be given anesthesia. Anesthesia may be general, spinal, or epidural.

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. You will be shown how to use it while you're at home. If removed too early, you may lose control of your bladder (urinary incontinence) or be unable to urinate due to scar tissue.

Open radical prostatectomy

Open radical prostatectomy removes the prostate through one large cut. Your surgeon can make the cut in one of two places (retropubic or perineal). This operation itself may take a few hours to complete. You may stay in the hospital for a couple of days and resume all normal activities in about 4 to 6 weeks. Your doctor or nurse will talk to you in more detail about what to expect before and after the operation.

It is helpful to know which method your doctor may use for the open radical prostatectomy. Below are 2 methods that are used for prostate cancer.

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. They are needed for natural erections. A nerve-sparing prostatectomy will be done if your cavernous nerves are likely to be cancer-free. However, if the cancer involves them, one or both bundles of nerves will be removed. If removed, good erections are still possible with aids, and orgasms can occur with or without these nerves.

Radical perineal prostatectomy

This surgery removes tissue through a cut in your perineum. The perineum is the area between your scrotum and anus as shown in **Figure 9**. During the operation, you will lie on your back with your legs spread open and supported with stirrups.

Your prostate and seminal vesicles will be removed after being separated from nearby tissues. Nerve sparing is possible but more difficult.

Figure 9.
Open methods to radical prostatectomy

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

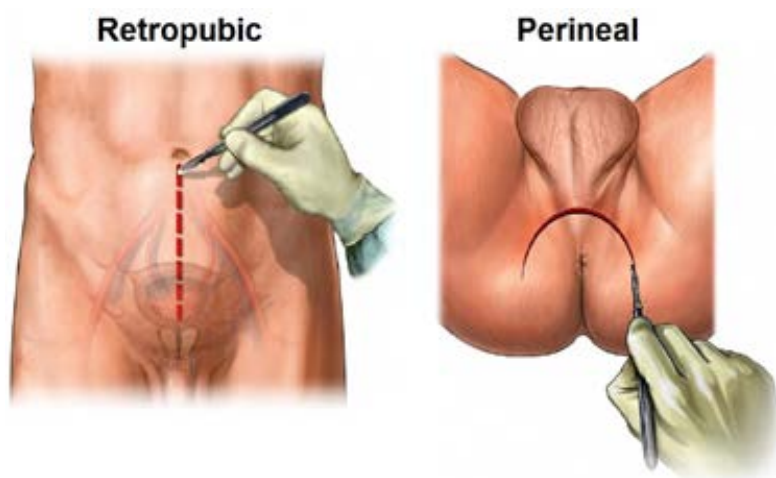


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Lymph nodes can't be removed. After your prostate has been removed, your urethra will be re-attached to your bladder.

Laparoscopic radical prostatectomy

A newer method for removing the prostate is the laparoscopic radical prostatectomy. This operation requires five small cuts, called ports, be made in your pelvis. Tools will be inserted into these cuts to see and remove tissue. It may take between 90 minutes and 4 hours to complete this operation. You will likely leave the hospital the next day. It may take another 2 weeks to recover at home.

Robotic-assisted radical prostatectomy

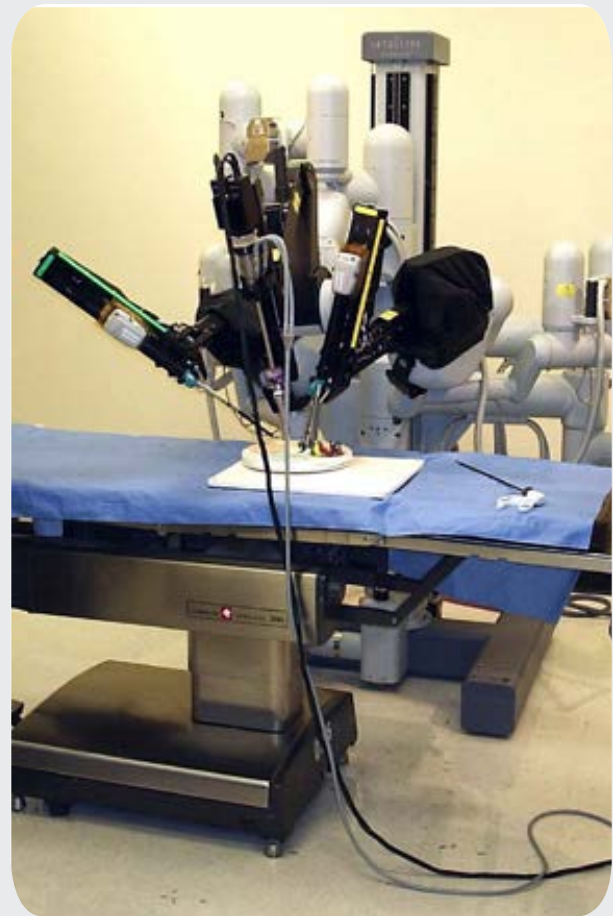
A laparoscopic radical prostatectomy can be done with the help of a “robot.” During this operation, the surgeon will be in the room with you but not by your side. Instead, he or she will be at a desk that is equipped with a computer system. This system allows the surgeon to move robotic arms that hold the surgical tools used to perform the operation. **See Figure 10.** Robotic arms make more precise cuts compared to a surgeon's hand. However, surgeons can detect changes in the tissue by touching your organs during an open prostatectomy. Surgeons who perform robotic surgery go through special training to perform this type of operation.

Pelvic lymph node dissection

A PLND (pelvic lymph node dissection) is an operation that removes lymph nodes from your pelvis. As described in Part 5, PLND is advised if you choose to have a radical prostatectomy and either 1) you have high-risk or very-high-risk prostate cancer or 2) a nomogram predicts you have a 2% or greater risk for cancer in your lymph nodes. Using a 2% cutoff, nearly half of men (48 out of every 100) will be spared having a PLND.

Figure 10. Robotic-assisted radical prostatectomy

Your prostate may be removed by your surgeon with “robotic” arms that hold surgical tools. Your surgeon will move the robotic arms through a computer system instead of with his or her hands. The surgical tools will be inserted into your body through small cuts made into your abdomen.



Laparoscopic Surgery Robot by Nimur
Laparoscopic Surgery Robot by Nimur available at commons.wikimedia.org/wiki/File:Laparoscopic_Surgery_Robot.jpg under a Creative Commons Attribution-Share Alike 3.0 Unported

See Figure 11. Also, almost all men in this group who have cancer in their lymph nodes will be staged and treated correctly.

An extended PLND removes more lymph nodes than a limited PLND. 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 metastases that haven't spread far. Therefore, an extended PLND is advised if you're to have a PLND. It can be done with an open retropubic, laparoscopic, or robotic method.

Side effects of surgical treatment

Side effects are unhealthy or unpleasant physical or emotional responses to treatment. You may experience side effects from the general anesthesia, radical prostatectomy, or the PLND. During the operation, you may have a serious loss of blood

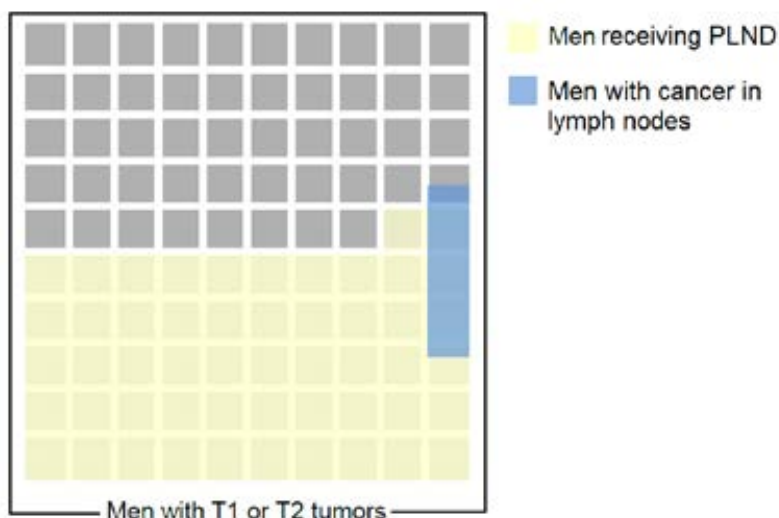
and require a blood transfusion. Serious risks of anesthesia and prostatectomy include heart attack and blood clots.

After the operation, general anesthesia may cause a sore throat from a breathing tube, nausea with vomiting, confusion, muscle aches, or itching. You will have pain and swelling, though this will often fade away within weeks. The PLND may rarely cause swelling in the legs due to the buildup of lymph (lymphedema) that will resolve over several weeks.

Almost every man has 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.

Figure 11.
Nomogram results for PLND

Primary tumors that are rated T1 or T2 have not grown outside of the prostate. However, the cancer may have spread to nearby lymph nodes. To receive the best treatment, your doctor needs to know if cancer is present in lymph nodes. When using a $\geq 2\%$ risk cutoff, most men with cancer in their lymph nodes will be correctly staged because they received a PLND.



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

Removing your prostate and seminal vesicles will cause you to have dry orgasms. You will no longer be able to father children through sex. Your prostatectomy essentially includes a vasectomy. This is an operation men may choose to have in order to stop being able to have children. Although not as common as erectile dysfunction, other sexual changes may include pain during orgasm (dysorgasmia), inability to have an orgasm (inorgasmia), curving of your penis (penile curvature or Peyronie's disease), and a smaller penis (penile shrinkage).

Bladder control often returns within months after the operation, but you may not have full control. Stress incontinence is leakage of a little urine when coughing, laughing, sneezing, or exercising. It is caused by damage to the muscle at the base of the bladder. Overflow incontinence occurs when there is too much urine in the bladder because scarring blocks the full release of urine. Some men also have problems with bowel movements (defecating) after the operation.

Not all side effects of surgical treatment are listed here. Please ask your treatment team for a complete list of common and rare side effects. If a side effect bothers you, tell your treatment team. There may be ways to help you feel better.

Radiation therapy

Radiation therapy is a cancer treatment that uses high-energy rays. The rays damage DNA. This either kills the cancer cells or stops new cancer cells from being made. Radiation can also harm normal cells.

Radiation therapy is an option for many men with prostate cancer. Radiation therapy may be given to your pelvic lymph nodes as well as to your prostate. The different ways to give radiation are discussed next.

External beam radiation therapy

Most often, EBRT (**external beam radiation therapy**) is the method used to treat prostate cancer. This method delivers radiation from outside your body using a large machine. The radiation passes through your skin and other tissue to reach the tumor.

Simulation

Treatment planning with a simulation session is needed. During simulation, pictures of the tumor will be taken with an imaging scan. Pictures are taken after your body is moved into the position needed for treatment.

Using the scans, your treatment team will plan the best radiation dose, number and shape of radiation beams, and number of treatment sessions. Beams are shaped with computer software and hardware added to the radiation machine. Radiation beams are aimed at the tumor with help from ink marks on the skin or marker seeds in the tumor.

Receiving treatment

During treatment, you will lie on a table in the same position as done for simulation. Devices may be used to keep you from moving so that the radiation targets the tumor. You will be alone while the technician operates the machine from a nearby room. He or she will be able to see, hear, and speak with you at all times.

As treatment is given, you may hear noises. One session often takes less than 10 minutes. EBRT is given 5 days a week for about 8 to 9 weeks, although there is growing interest in shortening the length of treatment.

Often, ADT (androgen deprivation therapy) is used with EBRT. ADT is described later in this chapter. Many studies have shown that adding ADT to EBRT improves treatment outcomes when prostate cancers are more aggressive. ADT has side effects so it shouldn't be used unless needed. Some men require short-term (4 to 6 months) ADT. Other men are on ADT for 1 to 3 years. There are multiple types of EBRT to treat prostate cancer:

- **3D-CRT (three-dimensional conformal radiation therapy)** uses beams matched to the shape of the tumor.
- **IMRT (intensity-modulated radiation therapy)** uses small beams of different strengths.

In **3D-CRT**, the radiation beams match the shape of your tumor to avoid healthy tissues. **IMRT** is a more precise type of 3D-CRT that may be used especially for more aggressive prostate cancer. The radiation beam is divided into smaller beams, and the strength of each beam can vary.

The prostate can slightly shift within the body. Tumors may also change



Newer treatment

In recent years, some cancer centers have built radiation machines that use proton beams. Proton beams are a stream of positively charged particles that emit energy within a short distance. Some doctors think that proton treatment is better than x-ray–based treatment. One benefit would be less severe side effects.

- ✓ To date, research hasn't shown that proton treatment is any better or worse for treating cancer or causing side effects. Well-designed research comparing IMRT and proton treatment is ongoing. Thus, NCCN experts advise that proton treatment can be an option if received at cancer centers with the proper equipment and experience. It is also helpful to ask about insurance coverage for this treatment since it may cost much more than EBRT. Your doctor may suggest you receive proton therapy in a clinical trial. More data is being collected to fully understand how this type of therapy can be used to treat prostate cancer.
- ✓ **SBRT (stereotactic body radiotherapy)** is a newer technique. It treats cancer with very precise, high-dose beams. Receiving SBRT is much like getting other EBRTs except treatment is finished in about 5 or less doses. Research thus far has shown that SBRT and IMRT are alike in treating cancer, but the side effects are different. SBRT may cause more side effects than IMRT. However, well-designed research of SBRT is needed to understand the side effects and assess long-term results. Thus, NCCN experts advise that treatment with SBRT be received only at cancer centers with the proper equipment and experience.

shape and size between and during treatment visits. IGRT (**image-guided radiation therapy**) can improve how well 3D-CRT and IMRT target the tumor.

IGRT uses a machine that delivers radiation and also takes pictures of the tumor. Pictures can be taken right before or during treatment. These pictures are compared to the ones taken during simulation. If needed, changes will be made to your body position or the radiation beams.

There are different types of radiation beams. 3D-CRT and IMRT are x-ray–based treatments. They use photon radiation beams. Photon beams are a stream of particles that have no mass or electric charge.

Brachytherapy

Brachytherapy is another standard radiation therapy for prostate cancer. This treatment involves placing radioactive seeds inside your prostate. Brachytherapy is also called interstitial radiation—a seed treatment. Brachytherapy may be used alone or combined with EBRT, ADT, or both.

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. Treatment planning is done beforehand to design the best course of treatment. You will be under general or spinal anesthesia when the seeds are placed.

Brachytherapy alone may be an option for men with very low, low, or favorable intermediate-risk prostate cancer. Brachytherapy can be given either as:

- Permanent LDR (**low dose-rate**) brachytherapy
- Temporary HDR (**high dose-rate**) brachytherapy

LDR brachytherapy uses thin needles to place 40 to 100 seeds into your prostate. Placement of the seeds is done as an outpatient procedure. The

seeds usually consist of either radioactive iodine or palladium. They will remain in your prostate to give low doses of radiation for weeks or 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.

For LDR brachytherapy, seed placement is harder if you have a very large or small prostate, your urine flow is blocked, or you've had TURP (**transurethral resection of the prostate**). If your prostate is large, you may be given ADT before LDR brachytherapy to shrink it. After the seeds are implanted, your doctor should measure the radiation dose for quality assurance.

HDR brachytherapy uses seeds made of iridium-194 that are contained inside soft catheters. The catheters are removed after radiation has been given. This treatment requires staying in the hospital for 1 to 2 days. Either type of brachytherapy may be given along with EBRT in men with unfavorable intermediate-, high-, or very-high-risk prostate cancer.

Side effects of radiation therapy

Similar to surgical treatment, a common side effect of EBRT and brachytherapy is erectile dysfunction. Unlike surgery, erectile dysfunction may develop several years after radiation therapy. Although not as common as erectile dysfunction, other sexual changes may include difficulty achieving orgasm, thicker semen, dry orgasm, discolored semen, and a decreased sperm count. These less common side effects often stop after a short period of time.

You may develop urinary problems. Urinary problems right after EBRT may include frequent urination, a burning feeling while urinating, blood in urine (hematuria), and feeling the need to rush to a bathroom or you'll leak urine (urge incontinence). After brachytherapy, you may have burning with

urination, a slow or weak urinary stream, urinary retention, overflow incontinence, and hematuria. These side effects go away. Several years later, radiation injury to the bladder can cause urinary incontinence, although this isn't common for either EBRT or brachytherapy. However, your risk after brachytherapy is higher if you have had a TURP.

Despite the best treatment planning and delivery, your rectum will be exposed to some radiation during EBRT or brachytherapy. You may have rectal pain, diarrhea, blood in the stool, and inflammation of the colon. These side effects will go away over several months.

Several years later, radiation injury to the rectum can cause rectal bleeding and irritation, but these symptoms are rare.

EBRT may cause changes in your skin. Your treated skin will look and feel as if it has been sunburned. It will likely become red and may also become dry and sore and feel painful when touched. You may also feel extremely tired despite sleep (fatigue) and not feel hungry. Exercise may help reduce fatigue.

Not all side effects of radiation therapy are listed here. Please ask your treatment team for a complete list of common and rare side effects. If a side effect bothers you, tell your treatment team. There may be ways to help you feel better.

Cryosurgery

Cryosurgery is a treatment option if radiation therapy fails. Cryosurgery treats prostate tumors by freezing them. This treatment is often done as an outpatient procedure.

Very thin needles will be inserted through your perineum into your prostate. 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. Your urethra will be spared by use of a catheter filled with warm liquid.

Side effects of cryotherapy

The full range of side effects from cryotherapy is unknown. More research is needed. Known short-term side effects include urinary retention, painful swelling, and "pins and needles" feeling in the penis (penile paresthesia). Long-term side effects include erectile dysfunction, stress incontinence, fistulas, and blockage of the urethra with rectal scar tissue. It is helpful to ask your doctor about the possible side effects of cryosurgery.

High-intensity focused ultrasound

HIFU (**high-intensity focused ultrasound**) is treatment option if radiation therapy fails. HIFU treats prostate tumors by using heat. HIFU uses high-intensity sound waves (ultrasound) to heat and kill the cancer cells. HIFU is done as an outpatient procedure. A probe is inserted into the rectum and the high-intensity sound waves are aimed directly at the cancer.

Side effects of HIFU

The full range of side effects from HIFU is unknown. More research is needed. Some side effects may include urinary retention, urinary incontinence, or erectile dysfunction. It is helpful to ask your treatment team for a full list of side effects.

Hormone therapy

Prostate cancer cells need hormones called androgens to grow. The main male androgen is testosterone. Hormone therapy will stop your body from making testosterone or will stop the action of testosterone. It can slow tumor growth or shrink the tumor for a period of time.

The types of hormone therapy are:

- ▶ **Bilateral orchiectomy** is the surgical removal of both testicles. They are removed since they make most of the testosterone in the body.
- ▶ **LHRH (luteinizing hormone-releasing hormone) agonists** are drugs used to stop the testicles from making testosterone. They are either injected into a muscle or implanted under the skin every 1, 3, 4, 6, or 12 months. LHRH agonists include goserelin acetate, histrelin acetate, leuprolide acetate, and triptorelin pamoate.
- ▶ **LHRH antagonists** are drugs used to stop the testicles from making testosterone. They are injected under the skin usually every month. Degarelix is an LHRH antagonist.
- ▶ **Antiandrogens** are drugs that block receptors on cancer cells from receiving testosterone. Antiandrogens include bicalutamide, flutamide, nilutamide, enzalutamide, and apalutamide.
- ▶ **Estrogens** can stop the adrenal glands and other tissues from making testosterone. One type of estrogen is called DES (**diethylstilbestrol**).
- ▶ **Corticosteroids** can stop the adrenal glands and other tissues from making testosterone. Hydrocortisone, prednisone, and dexamethasone are corticosteroids.

- ▶ **Androgen synthesis inhibitors** are drugs that block the making of androgen at different sites. Ketoconazole is an antifungal drug that stops the adrenal glands and other tissues from making testosterone. Abiraterone acetate works similarly but is more potent and less toxic.

The term “hormone therapy” can be confusing because of the many names it is called. Some people refer to all hormone therapy as androgen suppression therapy or ADT. However, to be exact, only orchiectomy and LHRH agonists and antagonists are ADTs.

Sometimes, antiandrogens are used with LHRH agonists or following an orchiectomy. This type of treatment is called CAB (**combined androgen blockade**). However, CAB is no better than castration alone for metastases. Moreover, it may lead to higher costs and worse side effects.

Finasteride or dutasteride used with CAB is called triple androgen blockade. The benefit of triple androgen blockade is probably small if any benefit exists. 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 on and off treatment. It can provide similar cancer control to continuous hormone therapy.

Side effects of hormone therapy

Hormone therapy has multiple side effects. It can be hard to know whether you will get a side effect. Many factors play a role. Such factors include your age, your health before treatment, how long or often you take 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. These sexual side effects don't seem to lessen with time.

Guide 3. Drug treatment for prostate cancer

Generic name	Brand name (sold as)	Type of treatment
Abiraterone acetate	Zytiga [®] , Yonsa [®]	Hormone therapy
Apalutamide	Erleada [™]	Hormone therapy
Bicalutamide	Casodex [®]	Hormone therapy
Cabazitaxel	Jevtana [®]	Chemotherapy
Degarelix	Firmagon [®]	Hormone therapy
Dexamethasone; Dexamethasone sodium phosphate	–	Hormone therapy
Diethylstilbestrol (DES)	–	Hormone therapy
Docetaxel	Taxotere [®]	Chemotherapy
Enzalutamide	Xtandi [®]	Hormone therapy
Flutamide	–	Hormone therapy
Goserelin acetate	Zoladex [®]	Hormone therapy
Histreltin acetate	Vantas [®]	Hormone therapy
Hydrocortisone	Cortef [®]	Hormone therapy
Ketoconazole	Nizoral [®]	Hormone therapy
Leuprolide acetate	Eligard [®] , Lupron Depot [®]	Hormone therapy
Methylprednisolone	Medrol [®]	Hormone therapy
Mitoxantrone hydrochloride	Novantrone [®]	Chemotherapy
Nilutamide	Nilandron [®]	Hormone therapy
Pembrolizumab	Keytruda [®]	Immunotherapy
Prednisone	–	Hormone therapy
Sipuleucel-T	Provenge [®]	Immunotherapy
Triptorelin pamoate	Trelstar [®]	Hormone therapy

The longer you take ADT, the more your risk for thinning and weakening bones (osteoporosis), bone fractures, weight gain, loss of muscle mass, diabetes, and heart disease increases. Other side effects of ADT include hot flashes, mood changes, and fatigue.

A side effect specific to orchiectomy is the loss of your testicles. Implants that look like testicles can be inserted into your scrotum. Your testicles won't be removed with LHRH agonists but these drugs will shrink your testicles over time.

Side effects of antiandrogens are like those of ADT. When an antiandrogen is used with an LHRH agonist, diarrhea is a major side effect. Other side effects include nausea, liver problems, breast growth and tenderness, and tiredness. Estrogens also increase risk for breast growth and tenderness as well as blood clots. Ketoconazole can cause low cortisol levels and cause health problems when taken with other drugs.

Abiraterone acetate with prednisone or methylprednisolone is a newer hormone therapy. It may be an option for men with M0 or M1 castration-naïve prostate cancer, or as a secondary hormone therapy for metastatic (M1) CRPC (castrate resistant-prostate cancer) disease. While taking abiraterone acetate, you should be tested for high blood pressure (hypertension), low potassium (hypokalemia), fluid buildup (edema), and problems with your adrenal glands, heart, and liver. You could also have hot flashes, fatigue, diarrhea, vomiting, constipation, coughing, shortness of breath, joint or muscle pain, and lung or urinary infections.

Enzalutamide and apalutamide are new antiandrogens. They try to prevent testosterone from having its normal effect, turning on prostate growth. Enzalutamide may be given to men with non-metastatic CRPC, or before or after docetaxel for metastatic CRPC. It may also be considered when you have metastatic CRPC and chemotherapy is not an option. A rare but severe side effect of enzalutamide is seizures. Common side effects may include extreme tiredness, hot flashes, diarrhea, headaches, pain, not feeling hungry, constipation, lung infections, swelling, shortness of breath, weight loss, headache, high blood pressure, dizziness, and a feeling that things are spinning around (vertigo). The chance that you may fall is greater when taking enzalutamide.

Apalutamide the newest hormone therapy and may be used to treat men with non-metastatic CRPC. This is cancer that has not spread in the body and is not responding to ADT. A rare but severe side effect of apalutamide is seizures. Common side effects may include extreme tiredness, hot flashes, diarrhea, pain, not feeling hungry, swelling, weight loss, headache, and high blood pressure. Apalutamide puts you at risk for falling. This drug may cause your muscles and bones to be weak and put you at risk for a broken bone (fracture).

Not all of the side effects of hormone therapy are listed here. Please ask your treatment team for a complete list of common and rare side effects. If a side effect bothers you, tell your treatment team. There may be ways to help you feel better. Some ways to reduce risks of hormone therapy are discussed in Part 6, but your treatment team can tell you more.

Immunotherapy

The immune system is the body's natural defense against infection and disease. The immune system includes many chemicals and proteins. These chemicals and proteins are made naturally in your body.

Immunotherapy increases the activity of your immune system. By doing so, it improves your body's ability to find and destroy cancer cells. Immunotherapy may be an option for some men with prostate cancer.

Sipuleucel-T

Sipuleucel-T is a drug that uses your white blood cells to destroy prostate cancer cells. In a lab, your white blood cells from a blood sample will be changed by a protein so they will find and destroy prostate cancer cells. This drug is known as a cancer vaccine. It is given as an injection.

Common side effects of sipuleucel-T include chills, fever, nausea, and headache. These effects don't appear to last for long. Serious heart problems rarely occur.

Pembrolizumab

Pembrolizumab is a newer immunotherapy drug approved for cancers with certain DNA changes, which occur in fewer than 5% of prostate cancer patients. Thus, your doctor may recommend a test to check if you have MSI-H (microsatellite instability-high) or mismatch repair (MMR)-deficient tumor cells to determine if pembrolizumab could be helpful, but it would typically not be used until other treatments have been used.

This type of immunotherapy is called a PD-1 (programmed death receptor-1) inhibitor. PD-1 is a protein found on immune system cells called T cells. This type of drug blocks the PD-1 protein and boosts the immune system response against the cancer. Pembrolizumab is given every few weeks as a liquid that is injected into a vein. Pembrolizumab may be an option for treating prostate cancer that continues to grow through at least one line of systemic therapy for metastatic CRPC.

The most common side effects of pembrolizumab may include skin rash, itchy skin, extreme tiredness, nausea, vomiting, diarrhea, and bone, joint, and/or muscle pain. This drug can also cause inflammation of the liver, kidney, or lungs. Not all of the side effects are listed here. It is helpful to ask for a complete list of side effects.

Chemotherapy

Chemotherapy, or “chemo,” is the use of drugs to kill cancer cells. Some chemotherapy drugs kill cancer cells by damaging their DNA or disrupting the making

of DNA. Other drugs interfere with cell parts that are needed for making new cells.

Docetaxel and cabazitaxel are chemotherapy drugs used to treat advanced prostate cancer. They may improve survival, delay or relieve symptoms, and reduce tumor growth and PSA levels. Mitoxantrone hydrochloride may relieve symptoms caused by advanced cancer. Read Part 7 for more details on chemotherapy.

[See Guide 3](#) on page 40 for a list of drugs used to treat prostate cancer. 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.

Docetaxel is an option for some men who are taking ADT for the first time. In this case, 3-week cycles are advised. These 3-week cycles may occur 6 times. Side effects may include fatigue, weakness or numbness in the toes or fingers (neuropathy), inflammation of the mouth (stomatitis), diarrhea, and low counts of neutrophils (neutropenia) with or without fever. Neutrophils are a type of white blood cell.

Docetaxel is also used to treat metastases after ADT fails to stop cancer growth. Three-week cycles are also advised. The number of cycles you receive should be based on how much the drug is helping and the severity of side effects.

Cabazitaxel is an option if docetaxel fails to work. However, the benefits of cabazitaxel are small and the side effects can be severe. You should not take cabazitaxel if your liver, kidney, or bone marrow is not working well or if you have severe neuropathy.

You may have a severe allergic reaction within a few minutes of receiving cabazitaxel. Common side effects are fatigue, neuropathy, hematuria, back pain, bruising, shortness of breath, cough, joint pain, and hair loss. Severe stomach and intestinal problems, illness from too few white blood cells, and kidney failure may occur.

Not all of the side effects of chemotherapy are listed here. Please ask your treatment team for a complete list of common and rare side effects. If a side effect bothers you, tell your treatment team. There may be ways to help you feel better.

Radiopharmaceuticals

Radiopharmaceuticals are drugs that contain a radioactive substance. Radium-223 is a radiopharmaceutical that is injected into the body to treat prostate cancer that has spread to the bone. It may improve survival time. It may also delay bone problems and the need for radiation to treat pain.

Since the chemical makeup of radium-223 is similar to calcium, it travels to bone damaged by cancer. Once it reaches the bone, it delivers radiation that kills the nearby cancer cells. The radiation doesn't travel far so healthy tissue is spared.

Radium-223 may lower blood cells counts. Thus, you may get infections and bruises and have unusual bleeding or fatigue. Since radium-223 leaves the body through the gut, other common side effects are nausea, diarrhea, and vomiting.

⁸⁹Sr (strontium-89) and ¹⁵³Sm (samarium-153) also are radiopharmaceuticals. They haven't been shown to extend life. However, they may relieve pain caused by cancer metastases in the bone. They also may cause a decrease in the number of blood cells.

Clinical trials

Clinical trials are research studies that people choose to take part in. Because of clinical trials, doctors learn how to prevent, diagnose, and treat diseases like cancer. Because of clinical trials, the tests and treatments in this book are now widely available to help men with prostate cancer.

One of your treatment choices may be to join a clinical trial. NCCN experts strongly support clinical trials as a treatment option. Clinical trials are an important option for men with prostate cancer at all stages. For example, some trials are testing whether using treatments that work for prostate cancer work better in combination, or when used in earlier stages of the disease. Newer treatments can also be tested to see if they work better for prostate cancer.

Phases of a clinical trial

Clinical trials go through levels or phases of testing to find safe and helpful ways to manage prostate cancer. These phases help move the research along to find out what works best for patients with prostate cancer.

- **Phase I** looks at how much drug to give, its side effects, and how often to give the treatment.
- **Phase II** tests for side effects and how cancer responds to treatment.
- **Phase III** compares the new treatment (or new use of treatment) to what is commonly used.
- **Phase IV** follows late side effects and if the treatment still works after a long period.

Taking part in a clinical trial

All clinical trials have a plan and are carefully led by a medical team. Patients in a clinical trial are often alike with their cancer type and general health. You can join a clinical trial when you meet certain terms (eligibility criteria).

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

Some benefits of a clinical trial:

- You'll have access to the most current cancer care.
- You will be closely watched by your medical team.
- You may help other patients with cancer.

Some risks of a clinical trial:

- Like any test or treatment, there may be side effects
- New tests or treatments may not work.
- You may have more clinic visits for treatment and blood or imaging tests.

Next steps

Ask your doctor or nurse if a clinical trial may be an option for you. There may be clinical trials where you're getting treatment or at other treatment centers nearby. You can also find clinical trials through the websites listed in Part 8 on page 88.

Understudied treatments

The treatments described so far are those recommended by NCCN experts. These treatments have been proven in clinical trials to be safe and work well. You may have heard about other treatments. Some treatments that are of great interest but need more research are addressed next.

Cryosurgery or high-intensity focused ultrasound

Cryosurgery is a treatment option following failure of radiation therapy. It causes many of the same side effects in the prostate region as surgery or radiation. The effects of cryosurgery are still uncertain. More research is needed to learn more about this treatment.

Vascular-targeted photodynamic therapy

VTP (vascular-targeted photodynamic therapy) destroys blood vessels of prostate tumors. It consists of a drug that is first injected into your vein. The drug is then activated by light. The light is emitted from tiny laser fibers that are inserted into your prostate. VTP isn't recommended by NCCN experts at this time unless it's part of a clinical trial.

Complementary and alternative medicine



CAM (complementary and alternative medicine) is a group of treatments sometimes used by people with cancer. Many CAMs are being studied to see if they are truly helpful.

Complementary medicines are meant to be used alongside standard therapies, most often for relaxation, to improve your health, or to prevent or reduce side effects.

Alternative medicine is treatment or techniques that are used instead of standard treatments such as chemotherapy or radiation. Some are sold as cures even though they haven't been proven to work in clinical trials.

Many cancer centers or local hospitals have complementary therapy programs that offer acupuncture, yoga, and other types of therapy.

It's important to tell your treatment team if you are using any complementary medicines, especially supplements, vitamins, or herbs. Some of these things can interfere with your cancer treatment. For more information about CAM, ask your doctor and visit the websites listed in Part 8.

Review

- ▶ A radical prostatectomy removes the prostate and the seminal vesicles. A PLND removes lymph nodes near the prostate.
- ▶ Radiation from a machine or “seeds” is used to kill cancer cells or stop new cancer cells from being made.
- ▶ Cryosurgery kills cancer cells by freezing them and HIFU kills cancer cells by heating them.
- ▶ Hormone therapy treats prostate cancer by either stopping testosterone from being made or stopping the action of testosterone.
- ▶ 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.
- ▶ Radiopharmaceuticals are radioactive drugs used to treat cancer in the bones.
- ▶ Clinical trials give men with prostate cancer access to new tests and treatments.

5

Treatment guide: Initial treatment

49 Very low risk

51 Low risk

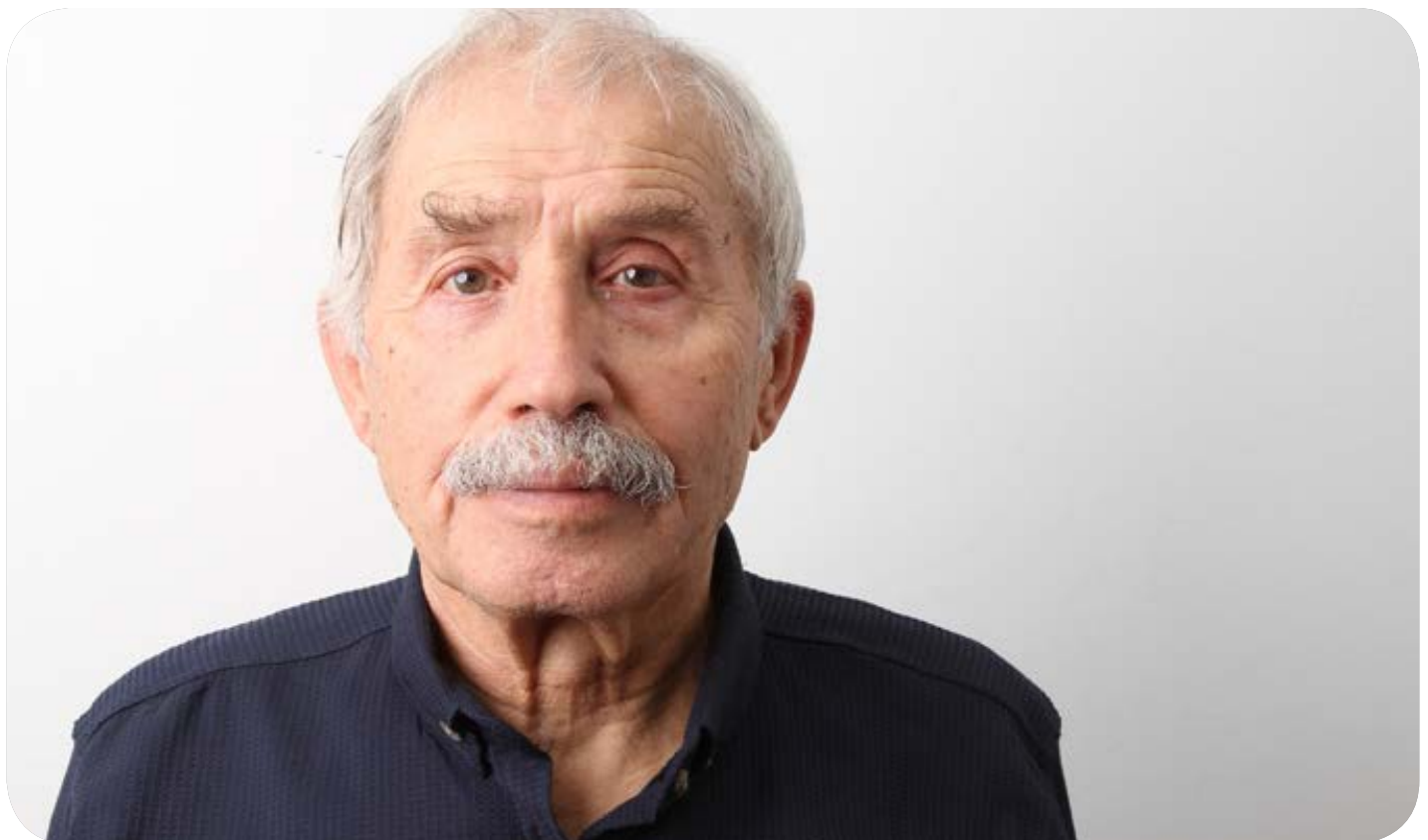
54 Favorable intermediate risk

56 Unfavorable intermediate risk

58 High risk or very high risk

60 Regional cancer

61 Review



Part 5 is a guide to the initial treatment options for men with prostate cancer. The risk groups are used to recommend treatment options. These groups have been tested and have been found to predict treatment outcomes well. They provide a better basis for treatment recommendations than just using the cancer stage.

This information is taken from the treatment guidelines written by NCCN experts for prostate cancer doctors. Your doctors may suggest other treatments than those listed in Part 5 based on your health and personal wishes.



Helpful tips for reading the treatment guides in the next 4 chapters ➔

- ✓ The treatment guides (the colored charts) are numbered and list test or treatment options.
- ✓ It is helpful to read the guides from left to right, using the arrows to follow a path. The titles of the guides are important.
- ✓ The symbol \pm means “with or without.” This is used to show when a test or treatment is given with or without another test or treatment.
- ✓ Acronyms (a group of letters using the first letters of words or phrases) found in the treatment guides are defined on page 94.

Very low risk

Guide 4. Primary treatment

Expected years to live		What are the options?
<10 years	→	<ul style="list-style-type: none"> • Observation
10–20 years	→	<ul style="list-style-type: none"> • Active surveillance: <ul style="list-style-type: none"> ◦ PSA no more often than every 6 months as needed ◦ DRE no more often than every 12 months as needed ◦ Repeat prostate biopsy no more often than every 12 months as needed ◦ Consider mpMRI to help stage and grade the cancer if PSA increases and biopsy samples had no cancer
≥20 years	→	<ul style="list-style-type: none"> • Active surveillance: <ul style="list-style-type: none"> ◦ PSA no more often than every 6 months as needed ◦ DRE no more often than every 12 months as needed ◦ Repeat prostate biopsy no more often than every 12 months as needed ◦ Consider mpMRI to help stage and grade the cancer if PSA increases and biopsy samples had no cancer
		<ul style="list-style-type: none"> • Radiation therapy: <ul style="list-style-type: none"> ◦ EBRT ◦ Brachytherapy
		<ul style="list-style-type: none"> • Surgical treatment: <ul style="list-style-type: none"> ◦ Radical prostatectomy ± PLND if ≥2% risk of cancer in lymph nodes

Guide 4 lists the treatment options for men at very low risk of recurrence. This tumor can't be felt with a DRE but is found because of high PSA levels. NCCN experts are concerned about overtreatment of this early cancer.

Observation

NCCN experts advise starting observation if you're expected to live less than 10 years. Other health issues may be affecting you more than the prostate cancer. In the long run, prostate cancer may not

be the cause of death. The cancer itself may never cause any problems. Observation consists of testing on a regular basis so that supportive care with ADT can be given if symptoms from the cancer are likely to start. Tests during observation include PSA and DRE.

Active surveillance

Active surveillance is advised if you are a younger male with slow-growing disease, and are likely to live more than 10 years. Active surveillance consists of

testing on a regular basis so that treatment can be started when and if needed. Treatment is given when there is still an excellent chance for a cure.

Active surveillance consists of multiple tests. In general, PSA testing should occur no more often than every 6 months. DRE should occur no more often than every 12 months.

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 DRE, 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 or MRI showed concern for more disease, you may have a repeat biopsy within 6 months to make sure your cancer was correctly classified as low risk. If you're likely to live less than 10 years and are on observation, you may not have a repeat prostate biopsy.

A prostate biopsy may be done under the guidance of MRI images combined with real-time ultrasound images. This type of biopsy is called an MRI-US fusion biopsy. It may help detect higher-grade cancers. Higher-grade cancers include those with Gleason score 7 through 10.

The use of mpMRI may help to assess whether the cancer is still very low risk. Your doctor may suspect that the cancer is in the front part of your prostate that can't be felt during DRE. This is called anterior prostate cancer. Your doctor may also or instead suspect that an aggressive cancer is now present. mpMRI may help stage and grade the cancer when the PSA level increases but no cancer was found in biopsy samples.

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. NCCN experts suggest the following triggering events:

- Cancer from the repeat biopsy has a Gleason grade of 4 or 5, or
- There is a larger amount of cancer within biopsy samples or a greater number of biopsy samples have cancer.

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 alone.

Surgical treatment

Surgical treatment is another option if you will likely live more than 20 years and prefer treatment over active surveillance. It should consist of a radical prostatectomy. Your pelvic lymph nodes may also be removed if your risk for them having cancer is 2% or higher. Your doctor will determine your risk using a nomogram, which was described in Part 3.

The tissue that will be removed from your body during the operation will be sent to a pathologist. He or she will assess 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. See Guide 6 on page 53 for more information.

Low risk

Guide 5. Primary treatment

Expected years to live		What are the options?
<10 years	→	<ul style="list-style-type: none"> • Observation
≥10 years	→	<ul style="list-style-type: none"> • Active surveillance: <ul style="list-style-type: none"> ◦ PSA no more often than every 6 months as needed ◦ DRE no more often than every 12 months as needed ◦ Repeat prostate biopsy no more often than every 12 months as needed ◦ Consider mpMRI to help stage and grade the cancer if PSA increases and biopsy samples had no cancer
		<ul style="list-style-type: none"> • Radiation therapy: <ul style="list-style-type: none"> ◦ EBRT ◦ Brachytherapy
		<ul style="list-style-type: none"> • Surgical treatment: <ul style="list-style-type: none"> ◦ Radical prostatectomy ± PLND if ≥2% risk of cancer in lymph nodes

Guide 5 lists the treatment options for men at low risk of recurrence. Treatment options are based on how many years a man is expected to live.

Observation

NCCN experts advise starting observation if you're expected to live less than 10 years. The cancer itself may never cause any problems. Observation consists of testing on a regular basis so that supportive care with ADT can be given if symptoms from the cancer are likely to start. Tests during observation include PSA and DRE.

Active surveillance

Active surveillance is advised if you are a younger male with slow-growing disease, and are likely to live more than 10 years. Active surveillance consists of

testing on a regular basis so that treatment can be started when and if needed. Treatment is given when there is still an excellent chance for a cure.

Active surveillance consists of multiple tests. In general, PSA testing should occur no more often than every 6 months. DRE should occur no more often than every 12 months.

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 DRE, 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.

A prostate biopsy may be done under the guidance of MRI images combined with real-time ultrasound images. This type of biopsy is called MRI-US fusion biopsy and may help detect higher-grade cancers. Higher-grade cancers include those with Gleason score 7 through 10.

The use of mpMRI may help to assess whether the cancer is still low risk. Your doctor may suspect that the cancer is in the front part of your prostate that can't be felt during DRE. This is called anterior prostate cancer. Your doctor may also or instead suspect that an aggressive cancer is now present. mpMRI may help stage and grade the cancer when the PSA level increases but no cancer was found in biopsy samples.

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. NCCN experts suggest the following triggering events:

- Cancer from the repeat biopsy has a Gleason grade of 4 or 5, or
- There is a larger amount of cancer within biopsy samples or a greater number of biopsy samples have cancer.

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,

Order of treatments

Some men with prostate cancer may receive more than one type of treatment. It is helpful to talk to your doctor about the order of your treatment plan. The terms that describe the order of treatments are:



Neoadjuvant treatment is given to shrink the tumor before surgery or radiation.



Primary treatment is the main treatment given to rid the body of cancer.



Adjuvant treatment is given after surgery or radiation to kill any remaining cancer cells.

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 alone.

Surgical treatment

Surgical treatment is another option if you will likely live more than 10 years and prefer treatment over active surveillance. It should consist of a radical prostatectomy. Your pelvic lymph nodes may also be removed if your risk for them having cancer is 2% or higher. Your doctor will determine your risk using a nomogram, which was described in Part 3.

The tissue that will be removed from your body during the operation will be sent to a pathologist. He or she will assess 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.

Guide 6 lists options for adjuvant treatment after a radical prostatectomy. Adjuvant treatment helps to stop the cancer from returning. Options are based on the presence of high-risk features and cancer in the lymph nodes. High-risk features create the possibility that not all of the cancer was removed by the operation. High-risk features include:

- Cancer in surgical margins
- Cancer outside the prostatic capsule

- Cancer in the seminal vesicle(s)
- Detectable PSA levels

If test results find no high-risk features or cancer in the lymph nodes, no more treatment is needed. You may start observation. You will see Part 6.

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

There are two treatment options if cancer is found in lymph nodes. The first option is to start ADT now. EBRT may be given with ADT. If your PSA levels are undetectable, a second option is to start observation. Supportive care with ADT can be started if the levels rise.

For adjuvant ADT, an LHRH antagonist or LHRH agonist is advised. It can be given on an intermittent schedule to reduce its side effects. However, the benefits of ADT in this case are unclear. Your doctor can tell you how long to use ADT.

Guide 6. Adjuvant treatment after prostatectomy

Test results		What are the options?
No high-risk features or cancer in lymph nodes	→	• see Part 6, <i>Treatment monitoring</i>
High-risk features but no cancer in lymph nodes	→	• EBRT or • Observation
Cancer in lymph nodes	→	• ADT ± EBRT or • Observation

Favorable intermediate risk

Guide 7. Primary treatment

Expected years to live		What are the options?
<10 years*	→	<ul style="list-style-type: none"> • Radiation therapy <ul style="list-style-type: none"> ◦ EBRT ◦ Brachytherapy
	→	<ul style="list-style-type: none"> • Observation
≥10 years		<ul style="list-style-type: none"> • Active surveillance: <ul style="list-style-type: none"> ◦ PSA no more often than every 6 months as needed ◦ DRE no more often than every 12 months as needed ◦ Repeat prostate biopsy no more often than every 12 months as needed ◦ Consider mpMRI to help stage and grade the cancer if PSA increases and biopsy samples had no cancer
		<ul style="list-style-type: none"> • Radiation therapy <ul style="list-style-type: none"> ◦ EBRT ◦ Brachytherapy alone
		<ul style="list-style-type: none"> • Surgical treatment: <ul style="list-style-type: none"> ◦ Radical prostatectomy ± PLND if ≥2% risk of cancer in lymph nodes

*Men with “favorable” cancer may start active surveillance but more research on outcomes is needed.

Guide 7 lists the treatment options for men in the favorable intermediate risk group. Treatment options are based on how many years a man is expected to live.

Observation

Observation is an option for men expected to live less than 10 years. The cancer is unlikely to cause problems. Observation consists of testing on a regular basis so that supportive care with ADT can be given if symptoms from the cancer are likely to start. Tests during observation include PSA and DRE.

Active surveillance

Active surveillance is an option, especially if only 1 core contained a certain amount of cancer and you are likely to live more than 10 years. 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 carefully for any change in the disease status. Treatment is given when there is still an excellent chance for a cure.

Radiation therapy

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





Surgical treatment

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 your risk for them having cancer is 2% or higher. Your doctor will determine your risk using a nomogram, which was described in Part 3.

The tissue that will be removed from your body during the operation will be sent to a pathologist. He or she will assess 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 the operation. See Guide 9 on page 57 for more information.

Unfavorable intermediate risk

Guide 8. Primary treatment

Expected years to live		What are the options?
<10 years*		<ul style="list-style-type: none"> • Radiation therapy <ul style="list-style-type: none"> ◦ EBRT + ADT for 4–6 months ◦ EBRT + brachytherapy ± ADT for 4–6 months
		<ul style="list-style-type: none"> • Observation
≥10 years		<ul style="list-style-type: none"> • Surgical treatment: <ul style="list-style-type: none"> ◦ Radical prostatectomy ± PLND if ≥2% risk of cancer in lymph nodes
		<ul style="list-style-type: none"> • Radiation therapy <ul style="list-style-type: none"> ◦ EBRT + ADT for 4–6 months ◦ EBRT + brachytherapy ± ADT for 4–6 months

*Men with “favorable” cancer may start active surveillance but more research on outcomes is needed.

Guide 8 lists the treatment options for men in the unfavorable intermediate risk group. Treatment options are based on how many years a man is expected to live.

Observation

Observation is an option for men expected to live 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 ADT can be given if symptoms from the cancer are likely to start. Tests during observation include PSA and DRE. Active surveillance is not recommended for patients in this risk group.

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 but will likely cause more side effects.

Your doctor may want to add a short course of ADT to EBRT. Research has shown that adding ADT to radiation can increase the likelihood of cure. For ADT, an LHRH agonist alone or with an antiandrogen may be used. If you will receive ADT, it will be given before, during, and after radiation therapy for 4 to 6 months.

Surgical treatment

If you are expected to live 10 or more years, a radical prostatectomy is a second option. Your pelvic lymph nodes may also be removed if your risk for them having cancer is 2% or higher. Your doctor will determine your risk using a nomogram, which was described in Part 3.

Guide 9. Adjuvant treatment after radical prostatectomy

Test results		What are the options?
No high-risk features or cancer in lymph nodes	→	• See Part 6, <i>Treatment monitoring</i>
High-risk features but no cancer in lymph nodes	→	• EBRT • Observation
Cancer in lymph nodes	→	• ADT ± EBRT • Observation

The tissue that will be removed from your body during the operation will be sent to a pathologist. He or she will assess 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.

Guide 9 lists options for adjuvant treatment after a prostatectomy for favorable or unfavorable intermediate risk. Adjuvant treatment helps to stop the cancer from returning. Options are based on the presence of high-risk features and cancer in the lymph nodes. High-risk features suggest that not all of the cancer was removed by the operation. High-risk features include:

- Cancer in surgical margins
- Cancer outside the prostatic capsule
- Cancer in the seminal vesicle(s)
- Detectable PSA levels

If test results find no high-risk features or cancer in the lymph nodes, no more treatment is needed. You may start observation.

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

There are two treatment options if cancer is found in lymph nodes. The first option is to start ADT now. EBRT may be given with ADT. If your PSA levels are undetectable, a second option is observation. Treatment with ADT and radiation can be started if the levels rise.

For adjuvant ADT, an LHRH antagonist or LHRH agonist is advised. It can be given on an intermittent schedule to reduce its side effects. However, the benefits of ADT in this case are unclear. Your physician will discuss length of treatment with you.

High risk or very high risk

Guide 10. Primary treatment

What are the options?

- EBRT + ADT for 2–3 years
- EBRT+ brachytherapy + ADT for 1–3 years
- Radical prostatectomy + PLND

Guide 10 lists the treatment options for men in the high-risk or very-high-risk group who are expected to live for at least another 5 years. There are a few treatment options based on your level of risk. The first option is EBRT to the prostate and pelvic lymph nodes and long-term ADT. Docetaxel may be given after EBRT for six 3-week cycles. You will continue to take ADT during this time. When used with radiation, ADT may consist of an LHRH agonist or an LHRH agonist with an antiandrogen. If you will receive ADT, it will be given before, during, and after radiation therapy for a total of 2 to 3 years.

The second treatment option is EBRT plus brachytherapy and long-term ADT. The time ADT is given may be reduced when EBRT is given with brachytherapy. When used with radiation, ADT may consist of an LHRH agonist or an LHRH agonist with an antiandrogen. If you will receive ADT, it will be given before, during, and after radiation therapy for a total of 1 to 3 years.

If the tumor can be fully removed, a radical prostatectomy with removal of your pelvic lymph nodes (PLND) may be considered. This may be an option for men who are younger and have no other health issues.

The tissue removed from your body will be sent to a pathologist. He or she will assess how far the cancer has spread within the tissue. Your PSA level will also be tested.

Guide 11. Adjuvant treatment

After radiation therapy

What are the options?

- See Part 6, *Treatment monitoring*

After prostatectomy

Test results		What are the options?
No high-risk features or cancer in lymph nodes	→	• Observation
High-risk features but no cancer in lymph nodes	→	• EBRT • Observation
Cancer in lymph nodes	→	• ADT ± EBRT • Observation

Guide 11 lists options for adjuvant treatment. Adjuvant treatment helps to stop the cancer from returning. Options for adjuvant treatment after a prostatectomy are based on the presence of high-risk features and cancer in the lymph nodes. High-risk features may include:

- Cancer in surgical margins
- Cancer outside the prostatic capsule
- Cancer in the seminal vesicle(s)
- Detectable PSA levels

If test results find no high-risk features or cancer in the lymph nodes, no more treatment is needed. You may start observation.

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

There are two treatment options if cancer is found in lymph nodes. The first option is to start ADT now. EBRT may be given with ADT. If your PSA levels are undetectable, a second option is to start observation. Supportive care with ADT can be started if the levels rise.

For adjuvant ADT, an LHRH agonist or orchiectomy may be an option. It can be given on an intermittent schedule to reduce its side effects. However, the benefits of ADT in this case are unclear.

Regional cancer

Guide 12. Treatment options

What are the options?

- EBRT + ADT for 2–3 years ± abiraterone and prednisone
or
- EBRT + ADT for 2–3 years ± abiraterone and methylprednisolone
- ADT ± abiraterone and prednisone
or
- ADT ± abiraterone and methylprednisolone
- Intermittent ADT
- Observation

Guide 12 lists the treatment options for men with regional cancer. Regional cancer has spread to nearby lymph nodes but not to distant sites.

An option is EBRT with long-term ADT. ADT given with EBRT may consist of an LHRH agonist with or without an antiandrogen. If you will receive long-term ADT, it will be given before, during, and after radiation therapy for a total of 2 to 3 years. Along with ADT, you may receive abiraterone acetate and prednisone, or abiraterone acetate and methylprednisolone.

Other options for regional cancers consist of using ADT alone. You may receive intermittent ADT. Intermittent treatment is alternating periods of time on and off ADT. You may also receive the ADT with abiraterone acetate with either prednisone or methylprednisolone. ADT can stop much of the cancer, but it is not able to completely eliminate it therefore, ADT alone cannot cure prostate cancer.

ADT can consist of surgical castration with a bilateral orchiectomy or medical castration with an LHRH agonist. Both methods for castration work equally well. Observation may also be an option if your PSA is undetectable, or the level is low and stable.

Review

- ▶ One option for some men with 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 surgical treatment are options.

- ▶ For favorable intermediate-risk or unfavoarble intermediate-risk cancers, treatment options may include observation, radiation therapy, or surgical treatment. Certain men with favorable intermediate-risk cancer may be able to do active surveillace.

- ▶ High- and very-high-risk cancers may be treated with radiation or an operation. Sometimes long-term ADT, docetaxel, or both are added to radiation therapy.

- ▶ Regional cancers may be treated with radiation therapy plus ADT or ADT alone, or observation.

6

Treatment guide: Treatment monitoring

-
- 63 Reducing ADT risks

 - 65 Initial treatment results

 - 66 Treatment after prostatectomy

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Part 6 is a guide to monitoring after initial treatment. You can learn about the ways to reduce some of the health risks of ADT. Monitoring also includes assessing if initial treatment was successful. The tests used to assess treatment results are listed. If local treatments don't succeed in treating the cancer, the next treatments you can receive are explained.

This information is taken from the treatment guidelines written by NCCN experts for doctors who treat prostate cancer. Your doctors may suggest other treatments than those listed in Part 6 based on your health and personal wishes.

Reducing ADT risks

Guide 13 lists some risks of ADT and ways to reduce them. One known risk of ADT is the thinning and weakening of bones (osteoporosis).

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. Your blood should be tested to ensure the proper levels.

If you are at high risk for bone fracture, there are drugs that may strengthen your bones. Before ADT is planned to last more than 6 months, you should receive a DEXA (dual energy x-ray absorptiometry) scan to measure your bone density. Denosumab, zoledronic acid, or alendronate are recommended if your bone density is low. Denosumab is injected under the skin. Zoledronic acid is injected into a vein. Alendronate is a pill that is swallowed. One year after treatment has started, another DEXA scan is recommended.

Denosumab, zoledronic acid, and alendronate have possible side effects. They have been linked to a rare side effect called osteonecrosis—bone tissue death—of the jaw. Other side effects are low blood calcium levels and arthritis type aches. You may be at higher risk of jaw osteonecrosis if you already have dental problems. Thus, it's important to get a dental exam and dental treatment before starting any of these drugs.

Guide 13. Health care for ADT risks

Health risk	What are the options?
Osteoporosis	<ul style="list-style-type: none"> • Calcium and vitamin D3 • Denosumab, zoledronic acid, or alendronate if at high risk for bone fracture
Diabetes	<ul style="list-style-type: none"> • Follow guidelines for general population
Heart (cardiovascular) disease	<ul style="list-style-type: none"> • Follow guidelines for general population

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 are advised. You should tell your primary care physician if you are being treated with ADT. He or she can do everything possible to help keep you from getting diabetes.

ADT and other hormone therapies can have other side effects as discussed in Part 4. These risks included erectile dysfunction, fatigue, hot flashes, breast tenderness and growth, diarrhea, weight gain, liver inflammation, and so forth. There are ways to prevent or treat many of these side effects. Examples include exercise for fatigue, diet modification to reduce weight gain, antidepressant drugs for hot flashes or emotional changes, and radiation to prevent breast growth. Talk to your treatment team about ways to manage risks of hormone therapy.

Initial treatment results

Guide 14. Tests used

Initial treatment		Test		How often is this test needed?
Radiation therapy or Surgery if no disease in lymph nodes	→	PSA	→	<ul style="list-style-type: none"> • Every 6–12 months for 5 years • If normal results, then PSA every year
	→	DRE	→	<ul style="list-style-type: none"> • Every year unless PSA is undetectable
Still on ADT for lymph node metastases or Local disease while on observation	→	Physical exam	→	<ul style="list-style-type: none"> • Every 3–6 months
	→	PSA	→	<ul style="list-style-type: none"> • Every 3–6 months
	→	Bone imaging	→	<ul style="list-style-type: none"> • Every 6–12 months and if you have symptoms

Guide 14 lists the tests used to assess the results of initial treatment or to watch men who are on long-term ADT because of disease in the lymph nodes. The test may also occur for men who are being observed without treatment because of a shorter life expectancy. For many men, the goal of initial treatment is to cure the cancer. A cure is possible when the cancer has not spread far. The cancer may have been cured if tests find no signs of cancer after treatment. An undetectable PSA level after treatment is a good sign. However, prostate cancer returns in some men after having no signs of cancer for a period of time.

DRE and PSA testing done on a regular basis may catch a recurrence early. A DRE can find a recurrence near or in the prostate. An increase in the PSA level can be a sign of recurrence either near or in the prostate or in other areas. Besides PSA level, your doctor will assess the PSA doubling time and velocity.

If the goal of your initial treatment was to cure the cancer, PSA testing every 6 to 12 months for 5 years is recommended. However, PSA testing every 3 months may be needed if you have a high risk of recurrence. If PSA levels remain normal during the

5 years, then PSA testing can be done every year. A DRE can also help to find a recurrence of prostate cancer early as well as cancer in the rectum or colon. If your PSA is undetectable, your doctor may not do a DRE.

If your initial treatment controls but doesn't cure the cancer or if you are being observed without treatment, you should be checked often by a doctor. In addition to PSA testing, a complete physical exam is recommended. A physical exam may tell if the cancer is still growing despite undergoing treatment.

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. Persistent cancer is cancer that was not completely removed or destroyed by initial treatment. If tests find that your PSA level increases twice in a row after falling to near zero, the cancer may have returned (recurrence). However, some men have low levels of PSA that may result from benign prostate tissue left behind or PSA made by other organs, especially the small or large bowel (intestines), parotid or salivary glands, or dental disease.

Treatment after prostatectomy

Guide 15. Treatment by M stage

Health tests		Test results		What are the options?
Main tests: • PSA doubling time Possible tests: • Chest x-ray or CT chest • Bone imaging • CT or MRI of abdomen and pelvis, TRUS, or both • C-11 choline or F-18 fluciclovine PET/CT or PET/MRI • Decipher molecular test • Biopsy of the prostate bed	→	No distant metastases (M0 stage)	→	• EBRT ± ADT • Observation
	→	Distant metastases (M1 stage)	→	• ADT ± EBRT to site of metastases, if cancer in weight-bearing bones or if there is bone pain • Observation

Guide 15 lists the tests and treatment options when PSA scores or a DRE suggest there's cancer after you were treated with an operation. An elevated PSA may tell us that there is still cancer in your body. Once the PSA reaches a high enough level, your doctor may order imaging tests to try and find where the cancer cells are in the body. A fast PSA doubling time is associated with an earlier risk of finding disease has spread to the bone, and imaging may be ordered at lower PSA levels when the PSA is doubling quickly.

A chest x-ray, CT, MRI, PET/CT or PET/MRI, or TRUS may be used to look for cancer spread to lymph nodes or other organs. A bone scan shows if the cancer has spread to the bone. It is usually done when there are symptoms of bone metastases or when your PSA level is rising quickly.

If there is little reason to suspect distant metastases, EBRT to the prostate bed and sometimes the pelvic lymph node regions may be recommended, with or without ADT. However, observation may be a choice depending on your overall health and personal wishes. For ADT, an LHRH agonist may be used with or without an antiandrogen. If you will receive ADT, it will be given before, during, and after radiation therapy for a total of 6 months to 2 years. ADT is the main treatment for known or highly suspected cancer that has spread to distant areas in the body.

After treatment, testing to monitor treatment results will start again. These tests include PSA with either a DRE or physical exam. If the tests suggest the cancer is growing or spreading, imaging tests are advised.

Imaging tests should include a chest x-ray, bone scan, and CT or MRI of your abdomen and pelvis. CT and MRI should be done with and without contrast.

A PET scan may also be helpful although it is not considered standard by all insurance plans. For prostate cancer, a radiotracer called C-11 choline or F-18 fluciclovine or F-18 sodium fluoride will first be injected into your body. The radiotracer is detected with a special camera during the scan. Prostate cancer cells appear brighter in images than normal cells because they use a lot of choline to quickly build their membrane or use a lot of fluciclovine while making proteins. The radiotracer sodium fluoride is seen because it is incorporated into prostate cancer growing in the bones. Thus, PET can show even small amounts of cancer. However, it is unclear 1) if such PET scans improve outcomes in this setting; and 2) how results should be used for decisions about health care.

After radiation therapy, PSA levels usually fall to 0.3 ng/mL or below. If your PSA increases by at least 2 ng/mL after falling to low levels, the cancer may have returned. There are other changes in PSA that may be a sign of recurrence. Thus, your doctor may assess if the cancer has returned before the PSA level increases by 2 ng/mL. Signs of cancer also may be found by a DRE.

Next section

The next section lists what health care is advised when PSA scores or a DRE suggest there's cancer. Options are based on if you may be able to have local treatment. Local treatment is an option if: 1) the clinical stage was T1 or T2; 2) initial tests found no lymph node metastases or weren't done; 3) you're likely to live at least another 10 years; and 4) your current PSA level is below 10.

Treatment after radiation therapy

Guide 16. Local treatment isn't an option

What are the options?

- ADT (especially if disease on bone scan)
- Observation

Guide 17. Local treatment may be an option

Health tests		Test results		What are the options?
Main tests: <ul style="list-style-type: none"> • PSA doubling time • Chest x-ray or CT chest • Bone imaging • Prostate MRI • TRUS biopsy Possible tests: <ul style="list-style-type: none"> • Abdominal and pelvic CT/MRI • C-11 choline or F-18 fluciclovine PET/CT or PET/MRI 	→	Cancer isn't found in prostate or other areas	→	<ul style="list-style-type: none"> • Observation • ADT • Clinical trial
	→	Cancer is found in prostate but hasn't spread	→	<ul style="list-style-type: none"> • Observation • Radical prostatectomy + PLND • Cryosurgery • HIFU • Brachytherapy
	→	Metastases	→	<ul style="list-style-type: none"> • ADT listed in Part 7

Guide 16 lists treatment options for when local treatment isn't an option. In this case, your options include ADT or observation. Read Part 7 for more information.

Guide 17 lists test and treatment options for when local treatment may be an option. To confirm that local treatment is right for you, your doctors will assess where the cancer has grown. A fast PSA doubling time suggests spread beyond the prostate. A chest x-ray, bone scan, TRUS biopsy of your prostate, and MRI of your prostate should also be done. Possible other tests include a CT or MRI scan

of your abdomen and pelvis, and a C-11 choline or F-18 fluciclovine PET scan.

For PET scans, a radiotracer called C-11 choline or F-18 fluciclovine will first be injected into your body. The radiotracer is detected with a special camera during the scan. Prostate cancer cells appear brighter in images than normal cells because they use a lot of choline to quickly build their membrane or use a lot of fluciclovine while making proteins.

Thus, PET can show even small amounts of cancer. However, it is unclear 1) if such PET scans improve outcomes in this setting; and 2) how results should be used for decisions about health care.

Sometimes the prostate biopsy and imaging tests find no cancer despite rising PSA levels. One option in this case is to continue observation until cancer growth is confirmed. Another option is to start ADT. When to start ADT should be influenced by PSA velocity, your anxiety as well as your doctor's concern about cancer growth, and your feelings about side effects. A third option is to enroll in a clinical trial.

There are five options if cancer has returned in the prostate but has unlikely spread to distant sites. The first option is to continue observation until further cancer growth is found. Another option is radical prostatectomy with PLND. Be aware that the side effects of radical prostatectomy following radiation therapy are worse than when it used as initial treatment. Other options for local treatment include cryotherapy, HIFU, and brachytherapy. However, less is known about the effectiveness of these treatments. Which treatment you will receive needs to be based on your chances of further cancer growth, treatment being a success, and the risks of the treatment.

After treatment, testing to monitor treatment results will start again. These tests include PSA with either a DRE or physical exam. If the tests suggest the cancer is growing or spreading, imaging tests are advised. Imaging tests should include a chest CT scan, bone scan, and CT or MRI of your abdomen and pelvis. CT and MRI should be done with and without contrast. A PET scan may also be helpful.

Review

- ▶ ADT can increase your chances of osteoporosis, diabetes, and heart disease. Take steps to prevent or decrease the severity of these health problems.
- ▶ The results of initial treatment should be checked on a regular basis.
- ▶ If local treatments don't succeed, there are more options for treating the cancer.

7

Treatment guide: Systemic treatment

71 Castration-naïve prostate cancer

74 Castration-resistant prostate cancer

80 Review



Part 7 is a guide to systemic treatment for advanced disease. Advanced disease can't be cured by surgical treatment or radiation therapy. Instead, treatments are given that travel throughout the body that control the growth of cancer for long periods of time.

This information is taken from the treatment guidelines written by NCCN experts for doctors who treat prostate cancer. Your doctors may suggest other treatments than those listed in Part 7 based on your health and personal wishes.

Castration-naïve prostate cancer

In this section, options for castration-naïve prostate cancer are discussed. This means you were not taking ADT when the prostate cancer progressed or you were diagnosed at the start with prostate cancer that had already spread (metastasized). Options are based on if the cancer is M0 or M1 stage. Treatment for M0 and M1 is listed in Guide 18 on the next page. Surgical and medical castration may be considered. Ask your doctor more about your options.

Guide 18 (on page 72) list types of ADT that may be considered for M0 or M1 castration-naïve prostate cancer. This includes an orchiectomy, LHRH agonists, and an LHRH antagonist. Your doctor may also combine some of these methods, such as abiraterone acetate with prednisone or methylprednisolone or with docetaxel. For some men with M0 disease, observation may be an option.

If an LHRH agonist is given alone it may include goserelin, histrelin, leuprolide, or triptorelin. For some men, an LHRH agonist may be also added to a first-generation antiandrogen such as nilutamide, flutamide, or bicalutamide. The LHRH antagonist that may be given is degarelix. See more details about the types of treatment below for M0 and M1 disease.

Orchiectomy

When talking about prostate cancer, castration is a term that means the testicles are making little or no testosterone. It can be achieved by an operation or by medicines. Surgical castration that removes both testes is called a bilateral orchiectomy. This surgery is a type of ADT. Orchiectomy is a treatment option for both M0 and M1 cancers.

LHRH agonist and antagonist

Medical castration works equally as well as surgical castration. Medicines used to cause castration include an LHRH antagonist or agonist. They are a type of ADT. As discussed next, an antiandrogen may be added to an LHRH agonist.

The risk for side effects can be reduced by intermittent use of your medicine. Intermittent treatment improves quality of life without affecting survival. It 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.

Antiandrogen

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.

Guide 18. Treatment by M stage

M0 stage

What are the options?

- Orchiectomy
- LHRH agonist ± antiandrogen
- LHRH antagonist
- Observation

M1 stage

What are the options?

- ADT and docetaxel
- ADT and abiraterone with prednisone
- Orchiectomy
- LHRH agonist ± antiandrogen for ≥7 days to prevent testosterone flare
- LHRH agonist + antiandrogen
- LHRH antagonist
- ADT + abiraterone with methylprednisolone

Flare can also cause major problems if the metastases are located in weight-bearing bones (legs or spine). To prevent the flare, an antiandrogen (ex: bicalutamide) can be given for 7 or more days, starting before or along with the LHRH agonist.

Another treatment option is long-term use of an antiandrogen with an LHRH agonist. This is a form of CAB. CAB may be better than castration alone for metastases. However, it may lead to higher costs and worse side effects. Your doctor will discuss

with you whether or not you should receive an antiandrogen.

Observation

Observation is an option for men without metastases (M0). Observation consists of testing on a regular basis so that supportive care with ADT can be given if symptoms from the cancer are likely to start. Tests during observation include PSA and DRE.

ADT with docetaxel

Another option for metastatic disease is continuous ADT with 6 cycles of docetaxel. This combination is given with a steroid, either dexamethasone or prednisone. More research is needed to learn if this option can help control low-volume cancers. Low-volume disease is defined as 1) no metastases in internal organs (no visceral disease); and 2) fewer than four bone metastases.

ADT with abiraterone acetate

A newer option for both M0 and M1 disease is ADT and abiraterone acetate. This combination should be given with a steroid, either prednisone or methylprednisolone, to replace the amount your body does not make due to the abiraterone, and to reduce side effects of blood pressure and potassium level changes. If the cancer progresses while taking abiraterone acetate on either steroid, the steroid should be discontinued when abiraterone is discontinued. Talk with your physician about how to stop the steroid, as sometimes a taper is recommended.

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 (<50 ng/dL). If the levels aren't very low, the dose of your treatment will likely be increased. If the levels are very low, you may receive imaging tests to assess for new metastases.

Next section 

In the next section, options for CRPC are discussed. CRPC is also known as castrate-recurrent prostate cancer, and means that the prostate cancer is growing or spreading even though testosterone levels are low from ADT. Options are based on if the cancer is M0 or M1 stage. Treatment for M0 is addressed below. Treatment for M1 is listed in Guides 22, 23, and 24.

Despite low testosterone levels, CRPC may occur because androgen receptors in the cancer cells become active again. Changes in androgen receptors, called mutations, allow cancer cells to receive signals from unusual sources that activate growth. One unusual source is antiandrogens. Activation of androgen receptors may also occur because the cancer cells or nearby cells start to make testosterone.

Despite that the cancer has returned during ADT, it is important to keep taking this therapy. To treat the cancer, your testosterone levels need to stay at castrate levels (less than 50 ng/dL). To do so, your doctor may keep you on your current treatment or may switch the type of hormone therapy you are using.

Castration-resistant prostate cancer

Guide 19. Secondary Hormone Therapy for M0 or M1 CRPC

Secondary Hormone Therapy for M0 or M1 CRPC

Continue LHRH agonist or antagonist to maintain castrate serum levels of testosterone (<50 ng/dL) and add:

- Second-generation antiandrogen
 - Apalutamide (for M0)
 - Enzalutamide (for M0 or M1)
- Androgen metabolism inhibitor
 - Abiraterone with prednisone (for M1)
 - Abiraterone with methylprednisolone (for M1)
- First-generation antiandrogen
 - Nilutamide, flutamide, or bicalutamide
- Ketoconazole
- Ketoconazole plus hydrocortisone
- Corticosteroids (hydrocortisone, prednisone, dexamethasone)
- DES or other estrogen

Guide 19 lists the possible secondary hormone therapy options for M0 and M1 CRPC. You will typically continue taking an LHRH agonist or antagonist as new treatments are added or subtracted. Your doctor will consider options for secondary hormone therapy including antiandrogens, ketoconazole with or without hydrocortisone, corticosteroids, DES, or other estrogen. Newer hormone therapy options include abiraterone acetate, enzalutamide, and apalutamide.

Guides 20 and 21 (on the next page) list treatments for CRPC with no metastases. One option is observation. Instead of changing your treatment, you may want to continue observation until the proof for cancer growth is stronger. This is especially true if the PSA doubling time is 10 months or longer.

Your doctor may also suggest starting apalutamide or enzalutamide if your PSA doubling time is 10 months or less. Both drugs are the newest treatment options for men with non-metastatic CRPC. Enzalutamide may also be offered to men with M1 CRPC. They are secondary hormone therapies. Secondary hormone therapy may help control cancer growth if the androgen receptors are active.

Other options include other secondary hormone therapies as shown in Guide 19, especially if the PSA doubling time is less than 10 months. However, secondary therapies haven't been shown to extend life when given to men without metastases.

If your first hormone therapy was surgical or medical castration, starting CAB may help. Adding an antiandrogen may lower testosterone levels.

Guide 20. Treatment for M0 stage CRPC

Test results		What are the options?	
Negative for distant metastases	→	<ul style="list-style-type: none"> Continue ADT to maintain castrate serum levels of testosterone (<50 ng/dL) 	<ul style="list-style-type: none"> Observation, especially if PSA doubling time is >10 months Apalutamide, especially if PSA doubling time is ≤10 months Enzalutamide, especially if PSA doubling time is ≤10 months Other secondary hormone therapy, especially if PSA doubling time is ≤ 10 months

Guide 21. Disease monitoring and further treatment for M0 stage CRPC

Disease monitoring	What are the options?	
PSA increasing	→	<ul style="list-style-type: none"> No metastases (M0) on imaging: Change or maintain current treatment and continue disease monitoring
		<ul style="list-style-type: none"> Metastases (M1) on imaging: See systemic therapy in Guide 22
PSA is not increasing	→	<ul style="list-style-type: none"> Maintain current treatment and continue disease monitoring

Other secondary hormone therapies that may lower testosterone levels include ketoconazole with or without hydrocortisone, steroids, DES, and other estrogens.

If you're already on CAB, stopping your use of the antiandrogen—known as antiandrogen withdrawal—may help if the cancer cells are using the antiandrogen to grow. This effect is called the antiandrogen withdrawal response and usually lasts several months.

Guide 22. Treatment for M1 stage CRPC

First-line immunotherapy

Treatment conditions

- Sipuleucel-T is an option if these statements describe you:
 - The cancer is causing few or no symptoms,
 - There are no liver metastases,
 - You are expected to live more than 6 months, and
 - You are in good health other than having cancer

Other first-line treatment

Options if no metastases in internal organs

- Abiraterone acetate with prednisone
- Docetaxel
- Enzalutamide
- Radium-223 for bone metastases causing symptoms
- Abiraterone acetate with methylprednisolone
- Clinical trial
- Other secondary hormone therapy

Options if metastases in internal organs

- Docetaxel
- Enzalutamide
- Abiraterone acetate with prednisone
- Abiraterone acetate with methylprednisolone
- Clinical trial
- Mitoxantrone with prednisone
- Other secondary hormone therapy

Guide 22 addresses treatment for CRPC with metastases. Despite that the cancer has returned during hormone therapy, it is important to keep taking it. To treat the cancer, your testosterone levels need to stay at castrate levels. Castrate levels are less than 50 ng/dL. To do so, your doctor may keep you on your current treatment or may switch the type of hormone therapy you are using. You should keep taking hormone therapy even if given other types of treatment, such as immunotherapy.

Prostate cancer often spreads to the bones. When prostate cancer invades your bones, they are at risk for injury and disease. Such problems include bone fractures, bone pain, and spinal cord compression. Denosumab every 4 weeks or zoledronic acid every 3 to 4 weeks may help to prevent or delay these problems.

If you have painful bone metastases, there are treatments that may help to lessen the pain. EBRT may be used when pain is limited to a

specific area or your bones are about to fracture. Radiopharmaceuticals ^{89}Sr (strontium) or ^{153}Sm (samarium) may relieve pain from widely spread bone metastases that isn't responding to other treatments. Be aware that these treatments can cause your bone marrow to make fewer blood cells, which could prevent you from being treated with chemotherapy.

Radiation therapy used to relieve pain is called supportive care. Supportive care (also called palliative care) doesn't aim to treat cancer but aims to improve quality of life. Ask your treatment team for a supportive care plan to address any symptoms you have and other areas of need.

Sipuleucel-T

Sipuleucel-T is an immunotherapy created from your own immune cells that was tested among men with metastatic CRPC. Research found that men who took sipuleucel-T lived, on average, 4 months longer than men not taking this drug. Your results may be the same, better, or worse. Sipuleucel-T is only advised for men who meet the conditions listed in the Guide 22. Sipuleucel-T has not been tested among men with metastases to the internal organs (visceral disease).

For treatments other than sipuleucel-T, a drop in PSA levels or improvement in imaging tests occurs if treatment is working. Be aware that these signs typically don't occur immediately following sipuleucel-T. Thus, don't be discouraged if your test results don't improve.

There are other options if sipuleucel-T is not right for you. These options for metastatic CRPC are based on whether the cancer is or isn't in the internal organs. Some options in the two groups overlap. However, the order of options differ based what's best for that group.

Enzalutamide and abiraterone acetate

Enzalutamide and abiraterone acetate are newer hormone therapies. See page 39 for more information about these therapies. Enzalutamide is an antiandrogen that may work better than other antiandrogens. In clinical trials, it lowered PSA levels and extended life by an average of about 5 months. Abiraterone acetate is taken on an empty stomach with a steroid. The steroid may be prednisone or methylprednisolone.

Docetaxel and other chemotherapy

Chemotherapy with hormone therapy is another treatment option. Docetaxel with prednisone on an every-3-week schedule is the preferred treatment option if the cancer is causing symptoms. It is not often used when the cancer isn't causing symptoms. However, your doctor may suggest it if the cancer is growing fast or may have spread to your liver.

If your PSA level rises while taking docetaxel, it doesn't mean that the treatment has failed. Your doctor may suggest that you keep taking docetaxel until it is clear that the cancer has grown or side effects are too severe. If docetaxel's side effects are too severe, you may be given mitoxantrone. Mitoxantrone is a chemotherapy drug. It may improve your quality of life, but it isn't likely to increase how long you will live.

Radium-223

Newer research supports use of radium-223 if the cancer has metastasized to the bone but not to the internal organs. In clinical trials, radium-223 was shown to extend the lives of men by an average of about 4 months. Your results may be the same, better, or worse. Radium-223 also reduced the pain caused by the bone metastases and the use of pain medication.

Guide 23. Treatment after abiraterone or enzalutamide

Options if no metastases in internal organs	Options if metastases in internal organs
<ul style="list-style-type: none"> • Docetaxel 	<ul style="list-style-type: none"> • Docetaxel
<ul style="list-style-type: none"> • Radium-223 for bone metastases 	<ul style="list-style-type: none"> • If not taken before: <ul style="list-style-type: none"> ◦ Abiraterone acetate with prednisone ◦ Abiraterone acetate with methylprednisolone ◦ Enzalutamide ◦ Cabazitaxel
<ul style="list-style-type: none"> • Pembrolizumab for MSI-H or dMMR 	
<ul style="list-style-type: none"> • If not taken before: <ul style="list-style-type: none"> ◦ Abiraterone acetate with prednisone ◦ Abiraterone acetate with methylprednisolone ◦ Enzalutamide ◦ Sipuleucel-T 	<ul style="list-style-type: none"> • Pembrolizumab for MSI-H or dMMR
<ul style="list-style-type: none"> • Clinical trial 	<ul style="list-style-type: none"> • Clinical trial
<ul style="list-style-type: none"> • Other secondary hormone therapy 	<ul style="list-style-type: none"> • Other secondary hormone therapy
<ul style="list-style-type: none"> • Best supportive care 	<ul style="list-style-type: none"> • Best supportive care

Clinical trial

A clinical trial is a type of research that studies how well a treatment works. Because of clinical trials, the treatments in this book are now widely used to help men with prostate cancer. There may be a clinical trial that you may join.

Other secondary hormone therapy

Compared to the newer secondary hormone therapies, abiraterone acetate and enzalutamide, older ones have only minor benefits. If your first hormone therapy was surgical or medical castration, starting CAB or switching to a new antiandrogen may help. If you're already on CAB, stopping your use of the antiandrogen—known as antiandrogen withdrawal—may help if the cancer cells are using the antiandrogen to grow. This effect is called the antiandrogen withdrawal response and usually lasts several months. Other medicines that may lower testosterone levels include ketoconazole with or without hydrocortisone, steroids, DES, and other

estrogens. See Guide 19 on page 74 for a list of secondary hormone therapy options.

Guide 23 lists treatment options for M1 disease following abiraterone acetate or enzalutamide. These options are based on whether the cancer is or isn't in the internal organs. Some options in the two groups overlap. However, the order of options differs based what's best for that group.

Docetaxel with a steroid (prednisone or dexamethasone) on an every-3-week schedule is preferred for cancer that is causing symptoms. Abiraterone acetate with prednisone or methylprednisolone may be offered if you took enzalutamide before and enzalutamide can be offered if you took abiraterone acetate before.

Radium-223 is an option for metastases that occur mostly in the bones and not in the internal organs. Sipuleucel-T may also be used for CRPC that

Guide 24. Treatment after docetaxel

Options if no metastases in internal organs	Options if metastases in internal organs
• Abiraterone acetate with prednisone	• Abiraterone acetate with prednisone
• Cabazitaxel	• Enzalutamide
• Enzalutamide	• Cabazitaxel
• Radium-223 for bone metastases causing symptoms	• Abiraterone acetate with methylprednisolone
• Abiraterone acetate with methylprednisolone	• Pembrolizumab for MSI-H or dMMR
• Pembrolizumab for MSI-H or dMMR	• Clinical trial
• Sipuleucel-T if none before	• Docetaxel rechallenge
• Clinical trial	• Mitoxantrone with prednisone
• Consider docetaxel rechallenge	• Other secondary hormone therapy
• Mitoxantrone with prednisone	• Best supportive care
• Other secondary hormone therapy	
• Best supportive care	

hasn't spread to internal organs. Pembrolizumab may be an option for MSI-H or dMMR tumors after the cancer has progressed on abiraterone acetate or enzalutamide. Another option to consider is a different secondary hormone therapy. All men with CRPC should also receive best supportive care. Joining a clinical trial is strongly supported at any stage of disease. It may give you access to new treatments.

Guide 24 lists options for M1 disease if docetaxel fails. These options are based on whether the cancer is or isn't in the internal organs. Some options in the two groups overlap. However, the order of options differ based what's best for that group. There is no strong agreement on what is the next best

treatment. Abiraterone acetate with prednisone or methylprednisolone or enzalutamide has been shown to slightly prolong life when used after docetaxel. Similar results were found with cabazitaxel plus a steroid (prednisone or dexamethasone). However, cabazitaxel can cause severe side effects, so close monitoring is needed. You shouldn't use cabazitaxel if you have liver problems.

Radium-223 is an option for men whose metastases are only in the bones. Pembrolizumab may be an option for MSI-H or dMMR tumors. Sipuleucel-T may also be used for CRPC that hasn't spread to internal organs and has not be taken before.

After docetaxel fails, your doctor may want you to take docetaxel again. This is called docetaxel rechallenge. Whether or not you took docetaxel a second time, other recommendations include a different chemotherapy, called cabazitaxel, and secondary hormone therapy such as abiraterone or enzalutamide if you have not taken those before. If you can't take a taxane-based chemotherapy like cabazitaxel, mitoxantrone is an option. Mitoxantrone and other chemotherapy drugs haven't extended the lives of men after docetaxel failure but may help you feel better by reducing symptoms.

All men with CRPC should also receive best supportive care that includes bone supportive therapy when indicated. Best supportive care alone may be the right choice for some men. Joining a clinical trial is strongly supported at any stage of disease. It may give you access to new treatments.

Review

- ▶ Advanced disease is often first treated with ADT.
- ▶ CRPC is prostate cancer that grows even though testosterone is at very low levels.
- ▶ Newer treatments for CRPC without metastases are apalutamide and enzalutamide. A clinical trial, observation, and other secondary hormone therapy are other options.
- ▶ Newer treatments for CRPC with metastases include sipuleucel-T, abiraterone acetate, enzalutamide, and radium-223. Chemotherapy with hormone therapy, clinical trials, and other secondary hormone therapy are other options.
- ▶ All men with CRPC should receive best supportive care.

8

Making treatment decisions

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Having cancer can feel very stressful. While absorbing the fact that you have cancer, you must also learn about tests and treatments. And, the time you have to decide on a treatment plan may feel short.

Parts 1 through 7 described prostate cancer along with the tests and treatment options recommended by NCCN experts. These options are based on science and agreement among these experts. Part 8 aims to help you make decisions and talk with your treatment team about your next steps of care.

It's your choice

The role patients want in choosing their treatment differs. You may feel uneasy about making treatment decisions. This may be due to a high level of stress. It may be hard to hear or know what others are saying. Stress, pain, and drugs can limit your ability to make good decisions. You may feel uneasy because you don't know much about cancer. You've never heard the words used to describe cancer, tests, or treatments. Likewise, you may think that your judgment isn't any better than your doctors'.

Letting others decide which option is best may make you feel more at ease. However, whom do you want to make the decisions? You may rely on your doctors alone to make the right decisions. However, your doctors may not tell you which to choose if you have multiple good options. You can also have loved ones help. They can gather information, speak on your behalf, and share in decision-making with your doctors. Even if others decide which treatment you will receive, your treatment team may still ask that you sign a consent form.

On the other hand, you may want to take the lead or share in decision-making. 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 you know your concerns and goals. By working together, you can decide on a plan that works best for you when it comes to your personal and health needs.

Questions to ask your doctors

You will likely meet with experts from different fields of medicine. It is helpful to talk with each person. Prepare questions before your visit and ask questions if the information isn't clear. You can get copies of your medical records. It may be helpful to have a family member or friend with you at these visits to listen carefully and even take notes. A patient advocate or navigator might also be able to come. They can help you ask questions and remember what was said.

The questions below are suggestions for information you read about in this book. Feel free to use these questions or come up with your own personal questions to ask your doctor and other members of your treatment team.

Questions about testing and the results

1. What tests will I have for this type of cancer?
2. Where and when will the tests take place?
3. How long will they take?
4. What are the risks?
5. How do I prepare for testing?
6. How soon will I know the results and who will explain them to me?
7. Would you give me a copy of the pathology report and other test results?
8. Where did the cancer start? In what type of cell?
9. What is the cancer stage? Does this stage mean the cancer has spread far?
10. What is the grade of the cancer? Does this grade mean the cancer will grow and spread fast?
11. Can the cancer be cured? If not, how well can treatment stop the cancer from growing?

Questions about treatment options

1. What treatment options do I have?
2. What will happen if I do nothing?
3. Can I just carefully monitor the cancer?
4. Can I join a clinical trial?
5. Do you consult NCCN recommendations when considering options?
6. Are you suggesting options other than what NCCN recommends? If yes, why?
7. How do my age, health, and other factors affect my options?
8. Which option is proven to work best?
9. Which options lack scientific proof?
10. What are the benefits of each option? Does any option offer a cure? Are my chances any better for one option than another? Is any option less invasive? Less time-consuming? Less expensive?
11. What are the risks of each option? What are possible complications? What are the rare and common side effects? Short-lived and long-lasting side effects? Serious or mild side effects?

Questions about clinical trials

1. What clinical trial is right for me?
2. How many people will be on the clinical trial?
3. What are the tests and treatments for this study? And how often will they be?
4. How long will I be on the clinical trial?
5. Will I be able to get other treatment if this doesn't work?
6. How will you know the treatment is working?
7. Who will help me understand the costs of the clinical trial?

Questions about a doctor's experience

1. Are you board certified? If yes, in what area?
2. How many patients like me have you treated?
3. How many procedures like the one you're suggesting have you done?
4. Is this treatment a major part of your practice?
5. How many of your patients have had complications?
6. How many of your patients have had side effects such as urinary incontinence or erectile dysfunction?

Deciding between options

Deciding which option is best can be hard. Doctors from different fields of medicine may have different opinions on which option is best for you. This can be very confusing. Your spouse or partner may disagree with which option you want. This can be stressful. In some cases, one option hasn't been shown to work better than another, so science isn't helpful. Some ways to decide on treatment are discussed next.

Getting a 2nd opinion

Even if you like and trust your doctor, it is helpful to get a 2nd opinion. You will want to have another doctor review your test results. He or she can suggest a treatment plan or check the one you already heard about.

Things you can do to prepare:

- ▶ Check with your insurance company about its rules on 2nd opinions. You want to know about out-of-pocket costs for doctors who are not part of your insurance plan.
- ▶ Reach out to patient advocacy organizations (see websites on the next page) for help with 2nd opinions. Some may also give referrals to hospitals or cancer centers who specialize in treating prostate cancer.
- ▶ Make plans to have copies of all your records sent to the doctor you will see for your 2nd opinion. Do this well before your appointment. If you run into trouble having records sent, pick them up and bring them with you.

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.

Getting support

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 on the next page.

You can also reach out to a social worker or psychologist. 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 to those with children, so they can connect and get support.

Keep in mind:

- ✓ Every treatment option has benefits and risks. Consider these when deciding which option is best for you.
- ✓ Talking to others may help identify benefits and risks you hadn't thought of.
- ✓ It is helpful to ask your doctor about his or her personal results with treatment, not only about the results based on medical findings.

Websites

American Cancer Society

cancer.org/cancer/prostatecancer/index

California Prostate Cancer Coalition (CPCC)

prostatecalif.org

Malecare Cancer Support

malecare.org and cancergraph.com

National Alliance of State Prostate Cancer Coalitions (NASPCC)

naspcc.org

National Coalition for Cancer Survivorship

Canceradvocacy.org/toolbox

National Prostate Cancer Awareness (PCaAware) Foundation

pcaaware.org

Nomograms

nomograms.mskcc.org/Prostate/index.aspx

Prostate Conditions Education Council (PCEC)

prostateconditions.org

Prostate Health Education Network (PHEN)

prostatehealthed.org

ZERO - The End of Prostate Cancer

zerocancer.org

Review

- ▶ Shared decision-making is a process in which you and your doctors plan treatment together.
- ▶ Asking your doctors questions is vital to getting the information you need to make informed decisions.
- ▶ Getting a 2nd opinion, attending support groups, and comparing benefits and risks may help you decide which treatment is best for you.

Glossary

90 Dictionary

94 Acronyms

Dictionary

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.

antiandrogen

A drug that stops the action of the hormone testosterone.

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-resistant prostate cancer (CRPC)

A worsening of prostate cancer despite treatment that lowered testosterone. Also known as castrate-recurrent prostate cancer.

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 (DRE)

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

dry orgasm

A sexual climax without the release of semen.

dual energy X-ray (DEXA)

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

epididymis

A tube-shaped structure through which sperm travel after leaving the testicles.

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.

extracapsular extension

The growth of prostate cancer beyond its outer edge.

fatigue

Severe tiredness despite getting enough sleep that limits one's ability to function.

fine-needle aspiration

A procedure that removes tissue samples with a very thin needle.

fistula

A passage between two organs that should not be joined.

flare

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

gene

Coded instructions in cells for making new cells and controlling how cells behave.

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.

Gleason score

The grading system for prostate cancer.

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.

immunotherapy

A treatment with drugs that help the body find and destroy cancer cells.

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.

interstitial radiation

Treatment with radioactive objects placed in the tumor. Also called brachytherapy.

laparoscopic radical prostatectomy

An operation that removes the prostate with tools passed through small cuts near the belly button.

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.

lymph

A clear fluid containing white blood cells.

lymph node

A small, bean-shaped disease-fighting structure.

magnetic resonance imaging (MRI)

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

magnetic resonance imaging-ultrasound (MRI-US) fusion biopsy

A procedure that removes tissue samples with a needle guided with two types of imaging.

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.

mutation

An abnormal change.

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.

nuclear medicine specialist

A doctor who's an expert in tests that use radioactive substances.

observation

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

open radical prostatectomy

An operation that removes the prostate through one large cut made in one of two places.

overflow incontinence

Leakage of urine due to an overly full bladder.

pathologist

A doctor who's an expert in testing cells and tissue to find disease.

pelvic lymph node dissection (PLND)

An operation that removes lymph nodes between the hip bones.

perineum

The body region 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.

primary grade

The most common pattern of how prostate cancer cells look.

primary treatment

The main treatment used to rid the body of cancer.

prognosis

The likely course and outcome of a disease based on tests.

prostate

A male gland that makes fluid, which protects sperm from the acid in the vagina.

prostate-specific antigen (PSA)

A protein mostly made by the prostate.

prostate-specific antigen (PSA) density

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

prostate-specific antigen (PSA) doubling time

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

prostate-specific antigen (PSA) level

The number of nanograms per milliliter of PSA—a prostate-made protein.

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.

radiologist

A doctor who specializes in reading imaging tests.

radiopharmaceutical

A drug that contains a radioactive substance.

recurrence

The return of cancer after a disease-free period.

risk group

A set of people who will likely have the same outcome.

robotic-assisted radical prostatectomy

An operation that removes the prostate with a machine controlled by the surgeon.

secondary grade

The second most common pattern of how prostate cancer cells look.

seminal vesicle

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

side effect

An unhealthy or unpleasant physical or emotional response to a test or treatment.

stress incontinence

Leakage of urine when pressure is placed on the bladder.

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.

transurethral resection of the prostate (TURP)

A procedure that removes prostate tissue samples through the urethra.

triple androgen blockade

A treatment that stops the making and action of testosterone with three methods.

ultrasound

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.

urge incontinence

A health condition in which urine is leaked during a sudden, strong need to urinate.

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.

Acronyms

3D-CRT

three-dimensional conformal radiation therapy

ADT

androgen deprivation therapy

AJCC

American Joint Committee on Cancer

ALP

alkaline phosphatase

CAB

combined androgen blockade

CAM

complementary and alternative medicine

CRPC

castration-resistant prostate cancer

CT

computed tomography

DES

diethylstilbestrol

DEXA

dual-energy x-ray absorptiometry

DNA

deoxyribonucleic acid

DRE

digital rectal exam

EBRT

external beam radiation therapy

HDR

high dose-rate

HIFU

high-intensity focused ultrasound

IGRT

image-guided radiation therapy

IMRT

intensity-modulated radiation therapy

LDR

low dose-rate

LHRH

luteinizing hormone-releasing hormone

PSA

prostate-specific antigen

PSMA

prostate-specific membrane antigen

mg

milligram

mpMRI

multi-parametric magnetic resonance imaging

MRI

magnetic resonance imaging

MRI-US

magnetic resonance imaging-ultrasound

PET

positron emission tomography

PLND

pelvic lymph node dissection

SBRT

stereotactic body radiotherapy

TRUS

transrectal ultrasound

TURP

transurethral resection of the prostate

VTP

vascular targeted photodynamic therapy

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For disclosures, visit www.nccn.org/about/disclosure.aspx.

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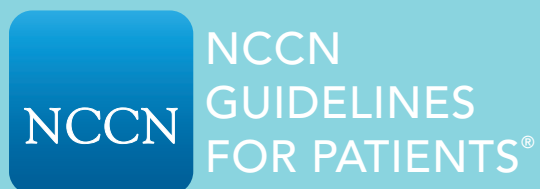
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