

National Cancer Institute



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What You Need  
To Know About™

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# Prostate Cancer

U.S. DEPARTMENT OF  
HEALTH AND HUMAN SERVICES  
National Institutes of Health

This booklet is about prostate cancer. The Cancer Information Service can help you learn more about this disease. The staff can talk with you in English or Spanish.

The number is 1-800-4-CANCER (1-800-422-6237). The number for callers with TTY equipment is 1-800-332-8615. Your call is free.

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Este folleto es acerca del cáncer de la próstata. Llame al Servicio de Información sobre el Cáncer para saber más sobre esta enfermedad. Este servicio tiene personal que habla español.

El número a llamar es el 1-800-4-CANCER (1-800-422-6237). Personas con equipo TTY pueden llamar al 1-800-332-8615. Su llamada es gratis.

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## What You Need To Know About™ Prostate Cancer

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**T**his National Cancer Institute (NCI) booklet has important information about *prostate\** cancer. Prostate cancer is the second most common type of cancer among men in this country. Only skin cancer is more common. Out of every three men who are diagnosed with cancer each year, one is diagnosed with prostate cancer.

You will read about possible causes, screening, symptoms, diagnosis, and treatment. You will also find ideas about how to cope with the disease.

Scientists are studying prostate cancer to find out more about its causes. And they are looking for better ways to treat it.

NCI provides information about cancer, including the publications mentioned in this booklet. You can order these materials by telephone or on the Internet. You can also read them online and print your own copy.

- **Telephone (1-800-4-CANCER):** Information Specialists at NCI's Cancer Information Service can answer your questions about cancer. They also can send you NCI booklets, fact sheets, and other materials.
- **Internet (<http://www.cancer.gov>):** You can use NCI's Web site to find a wide range of up-to-date information. For example, you can find many NCI booklets and fact sheets at <http://www.cancer.gov/publications>. People in the United States and its territories may use this

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\*Words that may be new to readers are printed in *italics*. The "Dictionary" section explains these terms. Some words in the "Dictionary" have a "sounds-like" spelling to show how to pronounce them.

Web site to order printed copies. This Web site also explains how people outside the United States can mail or fax their requests for NCI booklets.

You can ask questions online and get help right away from Information Specialists through **LiveHelp**. (Click on “Need Help?” at <http://www.cancer.gov>. Then click on “Connect to LiveHelp.”)

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## The Prostate

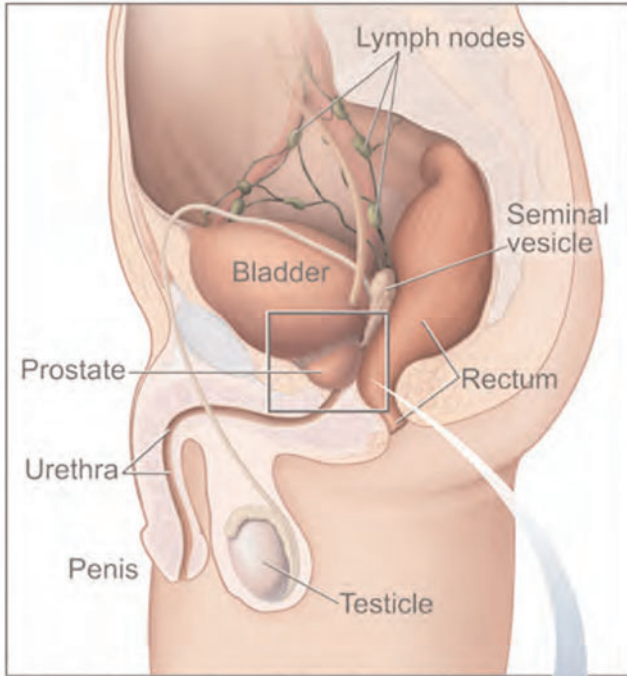
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**T**he prostate is part of a man’s *reproductive system*. It is located in front of the *rectum* and under the *bladder*. It surrounds the *urethra*, the tube through which urine flows. A healthy prostate is about the size of a walnut.

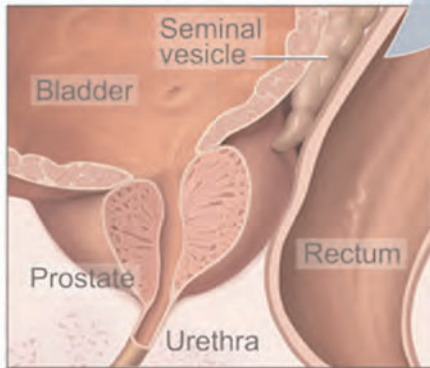
The prostate makes part of *seminal fluid*. During *ejaculation*, seminal fluid helps carry *sperm* out of the man’s body as part of *semen*.

Male *hormones (androgens)* make the prostate grow. The *testicles* are the main source of male hormones, including *testosterone*. The *adrenal gland* also makes testosterone, but in small amounts.

If the prostate grows too large, it squeezes the urethra. This may slow or stop the flow of urine from the bladder to the penis.



This shows the prostate and nearby organs.



This shows the inside of the prostate, urethra, rectum, and bladder.

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## Understanding Cancer

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**C**ancer begins in *cells*, the building blocks that make up *tissues*. Tissues make up the *organs* of the body.

Normally, cells grow and divide to form new cells as the body needs them. When cells grow old, they die, and new cells take their place.

Sometimes, this orderly process goes wrong. New cells form when the body does not need them, and old cells do not die when they should. These extra cells can form a mass of tissue called a growth or *tumor*.

Tumors can be *benign* or *malignant*:

- **Benign tumors** are not cancer:
  - Benign tumors are rarely life-threatening.
  - Generally, benign tumors can be removed. They usually do not grow back.
  - Cells from benign tumors do not invade the tissues around them.
  - Cells from benign tumors do not spread to other parts of the body.



**Benign prostatic hyperplasia** (BPH) is the *abnormal* growth of benign prostate cells. The prostate grows larger and squeezes the urethra. This prevents the normal flow of urine.

BPH is a very common problem. In the United States, most men over the age of 50 have *symptoms* of BPH. For some men, symptoms may be severe enough to need treatment.

To learn about BPH and other prostate changes that are not cancer, read NCI's booklet *Understanding Prostate Changes: A Health Guide for Men*.

- **Malignant tumors** are cancer:
  - Malignant tumors are generally more serious than benign tumors. They may be life-threatening.
  - Malignant tumors often can be removed. But sometimes they grow back.
  - Cells from malignant tumors can invade and damage nearby tissues and organs.
  - Cells from malignant tumors can spread (*metastasize*) to other parts of the body. Cancer cells spread by breaking away from the original (primary) tumor and entering the bloodstream or *lymphatic system*. The cells invade other organs and form new tumors that damage these organs. The spread of cancer is called *metastasis*.

When prostate cancer spreads, cancer is often found in nearby *lymph nodes*. If cancer has reached these nodes, it also may have spread to other lymph nodes, the bones, or other organs.

When cancer spreads from its original place to another part of the body, the new tumor has the same kind of abnormal cells and the same name as the primary tumor. For example, if prostate cancer spreads to bones, the cancer cells in the bones are actually prostate cancer cells. The disease is metastatic prostate cancer, not bone cancer. For that reason, it is treated as prostate cancer, not bone cancer. Doctors call the new tumor “distant” or metastatic disease.

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## Risk Factors

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**N**o one knows the exact causes of prostate cancer. Doctors often cannot explain why one man develops prostate cancer and another does not. However, we do know that prostate cancer is not contagious. You cannot “catch” it from another person.

Research has shown that men with certain *risk factors* are more likely than others to develop prostate cancer. A risk factor is something that may increase the chance of developing a disease.

Studies have found the following risk factors for prostate cancer:

- **Age:** Age is the main risk factor for prostate cancer. This disease is rare in men younger than 45. The chance of getting it goes up sharply as a man gets older. In the United States, most men with prostate cancer are older than 65.
- **Family history:** A man’s risk is higher if his father or brother had prostate cancer.

- **Race:** Prostate cancer is more common in African American men than in white men, including Hispanic white men. It is less common in Asian and American Indian men.
- **Certain prostate changes:** Men with cells called high-grade *prostatic intraepithelial neoplasia* (PIN) may be at increased risk for prostate cancer. These prostate cells look abnormal under a microscope.
- **Diet:** Some studies suggest that men who eat a diet high in animal fat or meat may be at increased risk for prostate cancer. Men who eat a diet rich in fruits and vegetables may have a lower risk. (More about diet studies is in “The Promise of Cancer Research” on page 31.)

Many of these risk factors can be avoided. Others, such as family history, cannot be avoided. You can help protect yourself by staying away from known risk factors whenever possible.

Scientists have also studied whether BPH, obesity, smoking, a *virus* passed through sex, or lack of exercise might increase the risk for prostate cancer. At this time, these are not clear risk factors. Also, most studies have not found an increased risk of prostate cancer for men who have had a *vasectomy*. A *vasectomy* is *surgery* to cut or tie off the tubes that carry sperm out of the testicles.

Most men who have known risk factors do not get prostate cancer. On the other hand, men who do get the disease often have no known risk factors, except for growing older.

If you think you may be at risk, you should talk with your doctor. Your doctor may be able to suggest ways to reduce your risk and can plan a schedule for checkups.

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## Screening

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**Y**our doctor can check you for prostate cancer before you have any symptoms. *Screening* can help doctors find and treat cancer early. But studies so far have not shown that screening tests reduce the number of deaths from prostate cancer. You may want to talk with your doctor about the possible benefits and harms of being screened. The decision to be screened, like many other medical decisions, is a personal one. You should decide after learning the pros and cons of screening.

Your doctor can explain more about these tests:

- **Digital rectal exam:** The doctor inserts a lubricated, gloved finger into the rectum and feels the prostate through the rectal wall. The prostate is checked for hard or lumpy areas.
- **Blood test for *prostate-specific antigen (PSA)*:** A lab checks the level of PSA in a man’s blood sample. A high PSA level is commonly caused by BPH or *prostatitis (inflammation of the prostate)*. Prostate cancer may also cause a high PSA level.

The digital rectal exam and PSA test can detect a problem in the prostate. They cannot show whether the problem is cancer or a less serious condition. Your doctor will use the results of these tests to help decide whether to check further for signs of cancer. Information about other tests is in the “Diagnosis” section on page 10.

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## Symptoms

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**A** man with prostate cancer may not have any symptoms. For men who have symptoms of prostate cancer, common symptoms include:

- Urinary problems
  - Not being able to urinate
  - Having a hard time starting or stopping the urine flow
  - Needing to urinate often, especially at night
  - Weak flow of urine
  - Urine flow that starts and stops
  - Pain or burning during urination
- Difficulty having an *erection*
- Blood in the urine or semen
- Frequent pain in the lower back, hips, or upper thighs

Most often, these symptoms are not due to cancer. BPH, an infection, or another health problem may cause them. Any man with these symptoms should tell his doctor so that problems can be diagnosed and treated as early as possible. He may see his regular doctor or a *urologist*. A urologist is a doctor whose specialty is diseases of the urinary system.

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## Diagnosis

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**I**f you have a symptom or test result that suggests cancer, your doctor must find out whether it is due to cancer or to some other cause. Your doctor will ask about your personal and family medical history. You will have a physical exam. You may have lab tests. Your visit may include a digital rectal exam, a urine test to check for blood or infection, and a blood test to measure PSA level.



You also may have other exams:

- **Transrectal ultrasound:** The doctor inserts a probe into the man's rectum to check for abnormal areas. The probe sends out sound waves that people cannot hear (*ultrasound*). The waves bounce off the prostate. A computer uses the echoes to create a picture called a *sonogram*.
- **Cystoscopy:** The doctor uses a thin, lighted tube to look into the urethra and bladder.
- **Transrectal biopsy:** A *biopsy* is the removal of tissue to look for cancer cells. It is the only sure way to diagnose prostate cancer. The doctor inserts a needle through the rectum into the prostate. The doctor takes small tissue samples from many areas of the prostate. Ultrasound may be used to guide the needle. A *pathologist* checks for cancer cells in the tissue.

You may want to ask the doctor these questions before having a biopsy:

- Where will the biopsy take place? Will I have to go to the hospital?
- How long will it take? Will I be awake? Will it hurt?
- What are the risks? What are the chances of infection or bleeding after the biopsy?
- How long will it take me to recover?
- How soon will I know the results?
- If I do have cancer, who will talk to me about the next steps? When?

## If Cancer Is Not Found

If the physical exam and test results do not suggest cancer, your doctor may suggest medicine to reduce symptoms caused by an enlarged prostate. Surgery also can relieve these symptoms. The surgery most often used in such cases is *transurethral resection of the prostate* (TURP or TUR). In TURP, an instrument is inserted through the urethra to remove prostate tissue that is pressing against the upper part of the urethra and restricting the flow of urine. You should talk to your doctor about the best treatment option.

## If Cancer Is Found

If cancer is present, the pathologist studies tissue samples from the prostate under a microscope to report the *grade* of the tumor. The grade tells how much the tumor tissue differs from normal prostate tissue. It suggests how fast the tumor is likely to grow. Tumors with higher grades tend to grow faster than those with lower grades. They are also more likely to spread.

One system of grading prostate cancer uses G1 through G4. Another way of grading is with the *Gleason score*. The pathologist gives each area of cancer a grade of 1 through 5. The pathologist adds the two most common grades together to make a Gleason score. Or the pathologist may add the most common grade and the highest (most abnormal) grade to get the score. Gleason scores can range from 2 to 10.

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## Staging

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**T**o plan your treatment, your doctor needs to know the extent (*stage*) of the disease. The stage is based on the size of the tumor, whether the cancer has spread outside the prostate and, if so, where it has spread.



You may have blood tests to see if the cancer has spread. Some men also may need *imaging* tests:

- **Bone scan:** The doctor injects a small amount of a *radioactive* substance into a blood vessel. It travels through the bloodstream and collects in the bones. A machine called a scanner detects and measures the radiation. The scanner makes pictures of the bones on a computer screen or on film. The pictures may show cancer that has spread to the bones.
- **CT scan:** An *x-ray* machine linked to a computer takes a series of detailed pictures of areas inside your body. Doctors often use CT scans to see the *pelvis* or *abdomen*.
- **MRI:** A strong magnet linked to a computer is used to make detailed pictures of areas inside your body.

These are the stages of prostate cancer:

- **Stage I:** The cancer cannot be felt during a digital rectal exam. It is found by chance when surgery is done for another reason, usually for BPH. The cancer is only in the prostate.
- **Stage II:** The cancer is more advanced, but it has not spread outside the prostate.
- **Stage III:** The cancer has spread outside the prostate. It may be in the *seminal vesicles*. It has not spread to the lymph nodes.
- **Stage IV:** The cancer may be in nearby muscles and organs (beyond the seminal vesicles). It may have spread to the lymph nodes. It may have spread to other parts of the body.
- **Recurrent cancer** is cancer that has come back (recurred) after a time when it could not be detected. It may recur in or near the prostate. Or it may recur in any other part of the body, such as the bones.

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## Treatment

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**M**any men with prostate cancer want to take an active part in making decisions about their care. It is natural to want to learn all you can about prostate cancer and your treatment choices. However, shock and stress after the diagnosis can make it hard to think of everything you want to ask your doctor. It often helps to make a list of questions before an appointment.

To help remember what the doctor says, you may take notes or ask whether you may use a tape recorder. You may also want to have a family member or friend with you when you talk to the doctor—to take part in the discussion, to take notes, or just to listen.

You do not need to ask all your questions at once. You will have other chances to ask your doctor or nurse to explain things that are not clear and to ask for more details.

Your doctor may refer you to a specialist, or you may ask for a referral. Specialists who treat prostate cancer include *urologists*, *urologic oncologists*, *medical oncologists*, and *radiation oncologists*.

### Getting a Second Opinion

Before starting treatment, you might want a second opinion about your diagnosis and treatment plan. Many insurance companies cover a second opinion if you or your doctor requests it. It may take some time and effort to gather medical records and arrange to see another doctor. Usually it is not a problem to take several weeks to get a second opinion. In most cases, the delay in starting treatment will not make treatment less effective. To make sure, you should discuss this delay with your doctor. Some men with prostate cancer need treatment right away.

There are a number of ways to find a doctor for a second opinion:

- Your doctor may refer you to one or more specialists. At cancer centers, several specialists often work together as a team.
- NCI’s Cancer Information Service, at 1–800–4–CANCER, can tell you about nearby treatment centers. Information Specialists also can provide online assistance through *LiveHelp* at <http://www.cancer.gov>.
- A local or state medical society, a nearby hospital, or a medical school can usually provide the names of specialists.
- The American Board of Medical Specialties (ABMS) has a list of doctors who have had training and passed exams in their specialty. You can find this list in the *Official ABMS Directory of Board Certified Medical Specialists*. This Directory is in most public libraries. Also, ABMS offers this information at <http://www.abms.org>. (Click on “Who’s Certified.”)
- NCI provides a helpful fact sheet called “How To Find a Doctor or Treatment Facility If You Have Cancer.”

## Treatment Methods

Men with prostate cancer have many treatment options. The treatment that is best for one man may not be best for another.

Treatment may involve *surgery*, *radiation therapy*, or *hormone therapy*. You may have a combination of treatments. If your doctor recommends *watchful waiting*, your health will be monitored closely. You will have treatment only if symptoms occur or get worse.

Cancer treatment is either *local therapy* or *systemic therapy*:

- **Local therapy:** Surgery and radiation therapy are local treatments. They remove or destroy cancer in the prostate. When prostate cancer has spread to other parts of the body, local therapy may be used to control the disease in those specific areas.
- **Systemic therapy:** Hormone therapy is systemic therapy. Hormones are given to control cancer that has spread.

The treatment that is right for you depends on the stage of the cancer, the grade of the tumor, your symptoms, and your general health. Your doctor will describe your treatment choices and the expected results.

Because cancer treatments often damage healthy cells and tissues, *side effects* are common. Side effects depend mainly on the type and extent of the treatment. Side effects may not be the same for each man, and they may change from one treatment session to the next. NCI's booklet *Know Your Options: Understanding Treatment Choices for Prostate Cancer* can tell you more about treatments and their side effects.

You should consider both the expected benefits and possible side effects of each treatment option. You may want to discuss with your doctor the possible effects on sexual activity. You can work with your doctor to create a treatment plan that reflects your medical needs and personal values.

At any stage of disease, *supportive care* is available to control pain and other symptoms, to relieve the side effects of treatment, and to ease emotional concerns. Information about such care is available on NCI's Web site at <http://www.cancer.gov/cancertopics/coping>

and from Information Specialists at  
1-800-4-CANCER or **LiveHelp**.

You may want to talk to your doctor about taking part in a *clinical trial*, a research study of new treatment methods. The section on “The Promise of Cancer Research” on page 31 has more information about clinical trials.

You may want to ask your doctor these questions before your treatment begins:

- What is the stage of the disease? Do any lymph nodes show signs of cancer? Has the cancer spread?
- What is the grade of the tumor?
- What is the goal of treatment? What are my treatment choices? Which do you recommend for me? Why?
- What are the expected benefits of each kind of treatment?
- What are the risks and possible side effects of each treatment? How can side effects be managed?
- What can I do to prepare for treatment?
- Will I need to stay in the hospital? If so, for how long?
- How will treatment affect my normal activities? Will it affect my sex life? Will I have urinary problems? Will I have bowel problems?
- What will the treatment cost? Will my insurance cover it?
- Would a clinical trial (research study) be appropriate for me?

## Surgery

Surgery is a common treatment for early stage prostate cancer. Your doctor may remove the whole prostate or only part of it. In some cases, your doctor can use a method known as *nerve-sparing surgery*. This type of surgery may save the *nerves* that control erection. But if you have a large tumor or a tumor that is very close to the nerves, you may not be able to have this surgery.

Each type of surgery has benefits and risks. Your doctor can further describe these types:

- ***Radical retropubic prostatectomy:*** The doctor removes the entire prostate and nearby lymph nodes through an *incision* (cut) in the abdomen.
- ***Radical perineal prostatectomy:*** The doctor removes the entire prostate through a cut between the *scrotum* and the *anus*. Nearby lymph nodes may be removed through a separate cut in the abdomen.
- ***Laparoscopic prostatectomy:*** The doctor removes the entire prostate and nearby lymph nodes through small incisions, rather than a single long cut in the abdomen. A thin, lighted tube (a *laparoscope*) is used to help remove the prostate.
- ***Transurethral resection of the prostate (TURP):*** The doctor removes part of the prostate with a long, thin device that is inserted through the urethra. The cancer is cut from the prostate. TURP may not remove all of the cancer. But it can remove tissue that blocks the flow of urine.
- ***Cryosurgery:*** This type of surgery for prostate cancer is under study at some medical centers. (More about cryosurgery is in “The Promise of Cancer Research” section on page 31.)

- ***Pelvic lymphadenectomy:*** This is routinely done during prostatectomy. The doctor removes lymph nodes in the pelvis to see if cancer has spread to them. If there are cancer cells in the lymph nodes, the disease may have spread to other parts of the body. In this case, the doctor may suggest other types of treatment.

The time it takes to heal after surgery is different for each man and depends on the type of surgery he has had. You may be uncomfortable for the first few days. However, medicine can help control the pain. Before surgery, you should discuss the plan for pain relief with your doctor or nurse. After surgery, your doctor can adjust the plan if you need more pain relief.

After surgery, the urethra needs time to heal. You will have a *catheter*. A catheter is a tube put through the urethra into the bladder to drain urine. You will have the catheter for 5 days to 3 weeks. Your nurse or doctor will show you how to care for it.

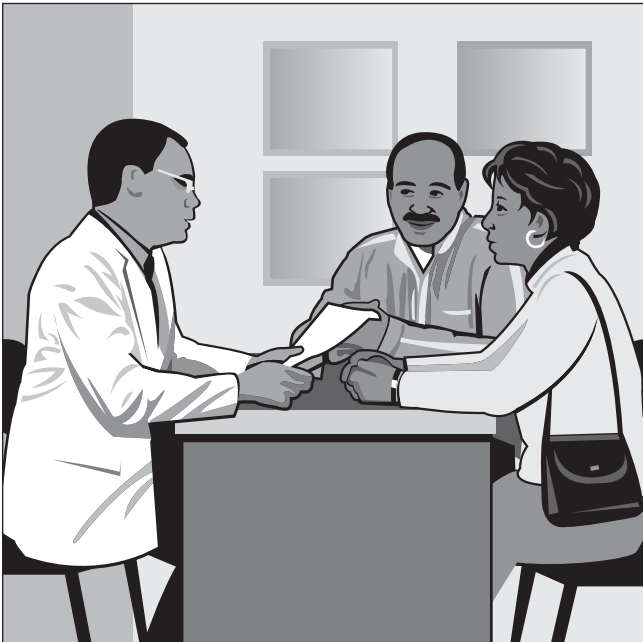
Surgery may cause short-term problems, such as *incontinence*. After surgery, some men may lose control of the flow of urine (*urinary incontinence*). Most men regain bladder control after a few weeks.

Some men may become *impotent*. Nerve-sparing surgery is an attempt to avoid the problem of impotence. If a man can have nerve-sparing surgery and the operation is a success, impotence may not last. In some cases, men become permanently impotent. You can talk with your doctor about medicine and other ways to help manage the sexual effects of cancer treatment.

If your prostate is removed, you will no longer produce semen. You will have *dry orgasms*. If you wish to father children, you may consider *sperm banking* or a *sperm retrieval* procedure.

You may want to ask your doctor these questions before choosing surgery:

- What kinds of surgery can I consider? Is nerve-sparing surgery an option for me? Which operation do you recommend for me? Why?
- How will I feel after the operation?
- If I have pain, how can we control it?
- Will I have any lasting side effects?
- Is there someone I can talk with who has had the same surgery I'll be having?





## Radiation Therapy

Radiation therapy (also called radiotherapy) uses high-energy rays to kill cancer cells. It affects cells only in the treated area.

For early stage prostate cancer, radiation treatment may be used instead of surgery. It also may be used after surgery to destroy any cancer cells that remain in the area. In later stages of prostate cancer, radiation treatment may be used to help relieve pain.

Doctors use two types of radiation therapy to treat prostate cancer. Some men receive both types:

- ***External radiation:*** The radiation comes from a large machine outside the body. Men go to a hospital or clinic for treatment. Treatments are usually 5 days a week for several weeks. Many men receive *3-dimensional conformal radiation therapy*. This type of treatment more closely targets the cancer. It spares healthy tissue.
- ***Internal radiation (implant radiation or brachytherapy):*** The radiation comes from radioactive material usually contained in small seeds. The seeds are put into the tissue. They give off radiation for months. The seeds are harmless and do not need to be removed.

Side effects depend mainly on the dose and type of radiation. You are likely to be very tired during radiation therapy, especially in the later weeks of treatment. Resting is important, but doctors usually advise patients to try to stay as active as they can.

If you have external radiation, you may have diarrhea or frequent and uncomfortable urination. Some men have lasting bowel or urinary problems. Your skin in the treated area may become red, dry, and tender.

You may lose hair in the treated area. The hair may not grow back.

Internal radiation treatment may cause incontinence. This side effect usually goes away. Lasting side effects from internal radiation are not common.

Both internal and external radiation can cause impotence. Internal radiation is less likely to have this effect.

You may want to ask your doctor these questions before choosing radiation therapy:

- How will radiation be given?
- When will treatment start? When will it end? How often will I have treatments?
- What can I do to take care of myself before, during, and after treatment?
- How will I feel during treatment? Will I be able to drive myself to and from treatment?
- How will we know the treatment is working?
- How will I feel after the radiation?
- Are there any lasting effects?
- What is the chance that the cancer will come back in my prostate?
- How often will I need checkups?

## Hormone Therapy

Hormone therapy keeps prostate cancer cells from getting the male hormones (androgens) they need to grow. The testicles are the body's main source of the male hormone testosterone. The adrenal gland makes a small amount of testosterone.

Hormone treatment uses drugs or surgery:

- **Drugs:** Your doctor may suggest a drug that can block natural hormones.
  - **Luteinizing hormone-releasing hormone (LH-RH) agonists:** These drugs can prevent the testicles from making testosterone. Examples are *leuprolide* and *goserelin*.
  - **Antiandrogens:** These drugs can block the action of male hormones. Examples are *flutamide*, *bicalutamide*, and *nilutamide*.
  - **Other drugs:** Some drugs can prevent the adrenal gland from making testosterone. Examples are *ketoconazole* and *aminoglutethimide*.
- **Surgery:** Surgery to remove the testicles is called *orchiectomy*.

After orchiectomy or treatment with an LH-RH agonist, your body no longer gets testosterone from the testicles. However, the adrenal gland still produces a small amount of male hormones. You may receive an antiandrogen to block the action of the male hormones that remain. This combination of treatments is known as *total androgen blockade*. Studies have not shown whether total androgen blockade is more effective than surgery or an LH-RH agonist alone.

Doctors can usually control prostate cancer that has spread to other parts of the body with hormone therapy. The cancer often does not grow for several years. But in time, most prostate cancers can grow with very little or no male hormones. Hormone therapy is no longer helpful. At that time, your doctor may suggest other forms of treatment that are under study.

Hormone therapy is likely to affect your *quality of life*. It often causes side effects such as impotence, hot flashes, loss of sexual desire, and weaker bones. An LH-RH agonist may make your symptoms worse for a short time when you first take it. This temporary problem is called “flare.” The treatment gradually causes your testosterone level to fall. Without testosterone, tumor growth slows. Your condition may improve. (To prevent flare, your doctor may give you an antiandrogen for a while along with the LH-RH agonist.)

Antiandrogens (such as nilutamide) can cause nausea, diarrhea, or breast growth or tenderness. Rarely, they may cause liver problems (pain in the abdomen, yellow eyes, or dark urine). Some men who use nilutamide may have difficulty breathing. Some may have trouble adjusting to sudden changes in light.

If used for a long time, ketoconazole may cause liver problems, and aminoglutethimide can cause skin rashes. If you receive total androgen blockade, you may have more side effects than if you have just one type of hormone treatment.

Any treatment that lowers hormone levels can weaken your bones. Your doctor can suggest medicines or *dietary supplements* that can reduce your risk of bone fractures.

You may want to ask your doctor these questions before choosing hormone therapy:

- What kind of hormone therapy will I have? Would you recommend drugs or surgery? Why?
- When will treatment start? How often will I have treatments? When will it end?
- Where will I go for treatment? Will I be able to drive home afterward?
- If I have surgery, how long will I need to stay in the hospital?
- How will I feel during treatment?
- What can I do to take care of myself during treatment?
- How will we know the treatment is working?
- Which side effects should I tell you about?
- Will there be lasting side effects?

## Watchful Waiting

You may choose watchful waiting if the risks and possible side effects of treatment outweigh the possible benefits. Your doctor may offer this choice if you are older or have other serious health problems. Your doctor may also suggest watchful waiting if you are diagnosed with early stage prostate cancer that seems to be slowly growing. Your doctor will offer you treatment if symptoms occur or get worse.

Watchful waiting avoids or delays the side effects of surgery and radiation, but this choice has risks. It may reduce the chance to control cancer before it spreads. Also, it may be harder to cope with surgery and radiation therapy as you age.

You may decide against watchful waiting if you do not want to live with an untreated cancer. If you choose watchful waiting but grow concerned later, you should discuss your feelings with your doctor. A different approach is nearly always available.

Watchful waiting is under study. See “The Promise of Cancer Research” on page 31 for information about this study.

You may want to ask your doctor these questions before choosing watchful waiting:

- If I choose watchful waiting, can I change my mind later on?
- Will the cancer be harder to treat later?
- How often will I have checkups?
- Between checkups, what problems should I report?

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## Complementary and Alternative Medicine

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**S**ome men with prostate cancer use *complementary and alternative medicine* (CAM):

- An approach is generally called complementary medicine when it is used along with standard treatment.
- An approach is called alternative medicine when it is used instead of standard treatment.

*Acupuncture*, massage therapy, herbal products, vitamins or special diets, visualization, meditation, and spiritual healing are types of CAM.

Many men say that CAM helps them feel better. However, some types of CAM may change the way standard treatment works. These changes could be harmful. And some types of CAM could be harmful even if used alone.

Some types of CAM are expensive. Health insurance may not cover the cost.

NCI offers a fact sheet called “Complementary and Alternative Medicine in Cancer Treatment: Questions and Answers.”

You also may request materials from the Federal Government’s National Center for Complementary and Alternative Medicine. You can reach their clearinghouse toll-free at 1-888-644-6226 (voice) and 1-866-464-3615 (TTY). In addition, you can visit the Center’s Web site at <http://www.nccam.nih.gov>, or send an email to [info@nccam.nih.gov](mailto:info@nccam.nih.gov).

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## Nutrition and Physical Activity

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**I**t is important for men with prostate cancer to take care of themselves. Taking care of yourself includes eating well and staying as active as you can.

You need the right amount of calories to maintain a good weight. You also need enough protein to keep up your strength. Eating well may help you feel better and have more energy. Your doctor, dietitian, or other health care provider can suggest a healthy diet. Also, the NCI booklet *Eating Hints for Cancer Patients* has many useful ideas and recipes.





Many men find they feel better when they stay active. Walking, yoga, swimming, and other exercise can keep you strong and increase your energy. Exercise may reduce pain and make treatment easier to handle. It also can help relieve stress. Whatever physical activity you choose, be sure to talk to your doctor before you start. Also, if your activity causes you pain or other problems, be sure to let your doctor or nurse know about it.

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## Follow-up Care

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**F**ollow-up care after treatment for prostate cancer is important. Even when the cancer seems to have been completely removed or destroyed, the disease sometimes returns because undetected cancer cells remained somewhere in the body after treatment. Your doctor will monitor your recovery and check for *recurrence* of the cancer. Checkups help ensure that any changes in your health are noted and treated if needed. Checkups may include lab tests, x-rays, biopsies, or other tests. Between scheduled visits, you should contact your doctor if you have any health problems.

*Facing Forward Series: Life After Cancer Treatment* is an NCI booklet for people who have completed their treatment. It answers questions about follow-up care and other concerns. It has tips for making the best use of medical visits. It also suggests ways to talk with your doctor about creating a plan of action for recovery and future health.

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## Sources of Support

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**L**earning you have prostate cancer can change your life and the lives of those close to you. These changes can be hard to handle. It is normal for you, your family, and your friends to have many different and sometimes confusing feelings.

You may worry about caring for your family, keeping your job, or continuing daily activities. Concerns about treatments and managing side effects, hospital stays, and medical bills are also common. Doctors, nurses, and other members of your health care team can answer questions about treatment, working, or other activities. Meeting with a social worker, counselor, or member of the clergy can be helpful if you want to talk about your feelings or concerns. Often, a social worker can suggest resources for financial aid, transportation, home care, or emotional support.

Friends and relatives can be supportive. Support groups also can help. In these groups, patients or their family members meet with other patients or their families to share what they have learned about coping with the disease and the effects of treatment. Groups may offer support in person, over the telephone, or online. You may want to talk with a member of your health care team about finding a support group.

You and your partner may be concerned about the effects of prostate cancer on your sexual relationship. You may want to talk with your doctor about possible treatment side effects and whether these are likely to last. Whatever the outlook, you and your partner may find it helps to discuss your concerns. You can find ways to be intimate during and after treatment. For some couples, it helps to talk with a sex counselor.

Information Specialists at 1–800–4–CANCER and at **LiveHelp** (<http://www.cancer.gov>) can help you locate programs, services, and publications. Also, you may want to read the NCI fact sheet “National Organizations That Offer Services to People With Cancer and Their Families.”

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## The Promise of Cancer Research

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**D**octors all over the country are conducting many types of clinical trials (research studies in which people volunteer to take part). They are studying new ways to prevent, detect, and treat prostate cancer.

Clinical trials are designed to answer important questions and to find out whether new approaches are safe and effective. Research already has led to many advances, and researchers continue to search for more effective methods for dealing with prostate cancer.

Men who join clinical trials may be among the first to benefit if a new approach is effective. And even if people in a trial do not benefit directly, they still make an important contribution by helping doctors learn more about prostate cancer and how to control it. Although clinical trials may pose some risks, researchers do all they can to protect their patients.

If you are interested in being part of a clinical trial, talk with your doctor. You may want to read the NCI booklet *Taking Part in Clinical Trials: What Cancer Patients Need To Know*. NCI also offers an easy-to-read brochure called *If You Have Cancer...What You Should Know About Clinical Trials*. These NCI publications describe how clinical trials are carried out and explain their possible benefits and risks.

NCI's Web site includes a section on clinical trials at [http://www.cancer.gov/clinical\\_trials](http://www.cancer.gov/clinical_trials). It has general information about clinical trials as well as detailed information about specific ongoing studies of prostate cancer. Information Specialists at 1-800-4-CANCER or at *LiveHelp* at <http://www.cancer.gov> can answer questions and provide information about clinical trials.

## Research on Prevention

Researchers are looking for ways to prevent prostate cancer:

- **Diet:** Some studies suggest that eating foods that have tomatoes in them may help protect men from prostate cancer. *Lycopene* is an *antioxidant* in tomatoes and some other fruits and vegetables. Research is in progress to see if lycopene can help prevent prostate cancer. A diet low in fat is also under study.
- **Dietary supplements:** The Selenium and Vitamin E Cancer Prevention Trial (SELECT) is studying these two supplements. The goal of the study is to learn whether these supplements can reduce the risk of developing prostate cancer.
- **Drug:** The Prostate Cancer Prevention Trial was a large study to test a drug that doctors thought might lower the risk of prostate cancer. The drug is *finasteride*. In the study, the drug did reduce the chance of developing prostate cancer. However, men who developed prostate cancer while taking the drug were more likely to have tumors that seemed to be high-grade. High-grade cancer grows and spreads more quickly than low-grade cancer. Researchers are now studying tumors from men in the study to see if they were really high-grade or only looked that way. If you are concerned about getting prostate cancer, you may want to talk with your doctor about the

potential benefits and possible risks of taking finasteride. You also may consider taking part in another prostate cancer prevention trial.

## **Research on Screening**

Researchers are studying ways to check for prostate cancer in men who have no symptoms. Screening can help find prostate cancer at an early stage. But studies have not shown whether screening saves lives. The Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial (PLCO) is designed to show if certain screening tests can reduce the number of deaths from these cancers. NCI supports this study. The prostate screening tests that PLCO is studying are the PSA test and digital rectal exam. Researchers will screen the men in the study until 2007. The trial will assess the harms and potential benefits of routine screening for prostate cancer. The results of this trial may change the way men are screened for prostate cancer.

## **Research on Treatment**

Researchers are studying many types of treatment and their combinations:

- **Surgery:** Different methods of surgery are being developed:
  - Robotic prostatectomy: The doctor uses a laparoscope and a surgical robot to help remove the prostate.
  - Cryosurgery: Surgeons use a tool that freezes and kills prostate tissue in men with early prostate cancer.

- **Radiation therapy:** Doctors are studying different doses of radiation therapy. They are looking at the use of radioactive implants after external radiation. And they are combining radiation therapy with hormone therapy.
- **Hormone therapy:** Researchers are studying different schedules of hormone therapy.
- **Biological therapy:** Doctors are testing cancer vaccines that help the *immune system* kill cancer cells.
- **Chemotherapy:** Researchers are testing anticancer drugs and combining them with hormone therapy.
- **Watchful Waiting:** Men with early prostate cancer usually do not have any symptoms of disease. For these men, researchers are comparing having surgery or radiation right away against watchful waiting. Men in the watchful waiting group do not receive treatment until they have symptoms. The results of the study will help doctors know whether to treat early stage prostate cancer right away, or only if symptoms appear or get worse.

Researchers also are looking at ways to lessen the side effects of treatment, such as bone thinning and impotence.

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## Dictionary

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***3-dimensional conformal radiation therapy*** (ray-dee-AY-shun): A procedure that uses a computer to create a 3-dimensional picture of the tumor. This allows doctors to give the highest possible dose of radiation to the tumor, while sparing the normal tissue as much as possible. Also called 3-dimensional radiation therapy.

***Abdomen*** (AB-do-men): The area of the body that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs.

***Abnormal***: Not normal. An abnormal lesion or growth may be cancerous, premalignant (likely to become cancer), or benign.

***Acupuncture*** (AK-yoo-PUNK-cher): The technique of inserting thin needles through the skin at specific points on the body to control pain and other symptoms. It is a type of complementary and alternative medicine.

***Adrenal gland*** (ah-DREE-nal): A small gland that produces steroid hormones, adrenaline, and noradrenaline, which help control heart rate, blood pressure, and other important body functions. There are two adrenal glands, one located on top of each kidney.

***Aminoglutethimide*** (a-MEE-no-gloo-TETH-ih-mide): An anticancer drug that belongs to the family of drugs called nonsteroidal aromatase inhibitors. Aminoglutethimide is used to decrease the production of sex hormones (estrogen in women or testosterone in men) and suppress the growth of tumors that need sex hormones to grow.

***Androgen*** (AN-dro-jen): A type of hormone that promotes the development and maintenance of male sex characteristics.

**Antiandrogen** (an-tee-AN-dro-jen): A drug used to block the production or interfere with the action of male sex hormones.

**Antioxidant** (an-tee-OKS-i-dent): A substance that prevents damage caused by free radicals. Free radicals are highly reactive chemicals that often contain oxygen. They are produced when molecules are split to give products that have unpaired electrons. This process is called oxidation.

**Anus** (AY-nus): The opening of the rectum to the outside of the body.

**Benign** (beh-NINE): Not cancerous. Benign tumors do not spread to tissues around them or to other parts of the body.

**Benign prostatic hyperplasia** (hye-per-PLAY-zha): BPH. A benign (noncancerous) condition in which an overgrowth of prostate tissue pushes against the urethra and the bladder, blocking the flow of urine. Also called benign prostatic hypertrophy.

**Bicalutamide** (bye-ka-LOO-ta-mide): An anticancer drug that belongs to the family of drugs called antiandrogens.

**Biological therapy** (by-oh-LAH-jih-kul THER-ah-pee): Treatment to stimulate or restore the ability of the immune system to fight infections and other diseases. Also used to lessen certain side effects that may be caused by some cancer treatments. Also called immunotherapy, biotherapy, or biological response modifier (BRM) therapy.



**Biopsy** (BY-op-see): The removal of cells or tissues for examination by a pathologist. The pathologist may study the tissue under a microscope or perform other tests on the cells or tissue. When only a sample of tissue is removed, the procedure is called an incisional biopsy. When an entire lump or suspicious area is removed, the procedure is called an excisional biopsy. When a sample of tissue or fluid is removed with a needle, the procedure is called a needle biopsy, core biopsy, or fine-needle aspiration.

**Bladder:** The organ that stores urine.

**Bone scan:** A technique to create images of bones on a computer screen or on film. A small amount of radioactive material is injected into a blood vessel and travels through the bloodstream; it collects in the bones and is detected by a scanner.

**Brachytherapy** (BRAKE-ih-THER-ah-pee): A procedure in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near a tumor. Also called internal radiation, implant radiation, or interstitial radiation therapy.

**Cancer:** A term for diseases in which abnormal cells divide without control. Cancer cells can invade nearby tissues and can spread through the bloodstream and lymphatic system to other parts of the body. There are several main types of cancer. Carcinoma is cancer that begins in the skin or in tissues that line or cover internal organs. Sarcoma is cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue. Leukemia is cancer that starts in blood-forming tissue such as the bone marrow, and causes large numbers of abnormal blood cells to be produced and enter the bloodstream. Lymphoma and multiple myeloma are cancers that begin in the cells of the immune system.

**Catheter** (KATH-i-ter): A flexible tube used to deliver fluids into or withdraw fluids from the body.

**Cell:** The individual unit that makes up the tissues of the body. All living things are made up of one or more cells.

**Chemotherapy** (kee-moh-THER-ah-pee): Treatment with drugs that kill cancer cells.

**Clinical trial:** A type of research study that uses volunteers to test new methods of screening, prevention, diagnosis, or treatment of a disease. Also called a clinical study.

**Complementary and alternative medicine:** CAM. Forms of treatment that are used in addition to (complementary) or instead of (alternative) standard treatments. These practices generally are not considered standard medical approaches. CAM may include dietary supplements, megadose vitamins, herbal preparations, special teas, acupuncture, massage therapy, magnet therapy, spiritual healing, and meditation.

**Cryosurgery** (KRY-o-SER-juh-ree): A procedure performed with an instrument that freezes and destroys abnormal tissues.

**CT scan:** Computed tomography scan. A series of detailed pictures of areas inside the body taken from different angles; the pictures are created by a computer linked to an x-ray machine. Also called computerized tomography and computerized axial tomography (CAT) scan.

**Cystoscopy** (sist-OSS-ko-pee): Examination of the bladder and urethra using a thin, lighted instrument (called a cystoscope) inserted into the urethra. Tissue samples can be removed and examined under a microscope to determine whether disease is present.

**Dietary supplement:** Vitamins, minerals, or other substances taken by mouth, and intended as an addition to the diet.

**Digital rectal examination:** DRE. An examination in which a doctor inserts a lubricated, gloved finger into the rectum to feel for abnormalities.

**Dry orgasm:** Sexual climax without the release of semen from the penis.

**Ejaculation** (i-JAK-yoo-LAY-shun): The release of semen through the penis during orgasm.

**Erection** (ih-REK-shun): In medicine, the swelling of the penis with blood, causing it to become firm.

**External radiation** (ray-dee-AY-shun): Radiation therapy that uses a machine to aim high-energy rays at the cancer. Also called external-beam radiation.

**Finasteride** (fi-NAS-ta-ride): A drug used to reduce the amount of male hormone (testosterone) produced by the body.

**Flutamide** (FLOO-ta-mide): An anticancer drug that belongs to the family of drugs called antiandrogens.

**Gleason score** (GLEE-sun): A system of grading prostate cancer cells based on how they look under a microscope. Gleason scores range from 2 to 10 and indicate how likely it is that a tumor will spread. A low Gleason score means the cancer cells are similar to normal prostate cells and are less likely to spread; a high Gleason score means the cancer cells are very different from normal and are more likely to spread.

**Goserelin** (go-SAIR-uh-lin): A drug that belongs to the family of drugs called gonadotropin-releasing hormone analogs. Goserelin is used to block hormone production in the ovaries or testicles.

**Grade:** The grade of a tumor depends on how abnormal the cancer cells look under a microscope and how quickly the tumor is likely to grow and spread. Grading systems are different for each type of cancer.

**Hormone:** A chemical made by glands in the body. Hormones circulate in the bloodstream and control the

actions of certain cells or organs. Some hormones can also be made in a laboratory.

**Hormone therapy:** Treatment that adds, blocks or removes hormones. For certain conditions (such as diabetes or menopause), hormones are given to adjust low hormone levels. To slow or stop the growth of certain cancers (such as prostate and breast cancer), synthetic hormones or other drugs may be given to block the body's natural hormones. Sometimes surgery is needed to remove the gland that makes hormones. Also called hormonal therapy, hormone treatment, or endocrine therapy.

**Imaging:** Tests that produce pictures of areas inside the body.

**Immune system** (im-YOON): The complex group of organs and cells that defends the body against infections and other diseases.

**Implant radiation** (ray-dee-AY-shun): A procedure in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near a tumor. Also called brachytherapy, internal radiation, or interstitial radiation.

**Impotent** (IM-po-tent): In medicine, describes the inability to have an erection of the penis adequate for sexual intercourse.

**Incision** (in-SIH-zhun): A cut made in the body to perform surgery.

**Incontinence** (in-KAHN-tih-nens): Inability to control the flow of urine from the bladder (urinary incontinence) or the escape of stool from the rectum (fecal incontinence).

**Inflammation** (in-fla-MAY-shun): Redness, swelling, pain, and/or a feeling of heat in an area of the body. This is a protective reaction to injury, disease, or irritation of the tissues.

**Internal radiation** (ray-dee-AY-shun): A procedure in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near a tumor. Also called brachytherapy, implant radiation, or interstitial radiation therapy.

**Ketoconazole** (kee-ta-KOE-na-zol): A drug that treats infection caused by a fungus. It is also used as a treatment for prostate cancer because it can block the production of male sex hormones.

**Laparoscope** (LAP-a-ruh-skope): A thin, lighted tube used to look at tissues and organs inside the abdomen.

**Laparoscopic prostatectomy** (LAP-a-ruh-SKOP-ik pros-ta-TEK-toe-mee): Surgery to remove all or part of the prostate with the aid of a laparoscope (a thin, lighted tube).

**Leuprolide** (LOO-pro-lide): A drug that belongs to the family of drugs called gonadotropin-releasing hormone analogs. It is used to block hormone production in the ovaries or testicles.

**Local therapy:** Treatment that affects cells in the tumor and the area close to it.

**Luteinizing hormone-releasing hormone agonist** (LOO-tin-eye-zing, . .AG-o-nist): LH-RH agonist. A drug that inhibits the secretion of sex hormones. In men, LH-RH agonist causes testosterone levels to fall. In women, LH-RH agonist causes the levels of estrogen and other sex hormones to fall.

**Lycopene** (LIE-kuh-peen): A red pigment found in tomatoes and some fruits. It is an antioxidant and may help prevent some types of cancer.

**Lymph node** (limf node): A rounded mass of lymphatic tissue that is surrounded by a capsule of connective tissue. Lymph nodes filter lymph (lymphatic fluid), and

they store lymphocytes (white blood cells). They are located along lymphatic vessels. Also called a lymph gland.

***Lymphatic system*** (lim-FAT-ik SIS-tem): The tissues and organs that produce, store, and carry white blood cells that fight infections and other diseases. This system includes the bone marrow, spleen, thymus, lymph nodes, and lymphatic vessels (a network of thin tubes that carry lymph and white blood cells). Lymphatic vessels branch, like blood vessels, into all the tissues of the body.

***Malignant*** (ma-LIG-nant): Cancerous. Malignant tumors can invade and destroy nearby tissue and spread to other parts of the body.

***Medical oncologist*** (MEH-dih-kul on-KOL-oh-jist): A doctor who specializes in diagnosing and treating cancer using chemotherapy, hormonal therapy, and biological therapy. A medical oncologist often is the main health care provider for someone who has cancer. A medical oncologist also gives supportive care and may coordinate treatment given by other specialists.

***Metastasis*** (meh-TAS-ta-sis): The spread of cancer from one part of the body to another. A tumor formed by cells that have spread is called a “metastatic tumor” or a “metastasis.” The metastatic tumor contains cells that are like those in the original (primary) tumor. The plural form of metastasis is metastases (meh-TAS-ta-seez).

***Metastasize*** (meh-TAS-ta-size): To spread from one part of the body to another. When cancer cells metastasize and form secondary tumors, the cells in the metastatic tumor are like those in the original (primary) tumor.

**MRI:** Magnetic resonance imaging (mag-NET-ik REZ-o-nans IM-a-jing). A procedure in which radio waves and a powerful magnet linked to a computer are used to create detailed pictures of areas inside the body. These pictures can show the difference between normal and diseased tissue. MRI makes better images of organs and soft tissue than other scanning techniques, such as CT or x-ray. MRI is especially useful for imaging the brain, spine, the soft tissue of joints, and the inside of bones. Also called nuclear magnetic resonance imaging.

**Nerve:** A bundle of fibers that receives and sends messages between the body and the brain. The messages are sent by chemical and electrical changes in the cells that make up the nerves.

**Nerve-sparing surgery** (SER-juh-ree): A type of surgery that attempts to save the nerves near the tissues being removed.

**Nilutamide** (nye-LOO-ta-mide): A drug that blocks the effects of male hormones in the body. It belongs to the family of drugs called antiandrogens.

**Orchiectomy** (or-kee-EK-toe-mee): Surgery to remove one or both testicles. Also called orchidectomy.

**Organ:** A part of the body that performs a specific function. For example, the heart is an organ.

**Pathologist** (pa-THOL-o-jist): A doctor who identifies diseases by studying cells and tissues under a microscope.

**Pelvic lymphadenectomy** (lim-FAD-eh-NEK-tah-me): Surgery to remove lymph nodes in the pelvis for examination under a microscope to see if they contain cancer.

***Pelvis:*** The lower part of the abdomen, located between the hip bones.

***Prostate*** (PRAHS-tayt): A gland in the male reproductive system. The prostate surrounds the part of the urethra (the tube that empties the bladder) just below the bladder, and produces a fluid that forms part of the semen.

***Prostate-specific antigen:*** PSA. A substance produced by the prostate that may be found in an increased amount in the blood of men who have prostate cancer, benign prostatic hyperplasia, or infection or inflammation of the prostate.

***Prostatic intraepithelial neoplasia*** (prah-STA-tik IN-trah-eh-puh-THEE-lee-ul NEE-uh-PLAY-zhuh): PIN. Noncancerous growth of the cells lining the internal and external surfaces of the prostate gland. Having high-grade PIN may increase the risk of developing prostate cancer.

***Prostatitis*** (PROS-tah-TITE-is): Inflammation of the prostate gland.

***Quality of life:*** The overall enjoyment of life. Many clinical trials assess the effects of cancer and its treatment on the quality of life. These studies measure aspects of an individual's sense of well-being and ability to carry out various activities.

***Radiation oncologist*** (ray-dee-AY-shun on-KOL-o-jist): A doctor who specializes in using radiation to treat cancer.



**Radiation therapy** (ray-dee-AY-shun THER-ah-pee): The use of high-energy radiation from x-rays, gamma rays, neutrons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body near cancer cells (internal radiation therapy, implant radiation, or brachytherapy). Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body. Also called radiotherapy.

**Radical perineal prostatectomy** (RAD-ih-kul peh-ri-NEE-al pros-ta-TEK-toe-mee): Surgery to remove all of the prostate through an incision between the scrotum and the anus. Nearby lymph nodes are sometimes removed through a separate incision in the wall of the abdomen.

**Radical retropubic prostatectomy** (RAD-ih-kul re-tro-PYOO-bik pros-ta-TEK-toe-mee): Surgery to remove all of the prostate and nearby lymph nodes through an incision in the wall of the abdomen.

**Radioactive** (RAY-dee-o-AK-tiv): Giving off radiation.

**Rectum:** The last several inches of the large intestine. The rectum ends at the anus.

**Recurrence:** Cancer that has returned after a period of time during which the cancer could not be detected. The cancer may come back to the same place as the original (primary) tumor or to another place in the body. Also called recurrent cancer.

**Recurrent cancer:** Cancer that has returned after a period of time during which the cancer could not be detected. The cancer may come back to the same place as the original (primary) tumor or to another place in the body. Also called recurrence.

**Reproductive system:** In women, this system includes the ovaries, the fallopian tubes, the uterus (womb), the cervix, and the vagina (birth canal). The reproductive system in men includes the prostate, the testes, and the penis.

**Risk factor:** Something that may increase the chance of developing a disease. Some examples of risk factors for cancer include age, a family history of certain cancers, use of tobacco products, certain eating habits, obesity, exposure to radiation or other cancer-causing agents, and certain genetic changes.

**Screening:** Checking for disease when there are no symptoms.

**Scrotum** (SKRO-tum): In males, the external sac that contains the testicles.

**Semen:** The fluid that is released through the penis during orgasm. Semen is made up of sperm from the testicles and fluid from the prostate and other sex glands.

**Seminal fluid** (SEM-in-al): Fluid from the prostate and other sex glands that helps transport sperm out of the man's body during orgasm. Seminal fluid contains sugar as an energy source for sperm.

**Seminal vesicle** (SEM-in-al VES-ih-kul): A gland that helps produce semen.

**Side effect:** A problem that occurs when treatment affects healthy tissues or organs. Some common side effects of cancer treatment are fatigue, pain, nausea, vomiting, decreased blood cell counts, hair loss, and mouth sores.

**Sonogram** (SON-o-gram): A computer picture of areas inside the body created by bouncing high-energy sound waves (ultrasound) off internal tissues or organs. Also called an ultrasonogram.

**Sperm:** The male reproductive cell, formed in the testicle. A sperm unites with an egg to form an embryo.

**Sperm banking:** Freezing sperm for use in the future. This procedure can allow men to father children after loss of fertility.

**Sperm retrieval:** The doctor removes sperm from a man's testis or epididymis using a fine needle or another instrument.

**Stage:** The extent of a cancer within the body. If the cancer has spread, the stage describes how far it has spread from the original site to other parts of the body.

**Supportive care:** Care given to improve the quality of life of patients who have a serious or life-threatening disease. The goal of supportive care is to prevent or treat as early as possible the symptoms of the disease, side effects caused by treatment of the disease, and psychological, social, and spiritual problems related to the disease or its treatment. Also called palliative care, comfort care, and symptom management.

**Surgery** (SER-juh-ree): A procedure to remove or repair a part of the body or to find out whether disease is present. An operation.

**Symptom:** An indication that a person has a condition or disease. Some examples of symptoms are headache, fever, fatigue, nausea, vomiting, and pain.

**Systemic therapy** (sis-TEM-ik THER-ah-pee): Treatment using substances that travel through the bloodstream, reaching and affecting cells all over the body.

**Testicle** (TES-tih-kul): One of two egg-shaped glands found inside the scrotum that produce sperm and male hormones. Also called a testis.

**Testosterone** (tes-TOS-ter-own): A hormone that promotes the development and maintenance of male sex characteristics.

**Tissue** (TISH-oo): A group or layer of cells that works together to perform a specific function.

**Total androgen blockade:** Therapy used to eliminate male sex hormones (androgens) in the body. This may be done with surgery, hormonal therapy, or a combination.

**Transrectal biopsy** (TRANS-REK-tal BY-op-see): A procedure in which a sample of tissue is removed from the prostate using a thin needle that is inserted through the rectum and into the prostate. Transrectal ultrasound (TRUS) is usually used to guide the needle. The sample is examined under a microscope to see if it contains cancer.

**Transrectal ultrasound** (TRANS-REK-tal): TRUS. A procedure in which a probe that sends out high-energy sound waves is inserted into the rectum. The sound waves are bounced off internal tissues or organs and make echoes. The echoes form a picture of body tissue called a sonogram. TRUS is used to look for abnormalities in the rectum and nearby structures, including the prostate. Also called endorectal ultrasound.

**Transurethral resection of the prostate** (TRANZ-yoo-REE-thral ree-SEK-shun): TURP. A surgical procedure to remove tissue from the prostate using an instrument inserted through the urethra.

**Tumor** (TOO-mer): An abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Tumors may be benign (not cancerous), or malignant (cancerous). Also called neoplasm.

**Ultrasound:** A procedure in which high-energy sound waves (ultrasound) are bounced off internal tissues or organs and make echoes. The echo patterns are shown

on the screen of an ultrasound machine, forming a picture of body tissues called a sonogram. Also called ultrasonography.

**Urethra** (yoo-REE-thra): The tube through which urine leaves the body. It empties urine from the bladder.

**Urinary incontinence** (YOOR-in-air-ee in-KAHN-tih-nens): Inability to hold urine in the bladder.

**Urologic oncologist** (yoor-uh-LAHJ-ik on-KOL-o-jist): A doctor who specializes in treating cancers of the urinary system.

**Urologist** (yoo-RAHL-o-jist): A doctor who specializes in diseases of the urinary organs in females and the urinary and sex organs in males.

**Vaccine**: A substance or group of substances meant to cause the immune system to respond to a tumor or to microorganisms, such as bacteria or viruses. A vaccine can help the body recognize and destroy cancer cells or microorganisms.

**Vasectomy** (vas-EK-toe-mee): An operation to cut or tie off the two tubes that carry sperm out of the testicles.

**Virus** (VYE-rus): A microorganism that can infect cells and cause disease.

**Watchful waiting**: Closely monitoring a patient's condition but withholding treatment until symptoms appear or change. Also called observation.

**X-ray**: A type of high-energy radiation. In low doses, x-rays are used to diagnose diseases by making pictures of the inside of the body. In high doses, x-rays are used to treat cancer.

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## National Cancer Institute Information Resources

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**Y**ou may want more information for yourself, your family, and your doctor. The following National Cancer Institute (NCI) services are available to help you.

### Telephone

The NCI's Cancer Information Service (CIS) provides accurate, up-to-date information on cancer to patients and their families, health professionals, and the general public. Information Specialists translate the latest scientific information into understandable language and respond in English, Spanish, or on TTY equipment. Calls to the CIS are free.

Telephone: 1-800-4-CANCER (1-800-422-6237)

TTY: 1-800-332-8615

### Internet

The NCI's Web site (<http://www.cancer.gov>) provides information from numerous NCI sources. It offers current information on cancer prevention, screening, diagnosis, treatment, genetics, supportive care, and ongoing clinical trials. It has information about NCI's research programs and funding opportunities, cancer statistics, and the Institute itself. Information Specialists provide live, online assistance through *LiveHelp*. (Click on "Need Help?" Then click on "Connect to LiveHelp.")

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## National Cancer Institute Publications

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**N**ational Cancer Institute (NCI) publications can be ordered by writing to the address below:

Publications Ordering Service  
National Cancer Institute  
Suite 3035A  
6116 Executive Boulevard, MSC 8322  
Bethesda, MD 20892–8322

Many NCI publications can be viewed, downloaded, and ordered from <http://www.cancer.gov/publications> on the Internet. In addition, people in the United States and its territories may order these and other NCI publications by calling the NCI's Cancer Information Service at 1–800–4–CANCER.

### **Publications About Prostate Changes and Prostate Cancer**

- *Understanding Prostate Changes: A Health Guide for Men*
- *What You Need To Know About™ Prostate Cancer* (also available in Spanish: *Lo que usted necesita saber sobre™ el cáncer de próstata*)

### **Publications About Cancer Treatment and Support**

- *Know Your Options: Understanding Treatment Choices for Prostate Cancer*
- *Radiation Therapy and You: A Guide to Self-Help During Cancer Treatment* (also available in Spanish: *La radioterapia y usted: una guía de autoayuda durante el tratamiento del cáncer*)

- *Chemotherapy and You: A Guide to Self-Help During Cancer Treatment* (also available in Spanish: *La quimioterapia y usted: una guía de autoayuda durante el tratamiento del cáncer*)
- *Helping Yourself During Chemotherapy: 4 Steps for Patients*
- *Biological Therapy: Treatments That Use Your Immune System to Fight Cancer*
- *Eating Hints for Cancer Patients: Before, During & After Treatment* (also available in Spanish: *Consejos de alimentación para pacientes con cáncer: antes, durante y después del tratamiento*)
- *Understanding Cancer Pain* (also available in Spanish: *El dolor relacionado con el cáncer*)
- *Pain Control: A Guide for People with Cancer and Their Families* (also available in Spanish: *Control del dolor: guía para las personas con cáncer y sus familias*)
- *Get Relief from Cancer Pain*
- “Complementary and Alternative Medicine in Cancer Treatment: Questions and Answers” (also available in Spanish: “La medicina complementaria y alternativa en el tratamiento del cáncer: preguntas y respuestas”)
- “Biological Therapies for Cancer: Questions and Answers” (also available in Spanish: “Terapias biológicas: el uso del sistema inmune para tratar el cáncer”)
- “How To Find a Doctor or Treatment Facility If You Have Cancer” (also available in Spanish: “Cómo encontrar a un doctor o un establecimiento de tratamiento si usted tiene cáncer”)



- “National Organizations That Offer Services to People With Cancer and Their Families” (also available in Spanish: “Organizaciones nacionales que brindan servicios a las personas con cáncer y a sus familias”)

## **Publications About Living With Cancer**

- *Advanced Cancer: Living Each Day*
- *Facing Forward Series: Life After Cancer Treatment* (also available in Spanish: *Siga adelante: la vida después del tratamiento del cáncer*)
- *Facing Forward Series: Ways You Can Make a Difference in Cancer*
- *Taking Time: Support for People with Cancer and the People Who Care About Them*
- *When Cancer Recurs: Meeting the Challenge*

## **Publications About Clinical Trials**

- *Taking Part in Clinical Trials: What Cancer Patients Need To Know* (also available in Spanish: *La participación en los estudios clínicos: lo que los pacientes de cáncer deben saber*)
- *If You Have Cancer... What You Should Know About Clinical Trials* (also available in Spanish: *Si tiene cáncer...lo que debería saber sobre estudios clínicos*)
- *Taking Part in Clinical Trials: Cancer Prevention Studies: What Participants Need To Know* (also available in Spanish: *La participación en los estudios clínicos: estudios para la prevención del cáncer*)

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