

NCCN Guidelines for Patients®



About this booklet



Its purpose

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 booklet is to help you get the best cancer treatment. This booklet presents which cancer tests and treatments are recommended by experts in prostate cancer.



Supported by the NCCN Foundation®

The NCCN Foundation supports the mission of the National Comprehensive Cancer Network® (NCCN®) to improve the care of patients with cancer. One of its aims is to raise funds to create a library of booklets for patients. Learn more about the NCCN Foundation at NCCN.org/foundation.



The source of the information

NCCN is a not-for-profit network of 23 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 booklet is based on these guidelines.



For more information

This booklet focuses on prostate cancer. NCCN also offers booklets on colon and lung cancers. Visit NCCN.org/patients for the full library of booklets.

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How to use this booklet

Who should read this booklet?

This booklet is about treatment for an 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. This booklet may be helpful for patients, caregivers, family, and friends dealing with this cancer. Reading this booklet at home may help you absorb what your doctors have said and prepare for treatment.

Does the whole booklet apply to me?

There is important information in this booklet for many situations. Thus, you will likely not get every test and treatment listed. Your treatment team can point out what applies to you and give you more information. To help you use this booklet, each topic is described at the start of Parts 1–8. Page numbers are listed so you can flip right to the topic of interest.

As you read through this booklet, you may find it helpful to create a list of questions to ask your doctors. The recommendations in this booklet include what NCCN experts feel is the most useful based on science and their experience. However, these recommendations may not be right for you. Your doctors may suggest other tests or treatments based on your health and other factors. This booklet does not replace the knowledge and recommendations of your doctors.

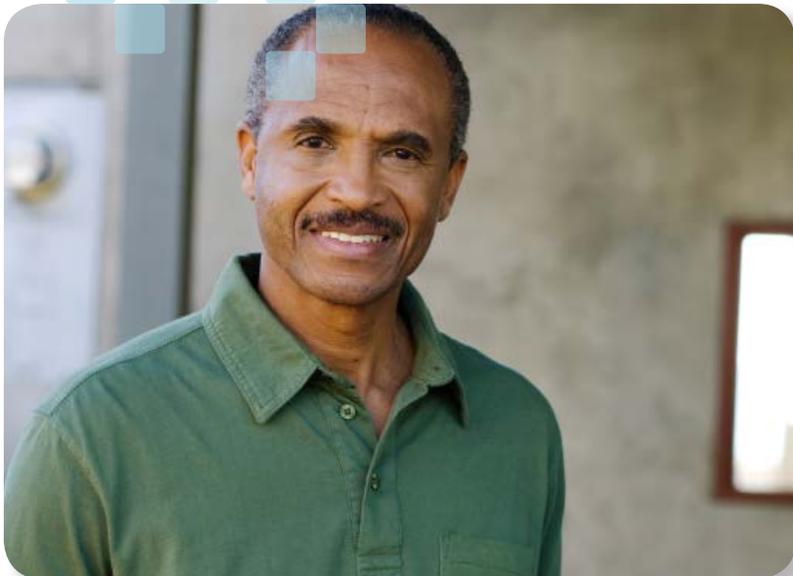
Help! I don't know these words!

In this booklet, many medical words are included that describe cancer, tests, and treatments. These are words that you will likely hear your treatment team use in the months and years ahead. Most of the information 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.

Words that you may not know are defined in the text or the sidebar. Words with sidebar definitions are underlined when first used on a page. Definitions of words often heard by men with prostate cancer are listed in the *Dictionary* in Part 9. Acronyms are also listed in the text or the sidebar. Acronyms are words formed from the first letters of other words. One example is PSA for **prostate-specific antigen**.

Part 1: About prostate cancer

You've learned that you have prostate cancer. It's common to feel shocked and confused. Part 1 reviews some basics about prostate cancer that may help you start to cope. These basics may also help you start planning for treatment.



6

1.1 What is the prostate?

Explains where the prostate is and what it does.

6

1.2 How prostate cancer starts

Describes the types of prostate cells where cancer begins.

7

1.3 How prostate cancer spreads

Explains how prostate cancer cells differ from normal prostate cells.

8

1.4 Tools

Lists webpages with basics about prostate cancer.

Part 1: About prostate cancer

1.1 What is 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.

1.2 How prostate cancer starts

Cancer is a disease of cells—the building blocks of tissue in the body. Inside of cells are coded instructions, called genes, for building new cells and controlling how cells

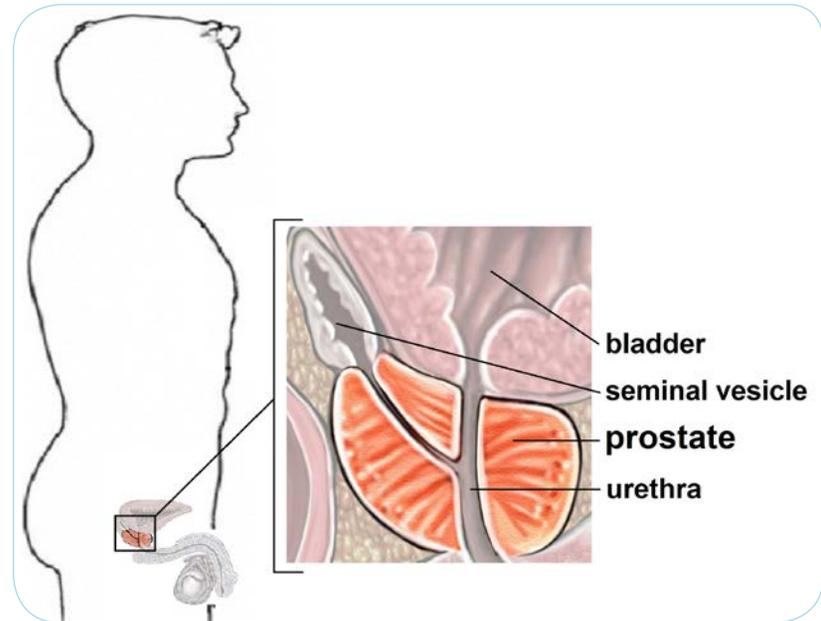


Figure 1. The prostate

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behave. Prostate cancer occurs when normal cells begin to grow faster or die slower, either of which causes a tumor to form. Some prostate cancers occur due to changes in genes, called mutations.

Aging, being of African-American descent, and having family members with prostate cancer have been linked to a higher chance of getting prostate cancer. Not all men with these conditions get prostate cancer and some men without these conditions do. Prostate cancer is common among older men. However, prostate cancer in older men often doesn't become a problem.

Part 1: About prostate cancer

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 booklet.

1.3 How prostate cancer spreads

Cancer cells don't behave like normal cells in three key ways. First, the changes in genes cause normal prostate cells to grow more quickly and live longer. Normal cells grow and then divide to form new cells when needed. They also die when old or damaged. 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. Prostate cancer can then grow and form tumors in other parts of the body.

Prostate cancer can spread through blood or lymph vessels that are in the prostate. Lymph is a clear fluid that gives cells water and food. It also has white blood cells that fight germs. After draining from the prostate, lymph travels in vessels to lymph nodes. Lymph nodes are small disease-fighting organs that destroy the germs picked up by lymph. Lymph vessels and nodes are found all over the body.

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 are aggressive and grow quickly. Why some prostate cancers grow fast is unknown and is being studied by researchers.

Definitions:

Bladder: An organ that holds and expels urine from the body

Connective tissue: Supporting and binding tissue that surrounds other tissues and organs

Puberty: The time when teens sexually develop

Sperm: Cells containing male genes that are needed to make babies

Testosterone: A hormone that helps sexual organs in men work

Urethra: A tube that expels urine and semen from a man's body

Vagina: The birth canal in women

White blood cell: A type of blood cell that fights disease

Part 1: About prostate cancer

1.4 Tools



Webpages

American Cancer Society

www.cancer.org/cancer/prostatecancer/detailedguide/index

The “NEW” Prostate Cancer InfoLink

prostatecancerinfolink.net/risk-prevention/what-prostate-cancer

prostatecancerinfolink.net/risk-prevention/risk-prostate-cancer

prostatecancerinfolink.net/risk-prevention/prevention-prostate-cancer/equal-risk

Prostate Cancer Foundation

www.pcf.org/site/c.leJRIROrEpH/b.5802023/k.B322/About_the_VProstate.htm

Prostate Cancer Support Association

www.prostatecancersupport.info/prostate.htm#diagnosis

Us TOO!

www.ustoo.com/Overview_Statistics.asp

Review of Part 1

- The prostate gland 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.

Part 2: Cancer staging

Cancer staging is a rating by your doctors of how far the cancer has grown and spread. The rating is based on test results. Doctors plan additional tests and treatment based on how much the cancer has grown. In Part 2, the tests and scoring system used for cancer staging are explained.



10

2.1 Prostate-specific antigen

Describes the levels of a protein made by prostate cells and found in blood.

10

2.2 Digital rectal exam

Describes a physical exam of the prostate.

11

2.3 Prostate biopsy

Describes how tissue samples from the prostate are removed for testing.

12

2.4 Gleason score

Explains the grading system of prostate cancer.

13

2.5 TNM scores

Defines the system used to rate the extent of cancer.

16

2.6 Tools

Lists helpful webpages along with questions to ask your doctor about tests.

Part 2: Cancer staging

2.1 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. However, PSA levels can be measured from a blood sample since some of it enters the bloodstream. PSA levels are used for cancer staging, treatment planning, and checking treatment results. PSA levels discussed in this booklet include:

- **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 with a TRUS (**transrectal ultrasound**).
- **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 medications can also affect the PSA level. PSA increases after ejaculations and vigorous exercise, especially running or bicycling. Thus, refrain from sex or exercise for 3 days before a PSA test. You will then have a more accurate PSA test.

2.2 Digital rectal exam

Doctors use a DRE (**digital rectal exam**) 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. Next, your doctor will insert a finger into your rectum to feel your prostate as shown in Figure 2. Your prostate can be felt since it is on the other side of the rectal wall. Bear in mind that not all aspects of the cancer can be felt on this exam.

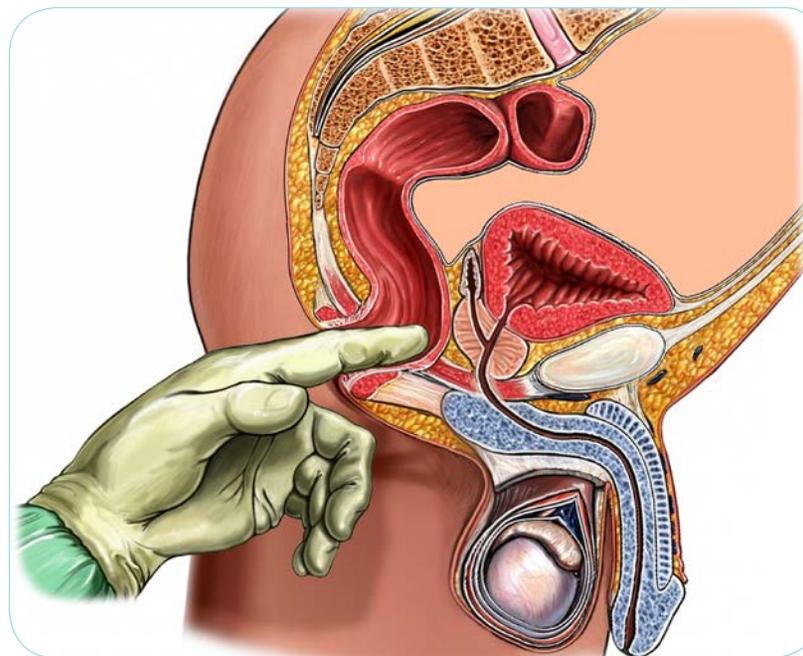


Figure 2. DRE

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Part 2: Cancer staging

2.3 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 examine it under a microscope. A biopsy is a procedure that 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. To prepare for the biopsy, your doctor may say to stop taking some medications and start taking others. Medications 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 pain is often minimal or none.

The most common type of prostate biopsy is the transrectal method. To make sure the best samples are removed, a TRUS probe is 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. Next, 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 removes 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 cancer is found as well as no other cause for the high PSA, your doctor may order more biopsies.

Definitions:

Local anesthesia: A loss of feeling in a small area of the body caused by drugs

Rectum: The last part of the large intestine

Part 2: Cancer staging

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,

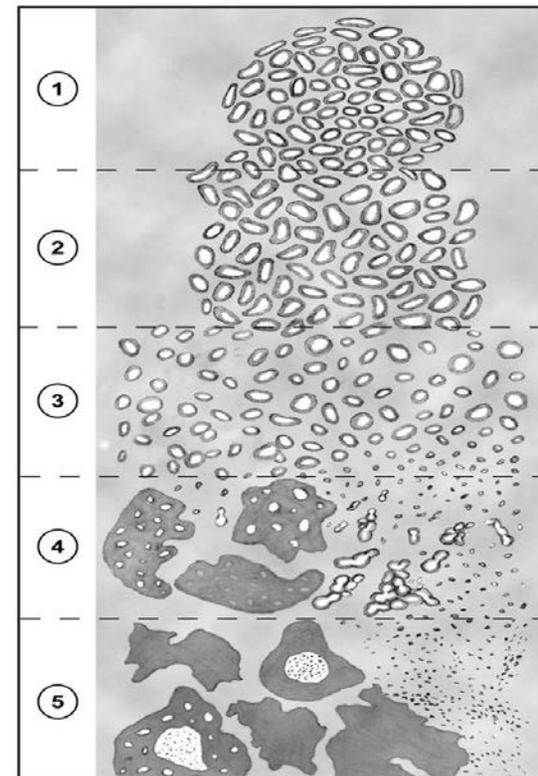
Rarely

- Swelling of your prostate (prostatitis) or epididymis (epididymitis),
- Inability to empty your bladder (urinary retention), and
- Hospitalization.

2.4 Gleason score

Not all cells from a prostate cancer look the same. Some cells may look near normal while other cells may look very abnormal. Prostate cancer is graded based on how well the cancer cells can form into glands. A normal prostate has glands, but cancer cells can lose their ability to form glands.

The grading system for prostate cancer is called the Gleason score. The Gleason score is used by doctors to plan treatment. Gleason scores range from 2 to 10, but



Brunbaugh

Figure 3. Gleason grades

Used with permission from Jonathan I. Epstein, M.D.

Part 2: Cancer staging

most prostate cancers are scored 6 to 10. Higher Gleason scores mean the cancer is more likely to grow and spread.

The Gleason score is the sum of two grades. Figure 3 depicts the grades of prostate cancer. Glands comprised of cells with a grade of 1 or 2 can't 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 grade is the most common Gleason pattern, and the secondary grade is the second most common Gleason pattern. The primary and secondary grades are added together to give the Gleason score. Gleason scores of 6 are associated with favorable prostate cancer; scores of 7 are associated with intermediate prostate cancer; and scores of 8 to 10 are associated with aggressive prostate cancer.

2.5 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, N, and M describe a different location of cancer growth. Your doctors will assign a score to each letter. These scores will be combined to assign the cancer a TNM stage.

T = Tumor

The T score is a rating of the size and extent of the 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.

Definitions:

Epididymis: The tube through which sperm travel after leaving the testicles

Primary tumor: The first mass of cancer cells in the body

Side effect: An unhealthy or unpleasant physical or emotional response to a test or treatment

Part 2: Cancer staging

- **T1c** tumors are found by needle biopsy that was done for a high PSA level.

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. See Figure 4. 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. This group is subdivided into T3a and T3b.

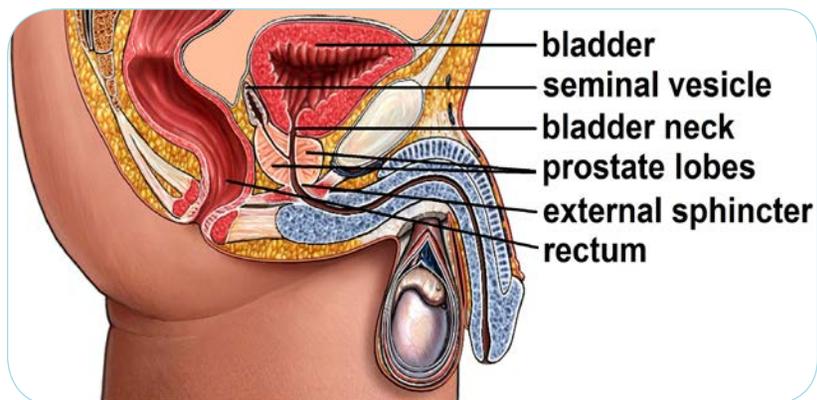


Figure 4. Areas of tumor growth

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

T4 tumors have spread into nearby tissues other than the seminal vesicles, or biopsy or imaging results show that these tumors are fixed to nearby tissues. These tissues include the external sphincter, rectum, bladder, levator muscles, and pelvic wall.

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

N = Nodes

The N category reflects if the cancer has spread within nearby lymph nodes. Nearby lymph nodes include the hypogastric, obturator, internal and external iliac, and sacral lymph nodes. These nodes are shown in Figure 5. 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. Most often, prostate cancer spreads to the external iliac, internal iliac, or obturator nodes.

Part 2: Cancer staging

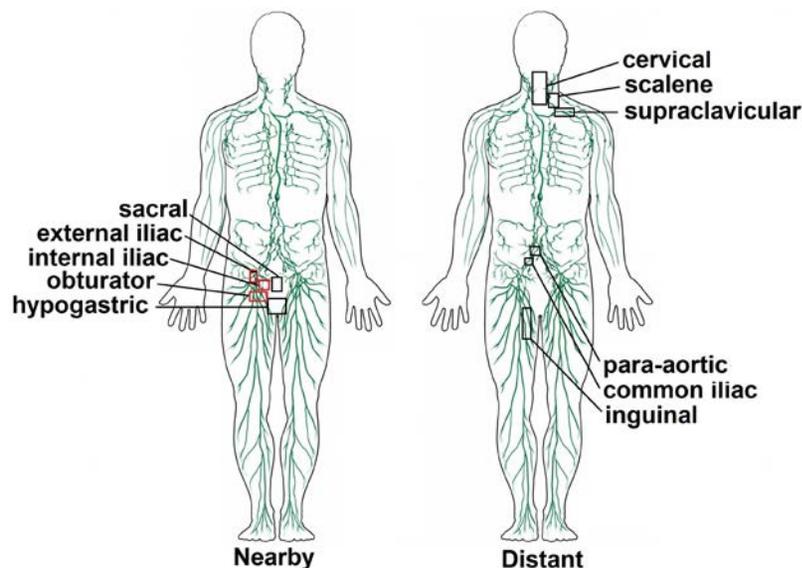


Figure 5. Nearby and distant lymph nodes

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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. These nodes are shown in Figure 5. Prostate cancer tends to metastasize to bone then the lungs and liver. M scores for prostate cancer include:

- **MX** means it is unknown if cancer has spread to distant sites.
- **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.

Definitions:



Read Part 1 for other definitions of tissues in or near the prostate.

Imaging test: A test that makes pictures of the insides of the body

External sphincter: Muscle that controls the flow of urine from the bladder through the urethra

Levator muscles: Muscles that support the prostate and control the flow of urine

Metastasize: The spread of cancer cells from the first tumor to another site

Pelvic wall: A layer of muscles and tissue that helps organs in the pelvis to stay in place

Rectum: The last part of the large intestine

Acronyms:

DRE = Digital rectal exam

Part 2: Cancer staging

2.6 Tools

Questions about testing to ask your doctor

- What tests will I have?
- Where will the tests take place? Will I be admitted into a hospital?
- How long will it take? Will I be awake?
- Will it hurt? Will I need anesthesia?
- What are the risks? What are the chances of infection or bleeding afterward?
- How do I prepare for testing? Should I not take aspirin? Should I not eat beforehand?
- Should I bring a list of my medications?
- Should I bring someone with me?
- How long will it take for me to recover? Will I be given an antibiotic or other drug afterward?
- How soon will I know the results and who will explain them to me?
- How can I get a copy of my test results?
- Who will talk with me about the next steps? When?

Part 2: Cancer staging



Webpages

Malecare

malecare.org/diagnosed-with-prostate-cancer/prostate-cancer-staging

The “NEW” Prostate Cancer InfoLink

prostatecancerinfolink.net/treatment

Prostate Cancer Foundation

www.pcf.org/site/c.leJRIROrEpH/b.5802083/k.8F09/Newly_Diagnosed.htm

Us TOO!

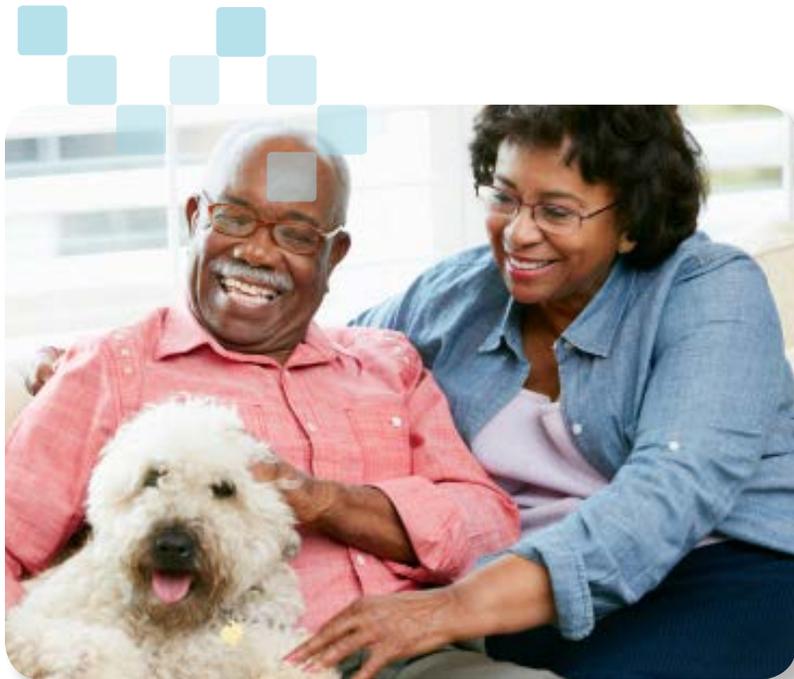
www.ustoo.com/Newly_Diagnosed.asp#STAGING

Review of Part 2

- Prostate cancer is grouped into stages.
- Cancer stages are defined by the growth and spread of the tumor.
- PSA is a protein made by prostate cells.
- A DRE and 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.

Part 3: Treatment planning

There are multiple sources of information that doctors use to plan treatment. The tests and the grading and staging systems used to assess the extent (growth) of the cancer were described in Part 2. The side effects of treatment that are listed in Part 4 and your personal preferences are other sources. Here, in Part 3, three more sources of information that doctors use are explained.



19

3.1 Life expectancy

Describes how your length of life may affect testing and treatment options.

20

3.2 Risk assessment

Describes two tools doctors use to assess your chances for events that affect testing and treatment options.

22

3.3 Imaging tests

Describes tests that make pictures of the insides of the body.

25

3.4 Tools

Lists helpful webpages on information related to treatment planning.

Part 3: Treatment planning

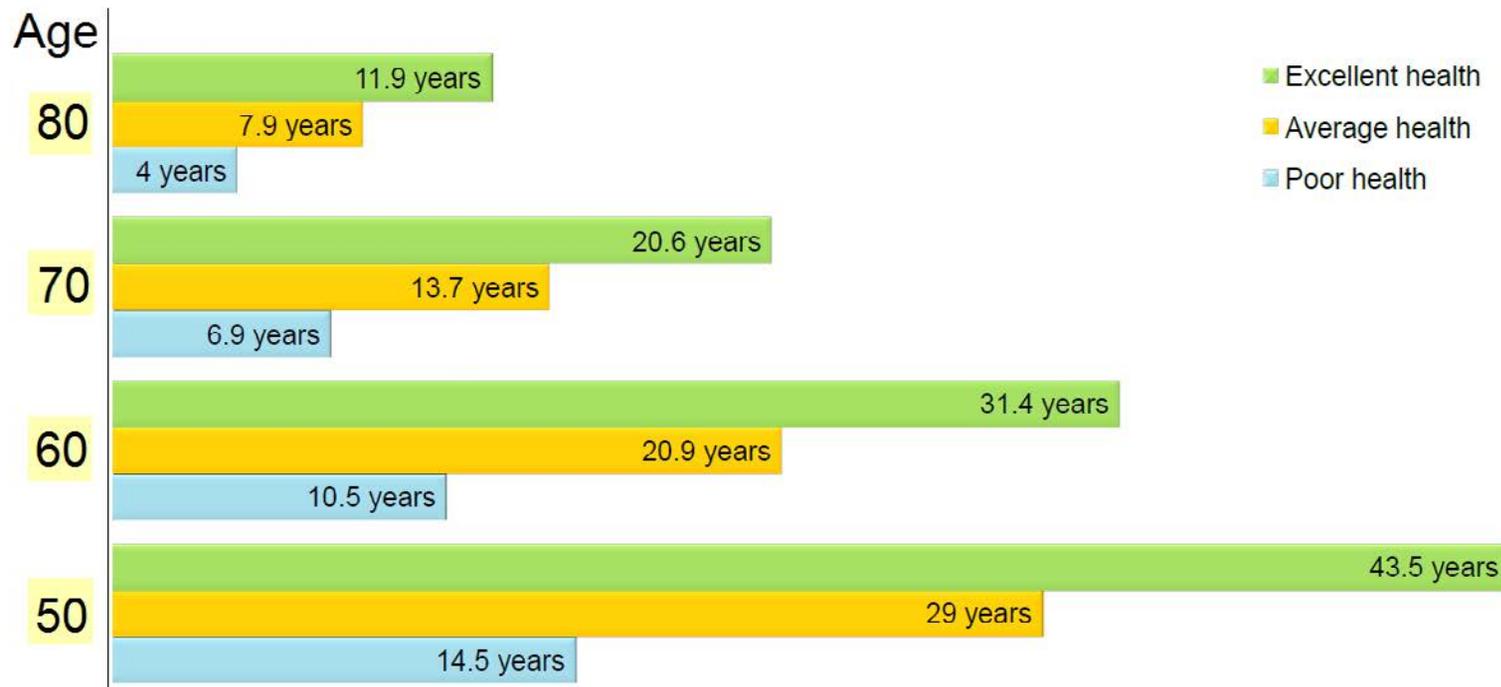


Figure 6. Examples of life expectancy by age and health

Most prostate cancers diagnosed in America are found using PSA and are slow growing. Their growth rate can be estimated using changes in PSA and a growing worldwide approach of “watching” prostate cancer. Thus, you and your doctor should begin talking about prostate cancer by comparing your life expectancy versus the threat to you by the prostate cancer.

3.2 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,

Part 3: Treatment planning

- How the cancer will respond to treatment, and
- Whether the cancer will return (called a recurrence) if you're cancer-free after treatment.

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.

Risk groups

Risk groups divide people with cancer into smaller subsets based on their chances for an event. Some risk groups are based on one piece of information while others use multiple pieces of information. In Part 5, 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 booklet, test and treatment recommendations are sometimes based on nomograms that predict how likely the cancer has spread to your lymph nodes. Also, NCCN experts recommend that nomograms be used in addition to recurrence risk groups to better plan treatment. Websites with information on nomograms are listed in Part 3.4.

Definitions:



Read pages 13–15 for definitions of TNM scores.

Gleason score: The grading system for prostate cancer based on how well the prostate cells can form into glands

Prognosis: A prediction of the pattern and outcome of a disease based on clinical information

PSA: A protein made by the prostate

Acronyms:

PSA = Prostate-specific antigen

Part 3: Treatment planning

3.3 Imaging tests

Imaging tests make pictures (images) of the insides of your body. They 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 the chart below. If you have these signs, you may get a 1) bone scan or 2) CT (computed tomography) or MRI (magnetic resonance imaging) scan of your pelvis. Results of these tests may change the stage of the cancer.

Test	Signs of metastases
Bone scan if you have a:	<ul style="list-style-type: none">• T1 tumor and your PSA level is >20 ng/mL,• T2 tumor and your PSA level is >10 ng/mL,• Gleason score of 8 or higher,• T3 or T4 tumor, or• You have symptoms that suggest cancer is in bone
Pelvic CT or MRI scan if you have a:	<ul style="list-style-type: none">• T3 or T4 tumor, or• T1 or T2 tumor and nomogram results show >10% risk of cancer spread to the lymph nodes

Getting an imaging test is often easy. There are usually no side effects. If radiation is used, the amount is small. Depending on the test, you may need to stop taking some medicines, stop eating and drinking for a few hours, and remove metal objects from your body.

After an imaging test, you will be able to resume your activities right away unless you took a sedative. You may not learn of the results for a few days since a radiologist or nuclear medicine specialist needs to see the pictures. A radiologist is a doctor who's an expert in reading images. A nuclear medicine specialist is a doctor who's an expert in tests that use radioactive substances.

Bone scan

A bone scan is suggested if you have signs or symptoms of bone metastases. For this test, a radiotracer will be injected into your vein. The most common radiotracer used for bone scans is technetium. A special camera will then take pictures of the dye in the bones. The radiotracer can be seen in your bones 2 to 3 hours after it is injected. You may be asked to drink water and empty your bladder to wash out any of the radiotracer that is not in your bones.

Figure 7 shows the machine used to take the pictures. You will need to lie still on the padded table for 45 to 60 minutes to complete the pictures. Prostate cancer in bone can damage the bone causing the bone to repair itself.

Part 3: Treatment planning

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. The radiologist can often tell what is and is not cancer in an abnormal bone scan.



Figure 7. Bone scan machine

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



Definitions:

Lymph node: A small disease-fighting organ

Metastasis: The spread of cancer cells from the first tumor to another site

Sedative: A drug that helps a person to relax or go to sleep

Part 3: Treatment planning

CT scan

A CT scan of your pelvis may show if your lymph nodes are enlarged. Before the scan, 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.

During the scan, you will need to lie face up on a table. The table will move through the imaging machine. A CT scan takes many pictures of a body part from different angles using x-rays. As the machine takes pictures, you may hear buzzing, clicking, or whirring sounds.

You will be alone, but a technician will operate the machine from a nearby room. He or she will be able to see, hear, and speak with you at all times. One scan is completed in about 30 seconds. A computer combines all the x-rays to make detailed pictures.

MRI

Instead of a CT scan, a MRI can be used to see if your lymph nodes are enlarged. MRI uses powerful magnets and radio waves to take pictures of the inside of the body. Getting an MRI is like getting a CT scan.

Fine-needle aspiration

If the CT or MRI scan suggests that the cancer has spread into your lymph nodes, a fine-needle aspiration can confirm if cancer is present. A fine-needle aspiration 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.

Definitions:

Biopsy: Removal of tissue samples for testing

Bladder: An organ that holds and expels urine from the body

Bowel: The organs that food travels through after leaving the stomach

Local anesthetic: A drug that causes a loss of feeling in a small area of the body

Lymph node: A small disease-fighting organ

Pelvis: The body area between the hipbones

Acronyms:

CT = Computed tomography

MRI = Magnetic resonance imaging

Part 3: Treatment planning



3.4 Tools

Webpages

Life Expectancy

www.ssa.gov/OACT/STATS/table4c6.html

Malecare

malecare.org/bone-scan

malecare.org/ct-scanmalecare.org/mri

Nomograms

nomograms.mskcc.org/Prostate/index.aspx

The “NEW” Prostate Cancer InfoLink

prostatecancerinfolink.net/2012/12/12/clinical-use-of-nomograms-and-other-tools-in-prostate-cancer-counseling-and-prognosis

prostatecancerinfolink.net/diagnosis/other-important-tests/mri-ct-etc

prostatecancerinfolink.net/diagnosis/other-important-tests/bone-scan

YOU ARE NOT ALONE

www.yananow.org/diagnosis.shtml

Review of Part 3

- Life expectancy is the number of years you will likely live.
- Risk groups for recurrence can be used to start talking about initial treatment options.
- Nomograms predict one person’s risk better than risk groups and should be used to better plan treatment.
- Imaging tests may be used to see if the cancer has spread beyond the prostate.
- A fine-needle aspiration removes tissue samples so that the presence of cancer can be confirmed.

Part 4: Overview of cancer treatments

Some men with prostate cancer don't get treated. But for those who will, Part 4 describes the main treatment types. This information may help you understand the recommended treatment options listed in Parts 5 through 7. It may also help you know what to expect during treatment. Not every man with prostate cancer will receive every treatment listed. Before any treatment, talk with your doctor about sperm-banking if you plan to have children.

From an NCCN doctor

"This is a controversial area. Many patients diagnosed with prostate cancer that has not spread do not need treatment while some do. What constitutes optimal treatment for individual patients often is debated. Getting a variety of opinions and/or multidisciplinary opinions is very useful in getting useful information about life expectancy, likelihood of the cancer causing problems, and side effects of treatment. We strongly encourage active participation of the patient and family in making these decisions in partnership with his physician team."

- 27** | **4.1 Surgical treatment**
Describes the operations used to remove prostate cancer.
- 32** | **4.2 Radiation therapy**
Describes the uses of radiation to treat prostate cancer.
- 34** | **4.3 Cryosurgery**
Describes how freezing is used to treat prostate cancer.
- 35** | **4.4 ADT (androgen deprivation therapy, hormone therapy)**
Describes ways to control cancer growth caused by hormones.
- 37** | **4.5 Immunotherapy**
Describes a drug that helps your body's disease-fighting system to destroy cancer.
- 37** | **4.6 Chemotherapy**
Describes chemotherapy drugs used for prostate cancer.
- 39** | **4.7 Radiopharmaceuticals**
Describes radioactive drugs that are used for cancer that has spread to the bone.
- 41** | **4.8 Tools**
Lists helpful webpages along with questions to ask your doctor about treatments.

Part 4: Overview of cancer treatments

4.1 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 gland, seminal vesicles, and sometimes other tissue. It is often used when the cancer appears not to have grown outside the prostate—T1 and T2 tumors. Less often, it is used when the cancer has grown outside the prostate but not into other organs.

There are four main types of radical prostatectomy. 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 surgeries he or she has done. Going to a surgeon who has and continues to perform many radical prostatectomies may be associated with a better outcome. Talk to other patients 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. Eating less, changing to a liquid diet, or using enemas or laxatives will empty your colon. 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 develop urinary incontinence or be unable to urinate due to scar tissue.

Definitions:

Anesthesia: Loss of feeling with or without loss of wakefulness caused by drugs

Catheter: A flexible tube inserted in the body

Enema: Injection of liquid into the rectum to clear the gut

Laxative: A drug that is used to clear out the gut

Seminal vesicles: A pair of male glands that makes fluid used by sperm for energy

Urethra: A tube that expels urine and semen from the body

Urinary incontinence: Inability to control the release of urine from the bladder

Part 4: Overview of cancer treatments

Open retropubic prostatectomy

This operation 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 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.

Afterward, your prostate and seminal vesicles will be removed. After removing your prostate, your urethra will be reattached to your bladder. It takes between 90 minutes and 3 hours to complete this operation, and you may stay 1 to 2 days in the hospital. It takes about 2 weeks to feel very well, and 4 to 6 weeks to resume all normal activities.

Open perineal prostatectomy

This operation removes tissue through a cut in your perineum. The perineum is the area between your scrotum and anus as shown in Figure 8. During the operation, you will lie on your back with your legs spread open and supported with stirrups. The prostate and seminal vesicles will be removed after being separated

from nearby tissues. Nerve sparing is possible but more difficult. Lymph nodes can't be removed. After your prostate has been removed, your urethra will be reattached to the bladder. This operation is completed in 1 to 3 hours. You may need to stay 1 to 2 days in the hospital. It takes about 2 weeks to feel very well, and 4 to 6 weeks to resume all normal activities.

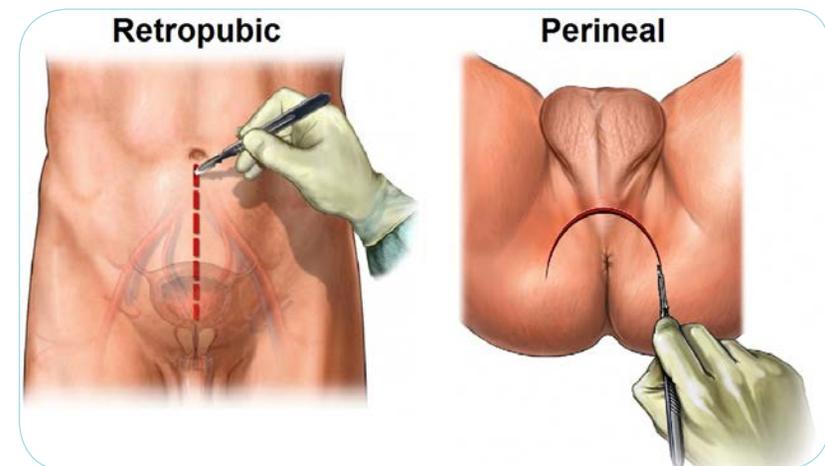


Figure 8. Open prostatectomy

Illustration Copyright © 2014 Nucleus Medical Media, All rights reserved.
www.nucleusinc.com

Laparoscopic prostatectomy

A newer retropubic method is the laparoscopic prostatectomy. This operation makes five small cuts, called ports, in your pelvis. Tools are inserted into these cuts to see and remove tissue. It takes 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 at home to recover.

Part 4: Overview of cancer treatments

Robot-assisted laparoscopic prostatectomy

A laparoscopic prostatectomy can be done with the help of a “robot.” During a robot-assisted prostatectomy, the surgeon controls the surgical tools using two or three robotic arms. Robotic arms make more precise cuts compared to a surgeon’s hand. However, surgeons can detect changes in the tissue by touching your organs. These changes aren’t detected when a robot is used.

Pelvic lymph node dissection

A PLND (**p**elvic **l**ymph **n**ode **d**issection) is an operation that removes lymph nodes from your pelvis. In Part 5, PLND is recommended if you have a T1 or T2 tumor, you choose to have a prostatectomy, and 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 100) will be spared having a PLND. See Figure 9. Also, almost all men in this group who have cancer in their lymph nodes will be correctly staged and treated.

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 recommended if you’re to have a PLND. It can be done with an open, 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, 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, itching, and

Definitions:



Read page 21 for more information on nomograms.

Lymph node: A small disease-fighting organ

Metastasis: The spread of cancer cells from the first tumor to another site

Nomogram: A tool that uses clinical information to predict an event

Part 4: Overview of cancer treatments

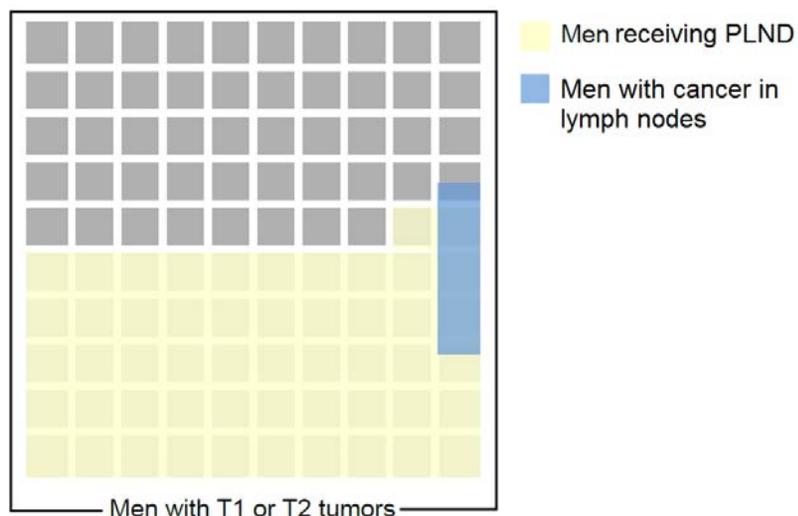


Figure 9. Graph showing how many men will receive a PLND and how many men with cancer in their lymph nodes will be found using a $\geq 2\%$ risk cutoff

crying right after you wake up. From the operation, you will have pain and swelling that often fade away within weeks. The PLND may rarely cause swelling (lymphedema) in the legs due to the buildup of lymph 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. 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. 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), and a smaller penis (penile shrinkage).

Bladder control often returns within months after the operation, but you may not have full control. Leaking a small amount of urine when coughing, laughing, sneezing, or exercising is called stress incontinence. It is caused by damage to the muscle at the base of the

Part 4: Overview of cancer treatments

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 defecating for awhile 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.

Order of treatments

Some men with prostate cancer will have more than one treatment. When and why treatments are given can be hard to understand. Parts 5 through 7 give full details. Here, the terms that describe the order of treatments are explained.

Primary treatment

Treatment used to cure the cancer

Or treatment used to control cancer growth



Adjuvant treatment

Treatment given after primary treatment to kill any remaining cancer cells



Salvage treatment

Treatment given after standard treatment fails

Definitions:

Dry orgasm: Having an orgasm without ejaculation

Erectile dysfunction: The inability to achieve erections sufficient for sex

Nerve graft: The transplant of nerves from one area of the body to another

Urinary incontinence: Inability to control the release of urine from the bladder

Acronyms:

PLND = Pelvic lymph node dissection

Part 4: Overview of cancer treatments

4.2 Radiation therapy

Radiation therapy uses high-energy rays to treat cancer. The rays damage DNA (**d**eoxyribonucleic **a**cid). DNA is a chain of chemicals in cells that contains genes. This either kills the cancer cells or stops new cancer cells from being made. 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. There are two ways to give radiation:

External beam radiation therapy

For prostate cancer, radiation is often given using a machine outside the body. This method is called EBRT (**e**xternal **b**eam **r**adiation **t**herapy). To receive EBRT, you first must have a simulation session. For simulation, imaging tests are used to help target the tumor with radiation.

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.

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.

There are multiple types of EBRT. For prostate cancer, 3D-CRT (**t**hree-**d**imensional **c**onformal **r**adiation **t**herapy) or IMRT (**i**ntensity-**m**odulated **r**adiation **t**herapy) may be used. 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 shape and size between and during treatment visits. IGRT (**i**mage-**g**uided **r**adiation **t**herapy) 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.

Often, ADT is used with EBRT. ADT is described in Part 4.4. 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 necessary. Some men require short-term (4–6 months) ADT while others are on ADT for 24 to 36 months.

Part 4: Overview of cancer treatments

Proton beams

3D-CRT and IMRT use photon radiation beams. Photon beams are a stream of particles that have no mass or electric charge. 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.

In theory, protons may reach tumors deep within the body with less harm to nearby tissues. However, proton therapy is not recommended for routine use at this time. Research hasn't shown proton beams to be the same or better for treating prostate cancer than conventional external beams.

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 can be given either as permanent LDR (low-dose rate) or temporary HDR (high-dose rate) therapy.

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.

Definitions:

Anesthesia: Loss of feeling with or without loss of wakefulness caused by drugs

Imaging test: A test that makes pictures of the insides of the body

Lymph node: A small disease-fighting organ

Perineum: The area between the scrotum and anus

Acronyms:

ADT = Androgen deprivation therapy

Part 4: Overview of cancer treatments

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). Moreover, your chances for side effects are higher. 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. HDR brachytherapy may be given with EBRT.

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.

Urinary problems right after EBRT may include frequent urination, urge incontinence, a burning sensation while urinating, and hematuria. After brachytherapy, you may have burning with urination, urinary retention, a slow or weak urinary stream, 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 colitis. 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 and have a loss of appetite.

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.

4.3 Cryosurgery

Cryosurgery is used as a salvage treatment after radiation therapy. It is not recommended as a primary treatment. More research is needed to compare cryosurgery to either prostatectomy or radiation therapy.

Cryosurgery treats prostate tumors by freezing them. Very thin needles will be inserted through your perineum

Part 4: Overview of cancer treatments

into your prostate. Imaging tests are 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. This treatment is often done as an outpatient procedure.

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 penile paresthesia. Long-term side effects include fistulas, stress incontinence, erectile dysfunction, and blockage of the urethra with rectal scar tissue.

4.4 ADT (androgen deprivation therapy, hormone therapy)

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

- **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 palmoate.
- **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, and enzalutamide.

Definitions:



Read pages 29–31 for comparison to side effects of surgery.

Colitis: Swelling of the colon

Fistula: A passage between two organs that aren't normally connected

Hematuria: Blood in urine

Paresthesia: Sensations of burning or tingling

Primary treatment: Medicine to cure or control cancer

Salvage treatment: Medicine used after primary treatment fails

TURP: Surgical removal of some prostatic tissue through the urethra

Urge incontinence: The feeling of having to rush to urinate or you'll leak urine

Urinary retention: Inability to empty the bladder

Part 4: Overview of cancer treatments

- **Estrogens** can stop the adrenal glands and other tissues from making testosterone. DES (diethylstilbestrol) is a commonly used estrogen.
- **Corticosteroids** can stop the adrenal glands and other tissues from making testosterone.
- **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.

Sometimes, antiandrogens are used with LHRH agonists or following an orchiectomy. This type of ADT 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 therapy to reduce side effects. Intermittent therapy is alternating periods of time on and off ADT. Intermittent therapy can provide similar cancer control to continuous ADT.

ADT has multiple side effects. It can disrupt sexual functioning by decreasing your desire for sex and causing erectile dysfunction. These sexual side effects don't seem to lessen with time. The longer you take ADT, the more your risk for osteoporosis, bone fractures, obesity, loss of muscle mass, diabetes, and heart disease increases. Most men have hot flashes but these may decrease over time. You may have breast tenderness and growth of breast tissue if you take antiandrogens or estrogens.

Not all of the side effects of ADT 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.

Part 4: Overview of cancer treatments

Supportive care

The main focus of this booklet is on the treatment of prostate cancer. However, supportive care is also very important. Supportive care doesn't aim to treat cancer but aims to improve quality of life. Supportive care is given at any stage of cancer, but is often the main type of care when the cancer is advanced. When used for advanced cancers, supportive care is often called palliative care. Supportive care can address many needs. Examples include treatment for physical and emotional symptoms, help with treatment decisions, and coordination of care between health providers. Talk with your treatment team to plan the best supportive care for you.

4.5 Immunotherapy

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 are changed by a protein so they will recognize and destroy prostate cancer cells. Common side effects of this drug includes chills, fever, nausea, and headache. These effects don't appear to last for long. Serious heart problems rarely occur.

4.6 Chemotherapy

Chemotherapy, or 'chemo,' is the use of drugs to kill cancer cells. Cell growth is stopped by damaging DNA or disrupting the making of DNA. Chemotherapy doesn't work on cells in a resting phase. Since cancer cells grow fast, chemotherapy can stop new cancer cells from being made.

Chemotherapy drugs for 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. Cycles vary in length depending on which drugs are used. Often, a cycle is 21 days long.

Definitions:

Adrenal gland: A small organ on top of each kidney that makes hormones

Castration: Surgery that removes the testicles or drugs that greatly reduce the level of testosterone

Diabetes: A disease that causes high levels of blood sugar

Hot flashes: A health condition of feeling intense heat and body sweat for short periods of time

Obesity: A high amount of body fat compared to body height

Osteoporosis: A disease that causes thinning, weakened bones

White blood cell: A type of blood cell that fights disease

Part 4: Overview of cancer treatments

Drug treatment for prostate cancer

Generic name	Brand name (sold as)	Type of treatment
Abiraterone acetate	Zytiga™	ADT
Bicalutamide	Casodex®	ADT
Cabazitaxel	Jevtana®	Chemotherapy
Degarelix	Firmagon®	ADT
Diethylstilbestrol	–	ADT
Docetaxel	Taxotere®	Chemotherapy
Enzalutamide	Xtandi®	ADT
Flutamide	–	ADT
Goserelin acetate	Zoladex®	ADT
Histreltin acetate	Vantas®	ADT
Ketoconazole	Nizoral®	ADT
Leuprolide acetate	Eligard®, Lupron Depot®, Lupron®	ADT
Mitoxantrone hydrochloride	Novantrone®	Chemotherapy
Nilutamide	Nilandron	ADT
Prednisone	–	ADT
Radium-223	Xofigo	Radiopharmaceutical
Sipuleucel-T	Provenge®	Immunotherapy
Triptorelin pamoate	Trelstar®	ADT

Part 4: Overview of cancer treatments

Complementary and alternative medicine

You may hear about other treatments from your family and friends. They may suggest using CAM (complementary and alternative medicine). CAM is a group of treatments that aren't often given by doctors. There is much interest today in CAM for cancer, and many CAMs are being studied to see if they are truly helpful.

Complementary medicines are treatments given along with usual medical treatments. While CAMs aren't known to kill cancer cells, they may improve your comfort and well-being. Two examples are acupuncture for pain management and yoga for relaxation.

Alternative medicine is used in place of usual medicine. Some alternative medicines are sold as cures even though they haven't been proven to work. If there was good proof that CAMs or other treatments cured cancer, they would be included in this booklet.

It is important to tell your treatment team if you are using any CAMs. They can tell you which CAMs may be helpful and which CAMs may limit how well treatments work.

Part 4: Overview of cancer treatments

4.8 Tools

Questions about treatment to ask your doctor

- What are the available treatments for prostate cancer?
- What are the risks and benefits of each treatment for prostate cancer?
- Will my age, general health, stage of prostate cancer, and other medical conditions limit my treatment choices?
- Do I have to get treated? What are observation and active surveillance?
- Where will I be treated? Will I have to stay in the hospital or can I go home after each treatment?
- What can I do to prepare for treatment? Should I stop taking my medications? Should I store my blood in case I need a transfusion?
- How many prostate surgeries have you done? How many of your patients have had complications?
- Are prostatectomies a major part of your practice?
- How soon should I start treatment? How long does treatment take?
- How much will the treatment cost? How can I find out how much my insurance company will cover?
- How likely is it that I'll be cancer-free after treatment?
- What symptoms should I look out for while being treated for prostate cancer?
- When will I be able to return to my normal activities?
- What is the chance that my cancer will come back and/or spread?
- What should I do after I finish treatment?
- Are there supportive services that I can get involved in? Support groups?

Part 4: Overview of cancer treatments

4.8 Tools



Webpages

The “NEW” Prostate Cancer InfoLink
prostatecancerinfolink.net/treatment

Us TOO!

www.ustoo.com/Treatment_Options.asp

YOU ARE NOT ALONE

www.yananow.org/choices.shtml

Review of Part 4

- 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.
- ADT 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 drugs stop the growth process of cells in a growth phase.
- Radiopharmaceuticals are radioactive drugs used to treat cancer in the bones.
- All cancer treatments can cause side effects. Ask your treatment team for a list of all known side effects caused by any treatment you may plan on having.

Part 5: Initial treatment by risk group

Part 5 is a guide to the initial treatment options for men with prostate cancer. The information in this guide is taken from the treatment guidelines written by NCCN experts for prostate cancer doctors. However, your doctors may suggest other treatments based on your health and personal wishes.

Groups based on the prognosis of the cancer are used to recommend treatment options. There are six risk groups. These risk groups have been tested and were found to predict treatment outcomes well. They provide a better basis for treatment recommendations than just using the stage of cancer.

You must know your level of risk to find which treatment options are best for you. If you don't know your risk, ask your doctor for the results of your PSA tests, biopsy tests, and the stage of the cancer. The criteria for each risk group are:

44

5.1 Very low risk

Men at very low risk include those with a T1c tumor, PSA level less than 10 ng/mL, PSA density less than 0.15 ng/mL/g, Gleason score 6 or less, and cancer in fewer than three biopsy cores and in half or less of any core.

46

5.2 Low risk

Men at low risk include those with a T1a, T1b, T1c, or T2a tumor, PSA level less than 10 ng/mL, and Gleason score 6 or less.

49

5.3 Intermediate risk

Men at intermediate risk include those with a T2b or T2c tumor, PSA level between 10 and 20 ng/mL, or Gleason score 7. If you meet more than one criterion, your risk is high.

52

5.4 High risk

Men at high risk include those with a T3a tumor, a PSA level greater than 20 ng/mL, or a Gleason score between 8 and 10. If you meet more than one criterion, your risk is very high.

54

5.5 Very high risk

Men at very high risk include those with a T3b or T4 tumor.

56

5.6 Metastatic disease

Men with metastatic disease include those with N1 or M1 disease.

Part 5: Initial treatment by risk group

5.1 Very low risk

Primary treatment

Expected years to live	Treatment options
<10 years →	Observation
10–20 years →	Active surveillance <ul style="list-style-type: none"> • PSA no more often than every 6 months, • DRE no more often than every 12 months, and • Prostate biopsy no more often than every 12 months
≥20 years →	Active surveillance <ul style="list-style-type: none"> • PSA no more often than every 6 months, • DRE no more often than every 12 months, and • Prostate biopsy no more often than every 12 months Radiation therapy <ul style="list-style-type: none"> • EBRT, or • LDR brachytherapy Surgical treatment <ul style="list-style-type: none"> • Radical prostatectomy, or • Radical prostatectomy + PLND if ≥2% risk of cancer in lymph nodes

This chart lists the treatment options for men at very low risk of recurrence. The criteria for very low risk include a T1c tumor. This tumor can't be felt with a DRE but is found because of high PSA levels.

NCCN experts are concerned about over-treatment of this early cancer. As a result, they recommend starting observation after diagnosis if you're expected to live less

than 10 years since the cancer 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 is an option if you are likely to live more than 10 years. Active surveillance consists

Part 5: Initial treatment by risk group

of testing on a regular basis so that treatment can be started when needed. Treatment is given when there is still an excellent chance for a cure. This option may be of interest if you're younger and want to avoid treatment side effects until treatment is clearly (if ever) needed. If older, treating the cancer may not be an urgent concern in light of other more serious health problems.

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 or change in DRE.

A decision to do a repeat biopsy should balance the potential benefits and risks. Risks include infection and other side effects. If 10 or more cores were removed, the next biopsy may be done within 18 to 24 months of diagnosis. If you're likely to live less than 10 years or are older than 75 years of age, repeat prostate biopsies are rarely needed.

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:

- Your risk for recurrence has increased,
- 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.

Besides active surveillance, there are two other options if you're likely to live more than 20 years. You may want treatment now since, in time, the cancer may grow outside your prostate, cause symptoms, or both. If you want treatment now, radiation therapy is an option. Very low risk cancers may be treated with

Acronyms:



Read Part 2 for testing information and Part 4 for treatment details.

DRE = Digital rectal exam

EBRT = External beam radiation therapy

LDR = Low-dose rate

PSA = Prostate-specific antigen

Part 5: Initial treatment by risk group

LDR brachytherapy alone. They can also be treated with EBRT to the prostate and maybe the seminal vesicles but not to the pelvic lymph nodes.

The third option is to have a radical prostatectomy. If you choose a prostatectomy, you may also have a PLND if

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

5.2 Low risk

Primary treatment

Expected years to live	Treatment options
<10 years →	Observation
≥10 years →	Active surveillance <ul style="list-style-type: none"> • PSA no more often than every 6 months, • DRE no more often than every 12 months, and • Prostate biopsy no more often than every 12 months
	Radiation therapy <ul style="list-style-type: none"> • EBRT, or • LDR brachytherapy
	Surgical treatment <ul style="list-style-type: none"> • Radical prostatectomy, or • Radical prostatectomy + PLND if ≥2% risk of cancer in lymph nodes

This chart lists the treatment options for men at low risk of recurrence. The criteria for low risk include T1 and T2a tumors. Treatment options are based on how many years a man is expected to live.

If you're likely to live less than 10 years, starting observation after diagnosis is recommended since the cancer may never cause any problems. Observation consists of testing on a regular basis so that supportive

Part 5: Initial treatment by risk group

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 an option if you are likely to live 10 or more years. Active surveillance consists of testing on a regular basis so that treatment can be started when needed. Treatment is given when there is still an excellent chance for a cure.

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 or change in DRE.

A decision to do a repeat biopsy should balance the potential benefits and risks. Risks include infection and other side effects. If 10 or more cores were removed, the next biopsy may be done within 18 to 24 months of diagnosis. If you're likely to live less than 10 years or are older than 75 years of age, repeat prostate biopsies are rarely needed.

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:

- Your risk for recurrence has increased,
- The 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.

Besides active surveillance, there are two other options if you're likely to live more than 10 years. You may want treatment now since, in time, the cancer may grow outside your prostate, cause symptoms, or both. If you want treatment now, radiation therapy is an option. Very-low-risk cancers may be treated with LDR

Acronyms:



Read Part 2 for testing information and Part 4 for treatment details.

ADT = Androgen deprivation therapy

DRE = Digital rectal exam

EBRT = External beam radiation therapy

LDR = Low-dose rate

PLND = Pelvic lymph node dissection

PSA = Prostate-specific antigen

Part 5: Initial treatment by risk group

brachytherapy alone. They can also be treated with EBRT to the prostate and maybe the seminal vesicles but not to the pelvic lymph nodes.

The third option is to have a radical prostatectomy. If you choose a prostatectomy, you may also have a PLND if your risk is 2% or higher for having cancer in the pelvic lymph nodes. Your doctor will determine your risk using a nomogram, which was described in Part 3.

Adjuvant treatment after prostatectomy

Surgical results	Treatment options
No high-risk features or cancer in lymph nodes	→ Observation
High-risk features but no cancer in lymph nodes	→ Radiation therapy, or → Observation
Cancer in lymph nodes	→ ADT ± radiation therapy, or → Observation

The tissue that was removed from your body during the operation will be sent to a pathologist for testing. The pathologist will assess how far the cancer has spread within the tissue. After the operation, your PSA level will also be tested.

Recommendations for adjuvant treatment 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. The options for when there are high-risk features but no cancer in the lymph nodes are radiation therapy or observation. Radiation therapy with EBRT is given to the areas where the cancer cells have likely spread. Treatment is 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. Radiation therapy may be given with ADT. ADT can be given on an intermittent schedule to reduce its side effects. However, the benefits of ADT in this case are unclear. For adjuvant ADT, an LHRH antagonist or LHRH agonist is recommended. If your PSA levels are undetectable, a second option is to start observation and then have supportive care when the levels rise.

Part 5: Initial treatment by risk group

5.3 Intermediate risk

Primary treatment

Expected years to live	Treatment options
<10 years	<ul style="list-style-type: none"> → Observation → Radiation therapy ± ADT for 4–6 months <ul style="list-style-type: none"> • EBRT ± brachytherapy, or • Brachytherapy alone
≥10 years	<ul style="list-style-type: none"> → Surgical treatment <ul style="list-style-type: none"> • Radical prostatectomy, or • Radical prostatectomy + PLND if ≥2% risk of cancer in lymph nodes → Radiation therapy ± ADT for 4–6 months <ul style="list-style-type: none"> • EBRT ± brachytherapy, or • Brachytherapy alone

This chart lists the treatment options for men in the intermediate risk group. The criteria for intermediate risk include T2b and T2c tumors. Treatment options are based on how many years a man is expected to live.

Observation instead of treatment is an option for men expected to live less than 10 years. In this case, 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 is not recommended if you expect to live longer than 10 years since the cancer will likely decrease your length of life and cause unpleasant symptoms.

Definitions:

Adjuvant treatment:

Treatment given after primary treatment to kill any remaining cancer cells

Lymph node: A small disease-fighting organ

Pathologist: A doctor who's an expert in testing cells to identify disease

Prostatic capsule: Tissue that covers the prostate

Seminal vesicles: A pair of male glands

Surgical margin: Normal tissue around the edge of a tumor that is removed

Acronyms:

ADT = Androgen deprivation therapy

DRE = Digital rectal exam

LHRH = Luteinizing hormone-releasing hormone

PSA = Prostate-specific antigen

Part 5: Initial treatment by risk group

For all men with intermediate risk, a treatment option is radiation therapy. Research has shown that EBRT alone often controls intermediate-risk prostate cancer. LDR or HDR brachytherapy can be used with EBRT for intermediate-risk cancers but will likely cause more side effects. Brachytherapy alone can also be given.

Your doctor may want to add a short course of ADT to radiation therapy. Research has shown that adding ADT can extend life. For ADT, an LHRH antagonist or LHRH agonist may be used. However, doctors often use CAB. If you will receive ADT, it will be given before, during, and after radiation therapy.

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

There is debate over which events 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 starting treatment if your risk for recurrence increases.

Adjuvant treatment after prostatectomy

Surgical results	Treatment options
No high-risk features or cancer in lymph nodes	→ Observation
High-risk features but no cancer in lymph nodes	→ Radiation therapy, or → Observation
Cancer in lymph nodes	→ ADT ± radiation therapy, or → Observation

If you had radiation therapy, you may have started ADT beforehand. ADT is recommended for 4 to 6 months, so you will need to keep taking these drugs after radiation therapy has ended.

If you had an operation, the tissue that was removed from your body will be sent to a pathologist for testing. The pathologist will assess how far the cancer has spread within the tissue. Your PSA level will also be tested.

Recommendations for adjuvant treatment 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,

Part 5: Initial treatment by risk group

- Cancer in the seminal vesicle(s), and
- 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. The options for when there are high-risk features but no cancer in the lymph nodes are radiation therapy or observation. Radiation therapy with EBRT is given to the areas where the cancer cells have likely spread. Treatment is 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. Radiation therapy may be added to ADT. ADT can be given on an intermittent schedule to reduce its side effects. However, the benefits of ADT in this case are unclear. For adjuvant ADT after prostatectomy, an LHRH antagonist or LHRH agonist is recommended. If your PSA levels are undetectable, a second option is to start observation and then have treatment when the levels rise.

Acronyms:



Read Part 2 for testing information and Part 4 for treatment details.

ADT = Androgen deprivation therapy

CAB = Combined androgen blockade

DRE = Digital rectal exam

EBRT = External beam radiation therapy

HDR = High-dose rate

LHRH = Luteinizing hormone-releasing hormone

LDR = Low-dose rate

PLND = Pelvic lymph node dissection

PSA = Prostate-specific antigen

Part 5: Initial treatment by risk group

5.4 High risk

Primary treatment

Treatment options

Radiation therapy ± ADT

- EBRT+ ADT for 2–3 years, or
- EBRT+ brachytherapy, ± ADT for 2–3 years

Surgical treatment

- Radical prostatectomy + PLND

This chart lists the treatment options for men in the high-risk group. The criteria for high risk include T3a tumors. For high-risk cancers, research supports treatment unless you're likely to live less than 5 years when observation is the best choice.

There are three treatment options for high-risk tumors. The preferred treatment is EBRT to the prostate and pelvic lymph nodes and long-term ADT. The second treatment option is EBRT plus HDR brachytherapy and maybe ADT. A third option is a radical prostatectomy with PLND.

For ADT, an LHRH antagonist or LHRH agonist may be used. However, doctors often use CAB. If you will receive ADT, it will be given before, during, and after radiation therapy for a total of 2 to 3 years.

Adjuvant treatment

Treatment results

After radiation therapy

If on ADT →

Treatment options

Continue to complete 2–3 years of ADT

After surgical treatment

No high-risk features or cancer in lymph nodes →

Observation

High-risk features but no cancer in lymph nodes →

Radiation therapy, or Observation

Cancer in lymph nodes →

ADT ± radiation therapy, or Observation

If you had radiation therapy, you may have started ADT beforehand. ADT is recommended for 2 to 3 years, so you will need to keep taking these drugs after radiation therapy has ended.

If you had a prostatectomy, the tissue that was removed from your body will be sent to a pathologist for testing. The pathologist will assess how far the cancer has spread within the tissue. Your PSA level will also be tested.

Part 5: Initial treatment by risk group

Recommendations for adjuvant treatment 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), and
- 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. The options for when there are high-risk features but no cancer in the lymph nodes are radiation therapy or observation. Radiation therapy with EBRT is given to the areas where the cancer cells have likely spread. Treatment is 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. Radiation therapy may be added to ADT. ADT can be given on an intermittent schedule to reduce its side effects. However, the benefits of ADT in this case are unclear. For adjuvant ADT, an LHRH antagonist or LHRH agonist is recommended. If your PSA levels are undetectable, a second option is to start observation and then have treatment when the levels rise.

Definitions:

Lymph node: A small disease-fighting organ

Prostatic capsule: Tissue that covers the prostate

Seminal vesicles: A pair of male glands

Surgical margin: Normal tissue around the edge of a tumor that is removed

Acronyms:

ADT = Androgen deprivation therapy

CAB = Combined androgen blockade

EBRT = External beam radiation therapy

HDR = High-dose rate

LHRH = Luteinizing hormone-releasing hormone

PLND = Pelvic lymph node dissection

PSA = Prostate-specific antigen

Part 5: Initial treatment by risk group

5.5 Very high risk

Primary treatment

Treatment options

Radiation therapy ± ADT

- EBRT+ ADT for 2–3 years, or
- EBRT+ brachytherapy, ± ADT for 2–3 years

Surgical treatment

- Radical prostatectomy and PLND if the cancer isn't fixed to nearby organs

ADT when a cure is not possible

This chart lists the treatment options for men at very high risk of recurrence. Men at very high risk include those with T3b and T4 tumors. There are four treatment options for very high-risk tumors.

The preferred treatment is EBRT to the prostate and pelvic lymph nodes and long-term ADT. The second treatment option is EBRT plus HDR brachytherapy and maybe ADT. For ADT given with radiation, an LHRH antagonist or LHRH agonist may be used. However, doctors often use CAB. If you will receive ADT, it will be given before, during, and after radiation therapy for 2 to 3 years.

If the tumor isn't fixed to nearby organs, a third option is a radical prostatectomy with PLND. When a tumor isn't fixed, it is more likely to be fully removed. In this case, an operation may be able to cure the cancer.

If you have a very-high-risk cancer that can't be cured, ADT can be used. The goal of ADT is to control the growth of the cancer. Recommendations for ADT include an LHRH antagonist or LHRH agonist. If these drugs don't suppress your testosterone level, your doctor may want you to take CAB.

Adjuvant treatment

Treatment results	Treatment options
After radiation therapy If on ADT →	Continue to complete 2–3 years of ADT
After surgical treatment No high-risk features or cancer in lymph nodes →	Observation
High-risk features but no cancer in lymph nodes →	Radiation therapy, or Observation
Cancer in lymph nodes →	ADT ± radiation therapy, or Observation

If you had radiation therapy, you may have started ADT beforehand. ADT is recommended for 2 to 3 years, so you will need to keep taking these drugs after radiation therapy has ended.

If you had a prostatectomy, the tissue that was removed from your body will be sent to a pathologist for testing.

Part 5: Initial treatment by risk group

The pathologist will assess how far the cancer has spread within the tissue. Your PSA level will also be tested.

Recommendations for adjuvant treatment 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), and
- 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. The options for when there are high-risk features but no cancer in the lymph nodes are radiation therapy or observation. Radiation therapy with EBRT is given to the areas where the cancer cells have likely spread. Treatment is 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. Radiation therapy may be added to ADT. ADT can be given on an intermittent schedule to reduce its side effects. However, the benefits of ADT in this case are unclear. For adjuvant ADT, an LHRH antagonist or LHRH agonist is recommended. If your PSA levels are undetectable, a second option is to start monitoring and then have treatment when the levels rise.

Definitions:

Lymph node: A small disease-fighting organ

Prostatic capsule: Tissue that covers the prostate

Seminal vesicles: A pair of male glands

Surgical margin: Normal tissue around the edge of a tumor that is removed

Acronyms:

ADT = Androgen deprivation therapy

CAB = Combined androgen blockade

EBRT = External beam radiation therapy

HDR = High-dose rate

LHRH = Luteinizing hormone-releasing hormone

PLND = Pelvic lymph node dissection

PSA = Prostate-specific antigen

Part 5: Initial treatment by risk group

5.6 Metastatic disease

TNM scores	Treatment options
Any T N1, M0	→ Observation
	→ ADT <ul style="list-style-type: none">• Orchiectomy,• LHRH agonist ± antiandrogen for ≥7 days to prevent testosterone flare,• LHRH agonist + antiandrogen, or• LHRH antagonist
	→ Radiation therapy + ADT for 2–3 years
	→ Observation, or
Any M1	→ ADT <ul style="list-style-type: none">• Orchiectomy,• LHRH agonist ± antiandrogen for ≥7 days to prevent testosterone flare,• LHRH agonist + antiandrogen, or• LHRH antagonist

This chart lists the treatment options for men with metastatic disease. Metastatic disease refers to cancer that has spread to nearby lymph nodes, a distant site, or both. The growth of these cancers can be controlled with treatment.

Observation or ADT are options for cancer that has spread to either the lymph nodes or distant sites. ADT for first-time users can consist of surgical castration with a bilateral orchiectomy or medical castration with an LHRH

antagonist or agonist. Both methods for castration work equally well.

Some metastases can be seen with imaging tests. When these overt metastases are treated with LHRH agonists, there can be an increase in testosterone for several weeks. This increase is called a “flare.” Flare can cause pain if there are bone metastases, but the pain doesn’t mean the cancer is growing. Flare can also cause paralysis if metastases are located in weight-bearing bones (legs or spine). To prevent the flare, an antiandrogen can be given for 7 or more days, starting before or along with the LHRH agonist.

Another option for first-line ADT is long-term use of an antiandrogen with an LHRH agonist. This is a form of CAB. However, CAB is no better than castration alone for metastases. Moreover, it may lead to higher costs and worse side effects.

If the cancer has only spread to nearby lymph nodes, a second treatment option is EBRT with long-term ADT. For ADT, an LHRH antagonist or LHRH agonist may be used. However, doctors often use CAB. ADT is given before, during, and after radiation therapy.

Part 6: Monitoring and salvage treatment

Part 6 is a guide to tests given after initial treatment. It also includes which treatments are recommended if surgical treatment and radiation therapy do not succeed in treating the cancer. These next-step treatments are called salvage treatment. The information in this guide is taken from the treatment guidelines written by NCCN experts for prostate cancer doctors. However, your doctors may suggest other tests and treatments based on your health and personal wishes.



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6.1 ADT risks

Discusses care of bone, blood sugar, and heart health while taking ADT.

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6.2 Monitoring

Lists the tests used to check the results of cancer treatment.

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6.3 Treatment after radical prostatectomy

Presents treatment options for cancer growth after prostatectomy.

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6.4 Treatment after radiation therapy

Presents treatment options for cancer growth after radiation therapy.

Part 6: Monitoring and salvage treatment

6.1 ADT risks

Screening, prevention, and treatment

Osteoporosis

- Calcium (1200 mg every day) and vitamin D3 (800–1000 IU every day) if older than 50 years old
- Denosumab (60 mg every 6 months), zoledronic acid (5 mg every year), or alendronate (70 mg every week) if at high risk for bone fracture
- DEXA scan before and 1 year after treatment

Diabetes

- Follow guidelines for general population

Heart (cardiovascular) disease

- Follow guidelines for general population
-

ADT can cause many side effects. One known side effect of ADT is osteoporosis. Calcium and vitamin D3 may help prevent or control osteoporosis. Both are recommended if you are older than 50 years old. Calcium 1200 mg (**milligram**) and vitamin D3 800 to 1000 IU (**international unit**) should be taken each day.

If you are at high risk for bone fracture, there are drugs that may strengthen your bones. Before treatment, you should receive a DEXA (**d**ual **e**nergy **X**-ray **a**bsorptiometry) scan to measure your bone density. Denosumab (120 mg every 6 months), zoledronic acid (5 mg every year), or alendronate (70 mg every week)

are recommended. 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 osteonecrosis—bone tissue death—of the jaw. Other side effects are hypocalcemia and arthralgias. 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.

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 recommended.

For advanced cancer, the risks of ADT can be reduced by using ADT intermittently rather than continuously. However, ADT can't be given intermittently if being used to make radiation more effective. Intermittent ADT improves quality of life without affecting survival. Intermittent ADT often begins with about 1 year of continuous ADT and then is stopped. ADT is resumed when a certain PSA level is reached or symptoms appear. PSA levels that trigger restarting ADT usually are 10, 20, or 40 ng/mL.

Part 6: Monitoring and salvage treatment

6.2 Monitoring

Risk level	Test names and schedule
Very low – Very high risk treated for cure →	<ul style="list-style-type: none">• PSA every 6–12 months → If results are normal, then PSA every year for 5 years, and• DRE every year unless PSA is undetectable
Very high risk, N1, or M1 not treated for cure →	<ul style="list-style-type: none">• Physical exam every 3–6 months, and• PSA every 3–6 months

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 the prostate. An increase in the PSA level can be a sign of recurrence either near the prostate or in other areas. Besides PSA level, your doctor will assess the PSA doubling time and velocity.

If the goal of your treatment is 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 is recommended 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 treatment controls but doesn't cure the cancer, you should be checked often by a doctor after treatment has begun. 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.

Definitions:



Read Part 2 for more information on tests.

Arthralgias: Joint pain

Hypocalcemia: Low calcium levels

Osteoporosis: A disease that causes bones to become thin and weak

Recurrence: The return of cancer after a cancer-free period

Acronyms:

ADT = Androgen deprivation therapy

DRE = Digital rectal exam

PSA = Prostate-specific antigen

Part 6: Monitoring and salvage treatment

Next steps. Persistent cancer is cancer that is not completely removed or destroyed by initial treatment. Recurrent cancer is the return of cancer after a cancer-free period. If tests suggest that there's persistent or

recurrent cancer after radical prostatectomy, read Part 6.3. Part 6.4 describes salvage treatment after radiation therapy.

6.3 Treatment after radical prostatectomy

Possible tests	Test results	Treatment options
<ul style="list-style-type: none"> • PSA doubling time Possible tests: <ul style="list-style-type: none"> • CT, MRI, or TRUS, • Bone scan, • PET scan, or • Biopsy 	No metastases	EBRT ± ADT for 2–3 years, or Observation
	Metastases	ADT ± EBRT Observation

After a radical prostatectomy, your PSA level should fall to near zero since the whole prostate was removed. If this doesn't happen, it may be a sign of persistent cancer. If tests find that your PSA level increases twice in a row after falling to near zero, the cancer may have returned.

Since high PSA levels don't always mean persistent or recurrent cancer, tests that find distant metastases may be done. A CT, MRI, or TRUS is used to look for cancer spread to lymph nodes or other organs. A fast PSA doubling time is a sign of aggressive cancer with possible spread to the bone. 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 imaging tests suggest there's cancer near to where the prostate was, a biopsy can be used to confirm if cancer is present.

If there is little reason to suspect distant metastases, radiation therapy with or without long-term ADT is recommended. However, observation may be a better choice depending on your overall health and personal wishes. For ADT, an LHRH antagonist or LHRH agonist may be used. However, doctors often use CAB. If you will receive ADT, it will be given before, during, and after radiation therapy.

For known or highly suspected distant metastases, ADT is the main treatment. Radiation therapy may also be used to

Part 6: Monitoring and salvage treatment

treat the metastatic site. However, observation may be a better choice depending on your overall health and personal wishes.

Next steps. Read Part 7 if 1) the cancer grows after either option for nonmetastatic cancer; 2) you choose ADT to treat metastases; or 3) the cancer grows during monitoring of metastatic cancer.

6.4 Treatment after radiation therapy

	Test names	Test results	Treatment options
Able to have local treatment	Possible tests: • PSA doubling time • TRUS biopsy, and • Bone scan • Abdominal and pelvic CT or MRI • Prostate MRI, or • PET scan	Cancer isn't found in prostate or other areas	Observation, ADT, Clinical trial, or More testing
		Cancer is found in prostate but hasn't spread	Observation, Radical prostatectomy, Cryosurgery, or Brachytherapy
		Metastases	ADT
Unable to have local treatment			ADT, or Monitoring

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. Signs of cancer also may be found by a DRE.

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

Acronyms:



Read Part 2 for testing information and Part 4 for treatment details.

ADT = Androgen deprivation therapy

CAB = Combined androgen blockade

CT = Computed tomography

EBRT = External beam radiation therapy

LHRH = Luteinizing hormone-releasing hormone

MRI = Magnetic resonance imaging

PSA = Prostate-specific antigen

TRUS = Transrectal ultrasound

Part 6: Monitoring and salvage treatment

10 years; and 4) your current PSA level is below 10. If you don't meet these criteria or have metastases, the treatment options are ADT or observation.

To confirm that local therapy is the right treatment for you, more tests are needed. A fast PSA doubling time suggests spread beyond the prostate. A TRUS biopsy of the prostate along with a bone scan should be done. Possible other tests include a CT or MRI scan of your abdomen and pelvis or a prostate MRI.

Sometimes the prostate biopsy and imaging tests find no cancer despite rising PSA levels. One option in this situation 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. A fourth option is to have more tests to try to find the source of the rising PSA level. These tests can include another biopsy, MR spectroscopy, or a prostate MRI.

There are four 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 even though the side effects of salvage prostatectomy are worse than primary prostatectomy. Other options for

local treatment include cryotherapy and brachytherapy. 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.

Next steps. If you choose ADT, read Part 7 for recommendations. For all other treatment options, your doctor will monitor for cancer growth. Read Part 7 if the cancer keeps growing.

Definitions:

Abdomen: The belly area between the chest and pelvis

Biopsy: Removal of tissue samples for testing

Clinical trial: A type of research that studies tests and treatments

Metastasis: The spread of cancer cells from the first tumor to another site

MR spectroscopy: A test that measures chemicals in cells without removing tissue from the body

Pelvis: The body area between the hipbones

Part 7: Treatment for advanced cancer

Part 7 is a guide to treatment for advanced disease. Advanced disease can't be cured by surgical treatment or radiation therapy. Instead, there are treatments that can control cancer growth for long periods of time. The information in this guide is taken from the treatment guidelines written by NCCN experts for prostate cancer doctors. However, your doctors may suggest other tests and treatments based on your health and personal wishes.

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7.1 ADT for first-time users

Presents options for ADT if you've never used it before.

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7.2 Castration-recurrent cancer without metastases

Presents treatment options for local cancer growth after first-time ADT.

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7.3 Castration-recurrent cancer with metastases

Presents treatment options for distant cancer growth after first-time ADT.



Part 7: Treatment for advanced cancer

7.1 ADT for first-time users

Treatment options

Orchiectomy,
LHRH agonist ± antiandrogen for ≥7 days
to prevent testosterone flare,
LHRH agonist + antiandrogen,
LHRH antagonist, or
Observation

ADT for first-time users includes surgical or medical castration. Surgical castration is done with a bilateral orchiectomy. Medical castration is done using an LHRH antagonist or agonist. Both castration methods work equally well.

Some metastases can be seen with imaging tests. When these overt metastases are treated with LHRH agonists, there can be an increase in testosterone for several weeks. This increase is called a “flare.” Flare can cause pain if there are bone metastases, but the pain doesn’t mean the cancer is growing. Flare can also cause paralysis if metastases are located in weight-bearing bones (legs or spine). To prevent the flare, an antiandrogen can be given for 7 or more days, starting before or along with the LHRH agonist.

Another option is long-term use of an antiandrogen with an LHRH agonist. This is one form of CAB. However, CAB

is no better than castration alone for metastases. Moreover, it may lead to higher costs and worse side effects.

For advanced cancer, the risks of ADT can be reduced by using ADT intermittently rather than continuously. Intermittent ADT improves quality of life without affecting survival. Intermittent ADT often begins with about 1 year of continuous ADT and then is stopped. ADT is resumed when a certain PSA level is reached or symptoms appear. PSA levels that trigger restarting ADT usually are 10, 20, or 40 ng/mL.

Besides ADT, observation is an option. 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.

Next steps. While on ADT, your doctor will monitor treatment results (see Parts 6.1 and 6.2). A rising PSA level during ADT suggests the cancer is growing. This increase is called a biochemical relapse. If PSA levels are rising, your testosterone levels should be tested to see if they are at castrate levels (less than 50 ng/dL). If the levels aren’t very low, the dose of your ADT will likely be increased. If the levels are very low, you may receive imaging tests to look for metastases. Cancer growth while taking ADT is called castration-recurrent cancer. Treatment recommendations for castration-recurrent cancer with no metastases are listed in Part 7.2, and with metastases in Part 7.3.

Part 7: Treatment for advanced cancer

7.2 Castration-recurrent cancer without metastases

Treatment options

- Clinical trial (preferred),
Observation, or
Secondary ADT
- Antiandrogen,
 - Antiandrogen withdrawal,
 - Ketoconazole,
 - Corticosteroids, or
 - DES or other estrogen

This chart lists treatment options for when the cancer isn't responding to first-time ADT. Castration-recurrent prostate cancer 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.

When tests find no proof of metastases, there are three options. Joining a clinical trial is the preferred option. A clinical trial is a type of research that studies how well a treatment works. Because of clinical trials, the treatments in this booklet are now widely used to help men with prostate cancer.

The second option is observation. Instead of changing your treatment, you may want to continue observation until the proof for cancer growth is stronger. The third option is secondary ADT, especially if the PSADT is less than 10 months. Secondary ADT may help control cancer growth if the androgen receptors are active. However, secondary therapies haven't been shown to extend life when given before chemotherapy.

Acronyms:



Read Part 4 for more information on treatment.

ADT = Androgen deprivation therapy

CAB = Combined androgen blockade

DES = Diethylstilbestrol

DRE = Digital rectal exam

LHRH = Luteinizing hormone-releasing hormone

PSA = Prostate-specific antigen

Part 7: Treatment for advanced cancer

If your first ADT was surgical or medical castration, starting CAB may help. Adding an antiandrogen may lower testosterone levels. Ketoconazole, steroids, DES, and other estrogens may also lower testosterone levels. 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 last several months.

Next steps. While on ADT, your doctor will monitor the treatment results (see Parts 6.1 and 6.2). Read Part 7.3 if the cancer metastasizes.

7.3 Castration-recurrent cancer with metastases

Despite that the cancer has returned during ADT, it is important to keep taking ADT. To treat the cancer, your testosterone levels need to stay at castrate levels. To do so, your doctor may keep you on your current ADT regimen or may switch the type of ADT you are using. You should keep taking ADT even if given other types of treatment, such as chemotherapy.

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.

Without symptoms

Treatment options

Sipuleucel-T,
Secondary ADT,
• Abiraterone acetate,
• Antiandrogen,
• Antiandrogen withdrawal,
• Ketoconazole,
• Corticosteroids,
• DES or other estrogen, or
• Enzalutamide
Docetaxel, or
Clinical trial

This chart lists treatment options for when the cancer has spread far but isn't causing symptoms. Sipuleucel-T is an immunotherapy drug used for metastatic castration-recurrent prostate cancer. Research found that men taking sipuleucel-T lived, on average, 4 months longer than men not taking this drug. Your results may be better or worse. NCCN experts recommend sipuleucel-T with ADT if the following describes you:

- In good health other than prostate cancer,
- Able to do most everyday life activities,
- Expected to live more than 6 months,
- No metastases to your liver, and
- Have no or very few symptoms of metastases.

Part 7: Treatment for advanced cancer

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 don't occur during sipuleucel-T. Thus, don't be discouraged if your test results don't improve. After sipuleucel-T, the next treatment should be based on any new symptoms and test results.

Besides sipuleucel-T, another treatment option is secondary ADT. Secondary therapy includes abiraterone acetate that is taken on an empty stomach with prednisone. This drug has been shown to slow cancer growth.

Compared to abiraterone acetate, other secondary ADT options have only minor benefits. If your first ADT 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. Ketoconazole, steroids, DES, and other estrogens may help stop cancer growth by lowering testosterone levels. Enzalutamide is a newer antiandrogen that may be more effective than currently available antiandrogens. Enzalutamide is listed in the chart since it has been shown to lower PSA levels and extend survival by an average of about 5 months.

The third and fourth options for metastatic castration-recurrent cancer without symptoms are docetaxel and a clinical trial. Docetaxel is not often used when there are no symptoms. However, your doctor may suggest it if the cancer is growing fast or may have spread to your liver.

Definitions:



Read Part 4 for more information on treatment

Average: The sum of a list of numbers divided by how many are in the list

Clinical trial: Research comparing new and current treatments to find out which is better

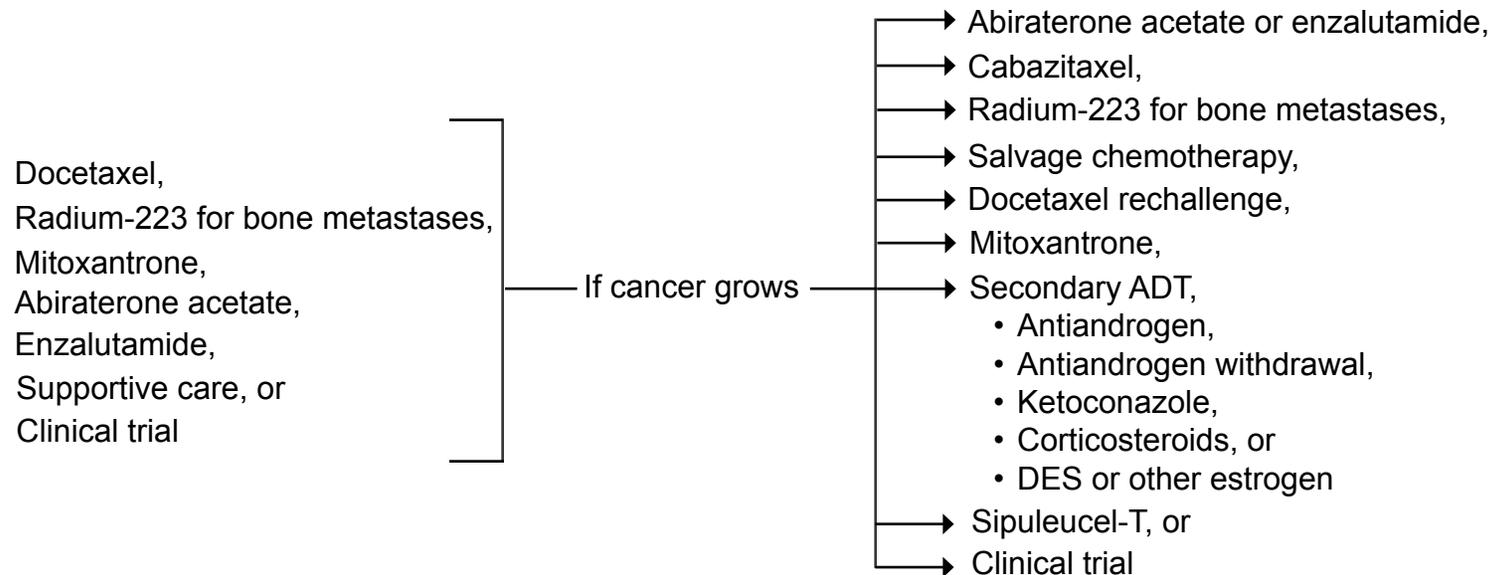
Imaging test: A test that makes pictures of the insides of the body

Spinal cord suppression: The bundle of nerves in the spine is squeezed causing pain

Part 7: Treatment for advanced cancer

With symptoms

Treatment options



This chart lists treatment options for when the cancer has spread far and is causing symptoms. When the cancer is this advanced, chemotherapy with ADT may help. Docetaxel with prednisone on an every-3-week schedule is the preferred treatment option. This regimen extended survival by an average of about 2 months. Research has found that men taking docetaxel live longer. Men were given up to 10 cycles if no cancer growth was noted and no severe side effects occurred. If your PSA level rises while taking docetaxel, it doesn't mean without doubt 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 you're unable to take docetaxel, four other treatments are recommended. Very new research supports use of radium-223 if the cancer has metastasized to the bone but not to the internal organs (visceral metastases). In research studies, radium-223 was shown to extend the lives of men by an average of about 4 months. Your results may be better or worse. Radium-223 also reduced the pain caused by the bone metastases and the use of pain medication.

Part 7: Treatment for advanced cancer

Mitoxantrone is a chemotherapy drug that is given with prednisone. It may improve your quality of life, but it isn't likely to increase how long you will live. Abiraterone acetate taken on an empty stomach with prednisone or enzalutamide may also be considered if you can't take chemotherapy. However, research on their use prior to docetaxel among men with symptoms from metastases isn't finished.

If you have pain from bone metastases, radiation therapy used as supportive care may help. EBRT may be used when pain is limited to a specific area or your bones are about to fracture. Radiopharmaceuticals ⁸⁹Sr (strontium) or ¹⁵³Sm (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. Besides EBRT and radiopharmaceuticals, your doctor may suggest other types of supportive care.

Another option is to take part in a 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 booklet are now widely used to help men with prostate cancer.

If docetaxel fails, there is no strong agreement on what is the next best treatment. Abiraterone acetate taken on an empty stomach with prednisone or enzalutamide has been shown to slightly prolong life when used after

docetaxel. Similar results were found with cabazitaxel plus prednisone. However, cabazitaxel can cause severe side effects so close monitoring is needed. You shouldn't use cabazitaxel if you have liver problems. New research also supports the use of radium-223 if you have painful bone metastases. After docetaxel fails, your doctor may want you to take docetaxel again. This is called docetaxel rechallenge.

Whether you took docetaxel or not, other recommendations include chemotherapy and secondary ADT. If you can't take a taxane-based chemotherapy like cabazitaxel, mitoxantrone with prednisone 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.

Joining a clinical trial is strongly supported. The recommendations listed in the chart have limited benefits. A clinical trial may give you access to new treatments.

Part 8: Making treatment decisions

Having cancer is very stressful. While absorbing the fact that you have cancer, you have to learn about tests and treatments. In addition, the time you have to accept a treatment plan feels short. Parts 1 through 7 described the cancer and the test and treatment options recommended by NCCN experts. These options are based on science and agreement among NCCN experts. Part 8 aims to help you make decisions that are in line with your beliefs, wishes, and values.

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8.1 It's your choice

Describes ways to take part in choosing treatment.

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Suggests key questions to ask your doctors.

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Lists ways to think through the options.

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Lists webpages that may help with treatment decisions.



Part 8: Making treatment decisions

8.2 Seeking information

You will likely meet with experts from different fields of medicine. Strive to have helpful talks with each person. Prepare questions before your visit and ask questions if the person isn't clear. You can also record your talks and get copies of your medical records. It may be helpful to have your spouse, partner, or a friend with you at these visits. They can help to ask questions and remember what was said. Suggested questions to ask include:

What's my diagnosis and prognosis?

It's important to know that there are different types of cancer. Cancer can greatly differ even when people have a tumor in the same organ. Based on your test results, your doctors can tell you which type of cancer you have. He or she can also give a prognosis. A prognosis is a prediction of the pattern and outcome of a disease. Knowing the prognosis may affect what you decide about treatment.

- Where did the cancer start? In what type of cell?
- Is this cancer common?
- What is the cancer stage? Does this stage mean the cancer has spread far?
- What is the grade of the cancer? Does this grade mean the cancer will grow and spread fast?
- What other tests results are important to know?
- How often are these tests wrong?

- Would you give me a copy of the pathology report and other test results?
- Can the cancer be cured? If not, how well can treatment stop the cancer from growing?

What are my options?

There is no single treatment practice that is best for all patients. There is often more than one treatment option along with clinical trial options. Your doctor will review your test results and recommend treatment options.

- What will happen if I do nothing?
- Can I just carefully monitor the cancer?
- Do you consult NCCN recommendations when considering options?
- Are you suggesting options other than what NCCN recommends? If yes, why?
- How do my age, health, and other factors affect my options?
- Which option is proven to work best?
- Which options lack scientific proof?
- What are the benefits of each option? Does any option offer a cure? Are my chances any better for one option than another? Which option spares the most healthy tissue? Is any option less invasive? Less time-consuming? Less expensive?

Part 8: Making treatment decisions

- How many procedures like the one you're suggesting have you done?
- Is this treatment a major part of your practice?
- How many of your patients have had complications?

8.3 Weighing your 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.

2nd opinion

The time around a cancer diagnosis is very stressful. People with cancer often want to get treated as soon as possible. They want to make their cancer go away before it spreads farther. While cancer can't be ignored, there is time to think about and choose which option is best for you.

You may wish to have another doctor review your test results and suggest a treatment plan. This is called getting a 2nd opinion. You may completely trust your doctor, but a 2nd opinion on which option is best can help.

Copies of the pathology report, a DVD of the imaging tests, and other test results need to be sent to the doctor giving the 2nd opinion. Some people feel uneasy asking

for copies from their doctors. However, a 2nd opinion is a normal part of cancer care.

When doctors have cancer, most will talk with more than one doctor before choosing their treatment. What's more, some health plans require a 2nd opinion. If your health plan doesn't cover the cost of a 2nd opinion, you have the choice of paying for it yourself.

If the two opinions are the same, you may feel more at peace about the treatment you accept to have. If the two opinions differ, think about getting a 3rd opinion. A 3rd opinion may help you decide between your options. Choosing your cancer treatment is a very important decision. It can affect your length and quality of life.

Decision aids

Decision aids are tools that help people make complex choices. For example, you may have to choose between two options that work equally as well. Sometimes making a decision is hard because there is a lack of science supporting a treatment.

Decision aids often focus on one decision point. In contrast, this booklet presents tests and treatment options at each point of care for large groups of patients. Well-designed decision aids include information that research has identified as what people need to make decisions. They also aim to help you think about what's important based on your values and preferences.

Part 8: Making treatment decisions

Support groups

Besides talking to health experts, it may help to talk to patients who have walked in your shoes. Support groups often consist of 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 patients.

Compare benefits and downsides

Every treatment option has benefits and downsides. Consider these when deciding which option is best for you. Some outcomes for each option are listed next. There may be other outcomes than those listed here.

Benefits and downsides

Active surveillance	
Benefits	Downsides
Avoid treatment that may not be needed*	Cancer may spread*/Miss chance to cure cancer
Avoid side effects of treatment*	Greater anxiety when not treated*
Maintain your quality of life*	Frequent doctor's visits and tests*
Lower initial costs	Long-term results of untreated prostate cancer aren't known
New treatments may become available*	

*Applies to observation too

Part 8: Making treatment decisions

Prostatectomy
Benefits
Long-established treatment of prostate cancer
May cure local cancer
Short hospital stay
Multiple surgical options
Removal of cancerous <u>lymph nodes</u>
Downsides
Requires <u>anesthesia</u>
Some risk of severe bleeding and heart attack
Doesn't treat distant cancer
Inexperienced surgeons have poorer results
Immediate <u>erectile dysfunction</u> at least in the short term
Immediate <u>urinary incontinence</u> at least in the short term

External beam radiation therapy
Benefits
Doesn't have same complications like an operation (eg, bleeding, heart attack)
Can be used with men of many different ages
Low risk of urinary incontinence and <u>urethral stricture</u>
Maintain erectile function in the short term
May treat cancer beyond the prostate
Downsides
Takes 8 to 9 weeks to complete
Possible injury to skin
Short-term bladder or bowel problems
Low but real risk of rectal symptoms
Risk of erectile dysfunction increases over time
Salvage prostatectomy for recurrence has greater risk of complications

Part 8: Making treatment decisions

Brachytherapy
Benefits
One day to complete
Fast recovery
Similar cancer control as a prostatectomy for low-risk cancer
Low risk of incontinence when no prior TURP
Maintain erectile function in the short term
Downsides
Requires anesthesia and sometimes a <u>catheter</u>
Risk of <u>urinary retention</u> right after treatment
Uncomfortable voiding for as long as 1 year
Higher risk of incontinence when prior TURP
Risk of erectile dysfunction increases over time

Definitions:



Read Part 4 for information on cancer treatments.

Anesthesia: Loss of feeling with or without loss of wakefulness caused by drugs

Catheter: A flexible tube inserted into the body

Erectile dysfunction: The inability to achieve erections sufficient for sex

Lymph node: A small disease-fighting organ

Urethral stricture: Scarring that blocks or narrows the urethra

Urinary incontinence: Inability to control the release of urine from the bladder

Urinary retention: Inability to empty the bladder

Part 8: Making treatment decisions

ADT	
Benefits	Downsides
Treats prostate cancer throughout the body	Sexual problems like low sex drive and erectile dysfunction
Prolongs life	Hot flashes that may bother you
Easy to take versus an operation or radiation therapy	Weight gain and loss of muscle
Can reduce cancer symptoms	Risk of serious health problems like diabetes and heart disease
Intermittent use reduces side effects	Can't cure prostate cancer

Part 8: Making treatment decisions

8.4 Tools



Webpages

American Cancer Society

www.cancer.org/Treatment/FindingandPayingforTreatment/index

National Coalition for Cancer Survivorship

www.canceradvocacy.org/toolbox

Prostate Cancer Foundation

www.pcf.org/site/c.leJRIROrEpH/b.5814039/k.9645/For_Families_and_Caregivers.htm

The Prostate Health Education Network

prostatehealthed.org

Us TOO!

www.ustoo.org/Chapter_NearYou.asp?country1=United States

YOU ARE NOT ALONE

www.yananow.org/choices.shtml

Review of Part 8

- 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, using decision aids, attending support groups, and comparing benefits and downsides may help you decide which treatment is best for you.

Part 9: Dictionary

Active surveillance

Delay of treatment with ongoing testing to watch for cancer growth.

Adenocarcinoma

Cancer in cells that line organs and make fluids or hormones.

Adjuvant treatment

Treatment that follows primary treatment.

Androgen

A hormone found in high levels in males that is involved in sexual development and functioning.

Androgen deprivation therapy (ADT)

Treatment that stops the making or action of hormones in the body. Also called hormone therapy.

Androgen synthesis inhibitor

A drug that blocks the making of androgen at different sites.

Antiandrogen

A drug used to stop the action of testosterone.

Antiandrogen withdrawal response

Decreases in the level of prostate-specific antigen when an antiandrogen is stopped.

Bilateral orchiectomy

Surgical removal of both testicles.

Biochemical relapse

A rise in prostate-specific antigen level after cancer treatment.

Biopsy

A medical procedure that removes tissue to test for disease.

Blood cell count

The number of red blood cells, white blood cells, and platelets in blood.

Bone metastases

Cancer that has spread to the bones.

Bone scan

A test for bone diseases.

Brachytherapy

The placement of radioactive objects near or in a tumor.

Cancer stage

A rating by doctors of the extent of the cancer.

Castration therapy

Orchiectomy or drugs that greatly reduce the level of testosterone.

Cavernous nerves

Nerves that send signals to start penile erections.

Clinical trial

Research comparing new and current treatments to find out which is better.

Combined androgen blockade (CAB)

Castration therapy combined with an antiandrogen.

Computed tomography (CT)

A test that uses x-rays to view body parts.

Cryosurgery

Treatment that freezes tissue to kill cancer cells.

Digital rectal exam (DRE)

A medical exam of the prostate by feeling it through the wall of the rectum.

Part 9: Dictionary

Dry orgasm

Having an orgasm without ejaculation.

Dual energy X-ray (DEXA)

A test that measures bone strength.

Dysorgasmia

Pain during orgasm.

Epididymis

The tube through which sperm travel after leaving the testicles.

Epididymitis

Swelling of the epididymis.

External beam radiation therapy (EBRT)

Radiation therapy received from a machine outside the body.

Extracapsular extension

Cancer growth through the prostatic capsule.

Fine-needle aspiration

Use of a thin needle to remove fluid or tissue from the body.

Fistula

A passage between two organs that aren't normally connected.

Genes

Information in cells for building new cells.

Gleason grade

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

Radioactive objects are removed from the tumor after the radiation dose has been given.

Hormone therapy

Treatment that stops the making or action of hormones in the body; androgen deprivation therapy.

Image-guided radiation therapy (IGRT)

Radiation therapy that uses imaging tests during treatment to better target the tumor.

Immunotherapy

Treatment that uses the immune system to fight disease.

Intensity-modulated radiation therapy (IMRT)

Radiation therapy that uses small beams of different intensities.

Intermittent therapy

Alternating periods of time on and off treatment.

Interstitial radiation

A type of radiation therapy that places radioactive objects in the tumor.

Laparoscopic radical prostatectomy

Removal of the prostate through several small cuts in the pelvis.

Life expectancy

The number of years a person is likely to live.

Part 9: Dictionary

Low-dose rate (LDR) brachytherapy

Radioactive objects are inserted into the tumor and left to decay.

Luteinizing hormone-releasing hormone (LHRH) agonist

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

Luteinizing hormone-releasing hormone (LHRH) antagonist

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

Lymph

A clear fluid containing white blood cells.

Lymph node

A small clump of special immune cells. There are thousands of lymph nodes located throughout the body.

Magnetic resonance imaging (MRI)

A test using radio waves and powerful magnets to view the parts of the body and how they are working.

Magnetic resonance (MS) spectroscopy

A test that measures chemicals in cells without removing tissue from the body.

Medical oncologist

A doctor who's an expert in the medical treatment of cancer with chemotherapy and immunotherapy.

Metastasis

The growth of cancer beyond local tissue.

Mutation

An abnormal change in the coded instructions within cells.

Neoadjuvant treatment

Treatments given before the primary treatment.

Nerve-sparing prostatectomy

One or both bundles of cavernous nerves aren't removed during a prostatectomy.

Nomogram

A tool that uses clinical information to predict an outcome.

Nuclear medicine specialist

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

Observation

Testing on a regular basis so that supportive care can be given if cancer symptoms are likely to start.

Open perineal prostatectomy

Removal of the prostate through one cut made between the scrotum and anus.

Open retropubic prostatectomy

Removal of the prostate through one long cut from the belly button to the base of the penis.

Orchiectomy

Surgical removal of one or both testicles from the body.

Overflow incontinence

Leakage of urine due to an overly full bladder.

Pathologist

A doctor who specializes in testing cells to identify disease.

Part 9: Dictionary

Pelvic lymph node dissection (PLND)

Removal of the lymph nodes in the pelvis.

Perineum

The area in men between the scrotum and anus.

Persistent cancer

Cancer not completely removed or destroyed by treatment.

Primary grade

The most common pattern of prostate cells' ability to form into glands.

Primary treatment

The main treatment used to cure or control cancer.

Prognosis

A prediction of the pattern and outcome of a disease based on clinical information.

Prostate

A male gland that makes fluid for protecting sperm from acid in the vagina.

Prostate-specific antigen (PSA)

A protein made by the prostate.

Prostate-specific antigen (PSA) density

Comparison of the level of PSA to the size of the prostate.

Prostate-specific antigen (PSA) doubling time

The time during which the level of PSA doubles.

Prostate-specific antigen (PSA) level

Number of nanograms per milliliter of PSA.

Prostate-specific antigen (PSA) velocity

How much the level of PSA changes over time.

Radiation oncologist

A doctor who specializes in the treatment of cancer with radiation.

Radical perineal prostatectomy

Removal of the prostate through the perineum.

Radical retropubic prostatectomy

Removal of the prostate through one incision in the lower abdomen.

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

Prediction of a person's chances for an event based on if he or she matches the criteria of a group.

Robotic-assisted prostatectomy

A laparoscopic prostatectomy during which a surgeon uses a machine to operate.

Salvage therapy

The treatment given after standard treatment fails.

Secondary grade

The second most common pattern of prostate cells' ability to form into glands.

Part 9: Dictionary

Seminal vesicles

A pair of 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.

Social worker

An expert in meeting social and emotional needs of people.

Stress incontinence

Leakage of urine when pressure is exerted on the bladder from sneezing, coughing, exercise, and so forth.

Supportive care

Treatment for symptoms of a disease.

Surgical margin

Normal tissue around the edge of a tumor that is removed during an operation.

Systemic therapy

Treatment to destroy cancer cells throughout the body.

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

Radiation therapy that uses beams that match the shape of the tumor.

Transrectal ultrasound (TRUS)

A type of ultrasound that takes pictures of the prostate through the rectum.

Transurethral resection of the prostate (TURP)

Surgical removal of some prostatic tissue through the urethra.

Triple androgen blockade

Finasteride or dutasteride with combined androgen blockade.

Tumor flare

An increase in testosterone after starting castration therapy.

Urethra

A tube that expels urine from the body; it also expels semen in men.

Urethral stricture

Scarring that blocks or narrows the urethra.

Urge incontinence

The feeling of having to rush to urinate or you'll leak urine.

Urinary incontinence

Inability to control the release of urine from the bladder.

Urinary retention

Inability to empty the bladder.

Urologist

A doctor who specializes in the urinary system of men and women and in male sex organs.

Venous thromboembolism

Dangerous blood clot in a vein.

Visceral metastasis

Spread of cancer cells from the first tumor to internal organs.

Credits

NCCN aims to improve the care given to patients with cancer. NCCN staff work with experts to create helpful programs and resources for many stakeholders. Stakeholders include health care providers, patients, businesses, and others. One resource is the series of booklets for patients called the NCCN Patient Guidelines. Each booklet presents the best practice for a type of cancer.

NCCN abbreviations and acronyms

NCCN®

National Comprehensive Cancer Network®

NCCN Patient Guidelines®

NCCN Guidelines for Patients®

NCCN Guidelines®

NCCN Clinical Practice Guidelines in Oncology®

The patient booklets are based on clinical practice guidelines written for doctors. These guidelines are called the NCCN Guidelines. Clinical practice guidelines list the best health care options for groups of patients. Many doctors use them to help plan treatment for their patients. However, they do not present the best care for every patient. Your doctor may recommend other tests and treatments based on your information.

Panels of experts create the NCCN Guidelines. Most of the experts are from the 23 NCCN Member Institutions. Panelists may include surgeons, radiation oncologists, medical oncologists, and patient advocates.

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. For more information on the NCCN Guidelines, visit www.nccn.org/professionals/physician_gls/guidelines-development.asp.

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

NCCN Member Institutions

Fred and Pamela Buffet Cancer Center at The Nebraska Medical Center

Omaha, Nebraska
800.999.5465
unmc.edu/cancercenter

City of Hope Comprehensive Cancer Center

Los Angeles, California
800.826.4673
cityofhope.org

Dana-Farber/Brigham and Women's Cancer Center Massachusetts General Hospital Cancer Center

Boston, Massachusetts
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dfbwcc.org
massgeneral.org/cancer

Duke Cancer Institute

Durham, North Carolina
888.275.3853
dukecancerinstitute.org

Fox Chase Cancer Center

Philadelphia, Pennsylvania
888.369.2427
foxchase.org

Huntsman Cancer Institute at the University of Utah

Salt Lake City, Utah
877.585.0303
huntsmancancer.org

Fred Hutchinson Cancer Research Center/ Seattle Cancer Care Alliance

Seattle, Washington
206.288.7222 • seattlecca.org
206.667.5000 • fhcrc.org

The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins

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cancer.northwestern.edu

Memorial Sloan-Kettering Cancer Center

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Moffitt Cancer Center

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Columbus, Ohio
800.293.5066
cancer.osu.edu

Roswell Park Cancer Institute

Buffalo, New York
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roswellpark.org

Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine

St. Louis, Missouri
800.600.3606
siteman.wustl.edu

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Memphis, Tennessee
888.226.4343 • stjude.org
877.988.3627 • westclinic.com

Stanford Cancer Institute
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877.668.7535
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**University of Alabama at
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cancer.ucsd.edu

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coloradocancercenter.org

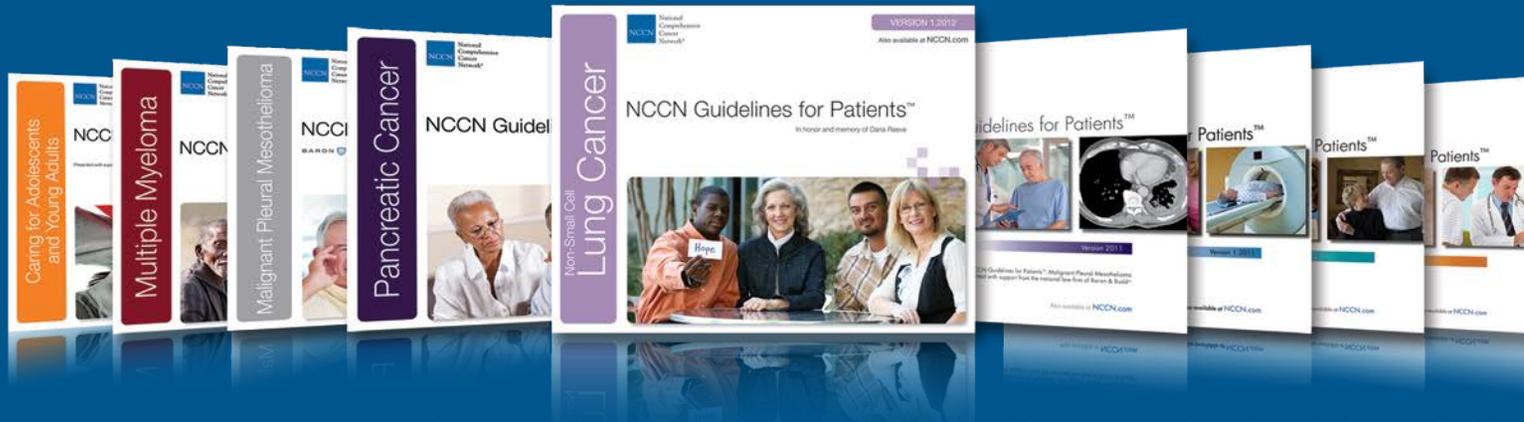
**University of Michigan
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Ann Arbor, Michigan
800.865.1125
mcancer.org

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Vanderbilt-Ingram Cancer Center
Nashville, Tennessee
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Breast, Colon, Lung, Ovarian, Pancreatic, and Prostate Cancers, Chronic Myelogenous Leukemia, Lung Cancer Screening, Melanoma, Mesothelioma, and Multiple Myeloma



The same authoritative source referenced by physicians and other health care professionals is available for patients.
To request a printed copy: patientguidelines@NCCN.org

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