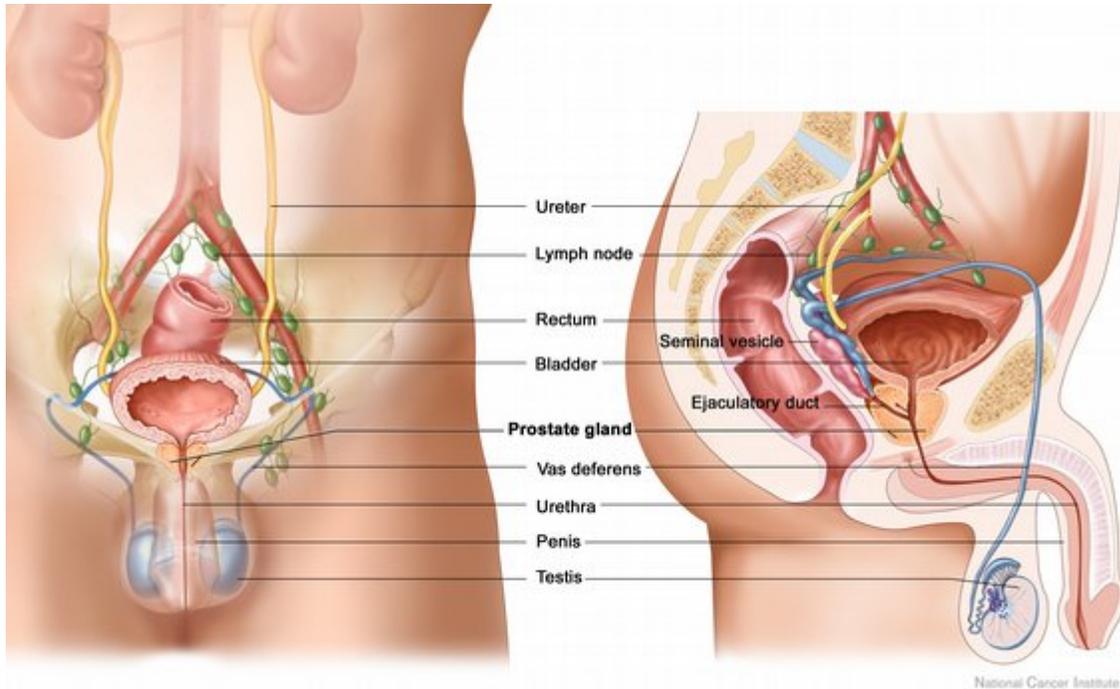


## General Prostate Cancer Information and Glossary of Terms

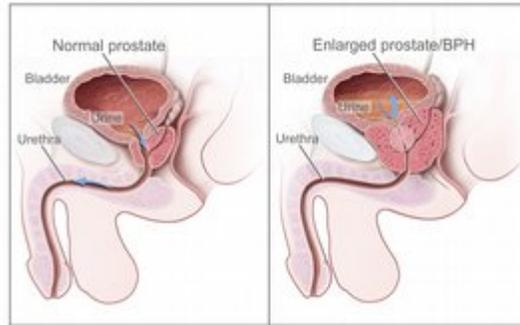
**Prostate cancer is a disease in which malignant (cancer) cells form in the tissues of the prostate.**

The prostate is a gland in the male reproductive system located just below the bladder (the organ that collects and empties urine) and in front of the rectum (the lower part of the intestine). It is about the size of a walnut and surrounds part of the urethra (the tube that empties urine from the bladder). The prostate gland produces fluid that makes up part of the semen.



Anatomy of the male reproductive and urinary systems, showing the prostate, testicles, bladder, and other organs.

Prostate cancer is found mainly in older men. As men age, the prostate may get bigger and block the urethra or bladder. This may cause difficulty in urination or can interfere with sexual function. The condition is called benign prostatic hyperplasia (BPH), and although it is not cancer, surgery may be needed to correct it. The symptoms of benign prostatic hyperplasia or of other problems in the prostate may be similar to symptoms of prostate cancer.



Normal prostate and benign prostatic hyperplasia (BPH).  
 A normal prostate does not block the flow of urine from the bladder. An enlarged prostate presses on the bladder and urethra and blocks the flow of urine.

**Possible signs of prostate cancer include a weak flow of urine or frequent urination.**

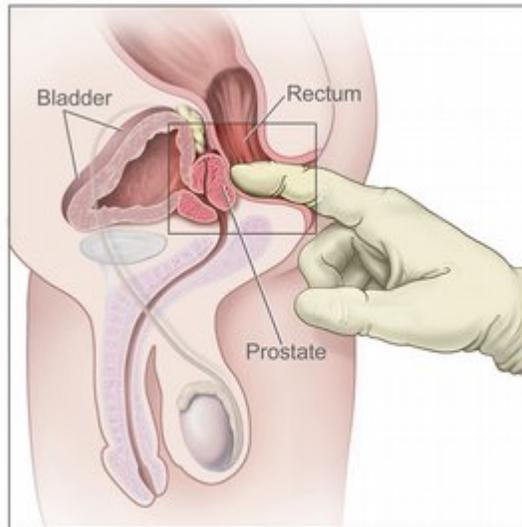
These and other symptoms may be caused by prostate cancer. Other conditions may cause the same symptoms. A doctor should be consulted if any of the following problems occur:

- Weak or interrupted flow of urine.
- Frequent urination (especially at night).
- Trouble urinating.
- Pain or burning during urination.
- Blood in the urine or semen.
- A pain in the back, hips, or pelvis that doesn't go away.
- Painful ejaculation.

**Tests that examine the prostate and blood are used to detect (find) and diagnose prostate cancer.**

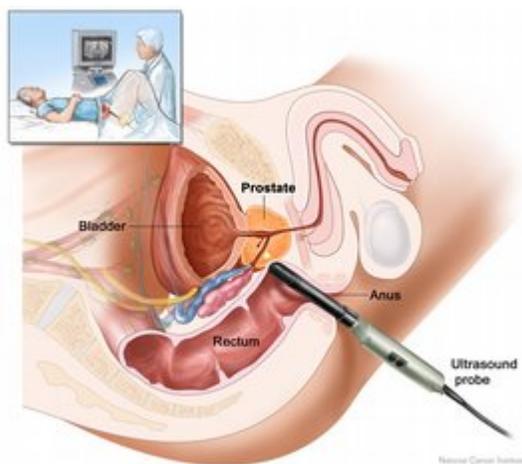
The following tests and procedures may be used:

- Digital rectal exam (DRE): An exam of the rectum. The doctor or nurse inserts a lubricated, gloved finger into the rectum and feels the prostate through the rectal wall for lumps or abnormal areas.



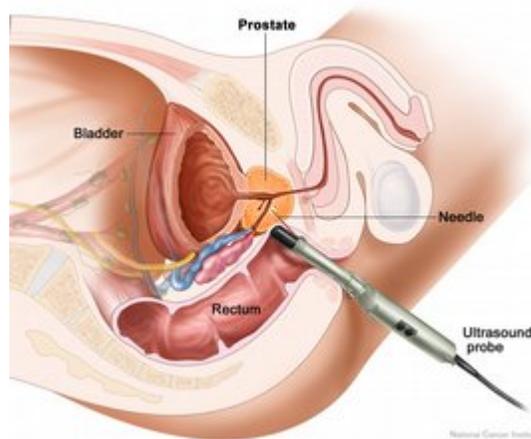
Digital rectal exam (DRE). The doctor inserts a gloved, lubricated finger into the rectum and feels the prostate to check for anything abnormal.

- Prostate-specific antigen (PSA) test: A test that measures the level of PSA in the blood. PSA is a substance made by the prostate that may be found in an increased amount in the blood of men who have prostate cancer. PSA levels may also be high in men who have an infection or inflammation of the prostate or BPH (an enlarged, but noncancerous, prostate).
- Transrectal ultrasound: A procedure in which a probe that is about the size of a finger is inserted into the rectum to check the prostate. The probe is used to bounce high-energy sound waves (ultrasound) off internal tissues or organs and make echoes. The echoes form a picture of body tissues called a sonogram. Transrectal ultrasound may be used during a biopsy procedure.



Transrectal ultrasound. An ultrasound probe is inserted into the rectum to check the prostate. The probe bounces sound waves off body tissues to make echoes that form a sonogram (computer picture) of the prostate.

- **Biopsy:** The removal of cells or tissues so they can be viewed under a microscope by a pathologist. The pathologist will examine the biopsy sample to check for cancer cells and determine the Gleason score. The Gleason score ranges from 2-10 and describes how likely it is that a tumor will spread. The lower the number, the less likely the tumor is to spread. There are 2 types of biopsy procedures used to diagnose prostate cancer:
  - Transrectal biopsy: The removal of tissue from the prostate by inserting a thin needle through the rectum and into the prostate. This procedure is usually done using transrectal ultrasound to help guide the needle. A pathologist views the tissue under a microscope to look for cancer cells.



Transrectal biopsy. An ultrasound probe is inserted into the rectum to show where the tumor is. Then a needle is inserted through the rectum into the prostate to remove tissue from the prostate.

- Transperineal biopsy: The removal of tissue from the prostate by inserting a thin needle through the skin between the scrotum and rectum and into the prostate. A pathologist views the tissue under a microscope to look for cancer cells.

### **Certain factors affect prognosis (chance of recovery) and treatment options.**

The prognosis (chance of recovery) and treatment options depend on the following:

- The stage of the cancer (whether it affects part of the prostate, involves the whole prostate, or has spread to other places in the body).
- The patient's age and health.
- Whether the cancer has just been diagnosed or has recurred (come back).

Prognosis also depends on the Gleason score and the level of PSA.

## Stages of Prostate Cancer

After prostate cancer has been diagnosed, tests are done to find out if cancer cells have spread within the prostate or to other parts of the body.

The process used to find out if cancer has spread within the prostate or to other parts of the body is called staging. The information gathered from the staging process determines the stage of the disease. It is important to know the stage in order to plan treatment. The following tests and procedures may be used in the staging process:

- Radionuclide bone scan: A procedure to check if there are rapidly dividing cells, such as cancer cells, in the bone. A very small amount of radioactive material is injected into a vein and travels through the bloodstream. The radioactive material collects in the bones and is detected by a scanner.

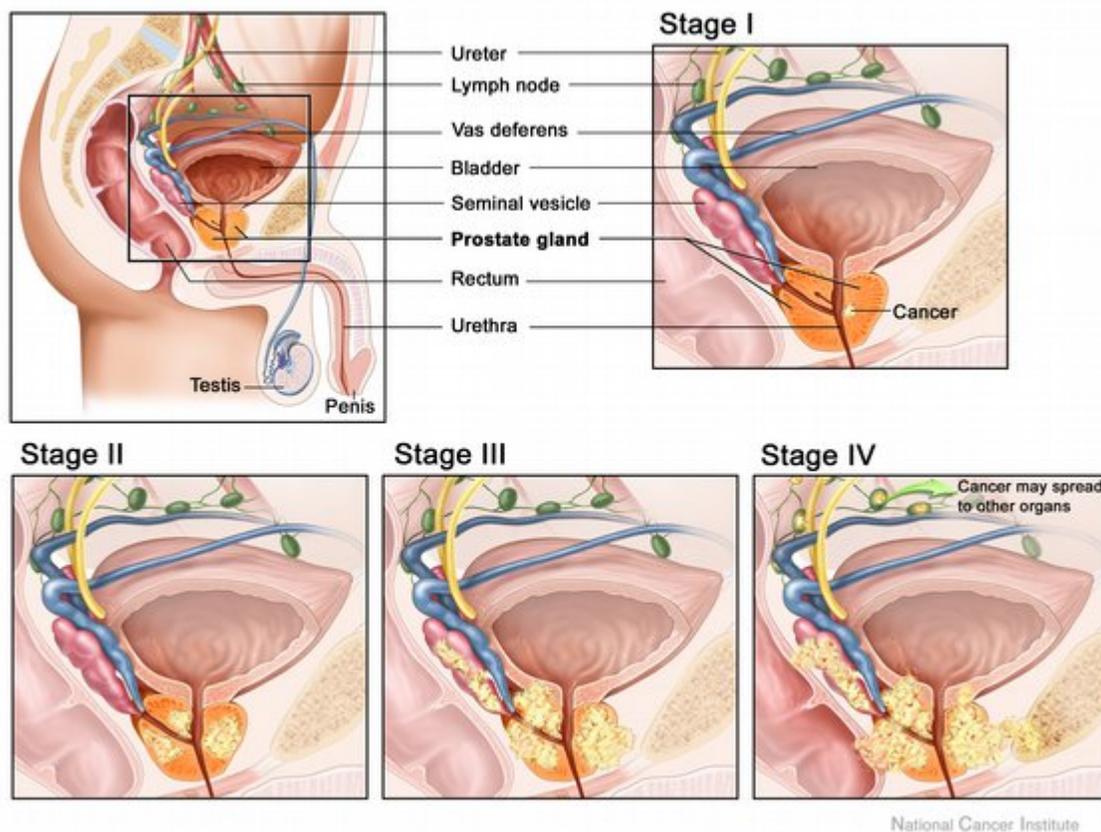


Bone scan. A small amount of radioactive material is injected into the patient's bloodstream and collects in abnormal cells in the bones. As the patient lies on a table that slides under the scanner, the radioactive material is detected and images are made on a computer screen or film.

- MRI (magnetic resonance imaging): A procedure that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the body. This procedure is also called nuclear magnetic resonance imaging (NMRI).
- Pelvic lymphadenectomy: A surgical procedure to remove the lymph nodes in the pelvis. A pathologist views the tissue under a microscope to look for cancer cells.
- CT scan (CAT scan): A procedure that makes a series of detailed pictures of areas inside the body, taken from different angles. The pictures are made by a computer linked to an x-ray machine. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly. This procedure is also called computed tomography, computerized tomography, or computerized axial tomography.
- Seminal vesicle biopsy: The removal of fluid from the seminal vesicles (glands that produce semen) using a needle. A pathologist views the fluid under a microscope to look for cancer cells.

The stage of the cancer is based on the results of the staging and diagnostic tests, including the original tumor biopsy. The biopsy is used to determine the Gleason score. The Gleason score ranges from 2-10 and describes how different the cancer cells look from normal cells and how likely it is that the tumor will spread. The lower the number, the less likely the tumor is to spread.

**The following stages are used for prostate cancer:**



As prostate cancer progresses from Stage I to Stage IV, the cancer cells grow within the prostate, through the outer layer of the prostate into nearby tissue, and then to lymph nodes or other parts of the body.

### **Stage I**

In stage I, cancer is found in the prostate only. It cannot be felt during a digital rectal exam and is not visible by imaging. It is usually found accidentally during surgery for other reasons, such as benign prostatic hyperplasia. The Gleason score is low. Stage I prostate cancer may also be called stage A1 prostate cancer.

### **Stage II**

In stage II, cancer is more advanced than in stage I, but has not spread outside the prostate. The Gleason score can range from 2-10. Stage II prostate cancer may also be called stage A2, stage B1, or stage B2

prostate cancer.

### **Stage III**

In stage III, cancer has spread beyond the outer layer of the prostate to nearby tissues. Cancer may be found in the seminal vesicles. The Gleason score can range from 2-10. Stage III prostate cancer may also be called stage C prostate cancer.

### **Stage IV**

In stage IV, cancer has metastasized (spread) to lymph nodes near or far from the prostate or to other parts of the body, such as the bladder, rectum, bones, liver, or lungs. Metastatic prostate cancer often spreads to the bones. The Gleason score can range from 2-10. Stage IV prostate cancer may also be called stage D1 or stage D2 prostate cancer.

## **Recurrent Prostate Cancer**

Recurrent prostate cancer is cancer that has recurred (come back) after it has been treated. The cancer may come back in the prostate or in other parts of the body.

## **Treatment Option Overview**

**There are different types of treatment for patients with prostate cancer.**

Different types of treatment are available for patients with prostate cancer. Some treatments are standard (the currently used treatment), and some are being tested in clinical trials. Before starting treatment, patients may want to think about taking part in a clinical trial. A treatment clinical trial is a research study meant to help improve current treatments or obtain information on new treatments for patients with cancer. When clinical trials show that a new treatment is better than the standard treatment, the new treatment may become the standard treatment.

Clinical trials are taking place in many parts of the country. Choosing the most appropriate cancer treatment is a decision that ideally involves the patient, family, and health care team.

**Four types of standard treatment are used:**

### **Watchful waiting**

Watchful waiting is closely monitoring a patient's condition without giving any treatment until symptoms appear or change. This is usually used in older men with other medical problems and early-stage disease.

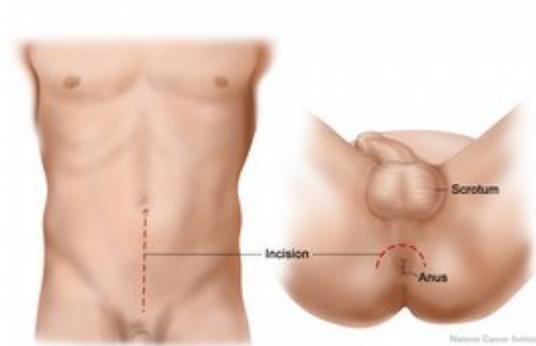
### **Surgery**

Patients in good health are usually offered surgery as treatment for prostate cancer. The following types of surgery are used:

- Pelvic lymphadenectomy: A surgical procedure to remove the lymph nodes in the pelvis. A

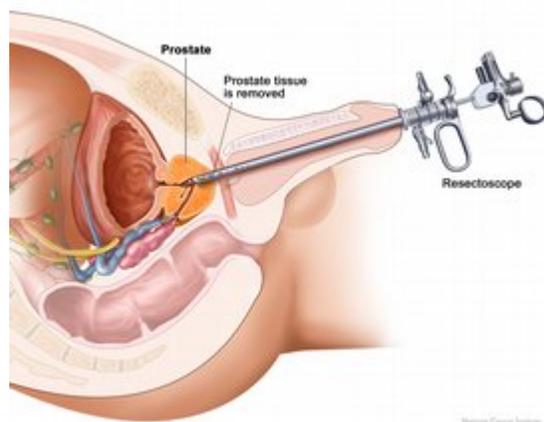
pathologist views the tissue under a microscope to look for cancer cells. If the lymph nodes contain cancer, the doctor will not remove the prostate and may recommend other treatment.

- Radical prostatectomy: A surgical procedure to remove the prostate, surrounding tissue, and seminal vesicles. There are 2 types of radical prostatectomy:
  - Retropubic prostatectomy: A surgical procedure to remove the prostate through an incision (cut) in the abdominal wall. Removal of nearby lymph nodes may be done at the same time.
  - Perineal prostatectomy: A surgical procedure to remove the prostate through an incision (cut) made in the perineum (area between the scrotum and anus). Nearby lymph nodes may also be removed through a separate incision in the abdomen.



Two types of radical prostatectomy. In a retropubic prostatectomy, the prostate is removed through an incision in the wall of the abdomen. In a perineal prostatectomy, the prostate is removed through an incision in the area between the scrotum and the anus.

- Transurethral resection of the prostate (TURP): A surgical procedure to remove tissue from the prostate using a resectoscope (a thin, lighted tube with a cutting tool) inserted through the urethra. This procedure is sometimes done to relieve symptoms caused by a tumor before other cancer treatment is given. Transurethral resection of the prostate may also be done in men who cannot have a radical prostatectomy because of age or illness.



Transurethral resection of the prostate (TURP). Tissue is removed from the prostate using a resectoscope (a thin, lighted tube with a cutting tool at the end) inserted through the urethra. Prostate tissue that is blocking the urethra is cut away and removed through the resectoscope.

Impotence and leakage of urine from the bladder or stool from the rectum may occur in men treated with surgery. In some cases, doctors can use a technique known as nerve-sparing surgery. This type of surgery may save the nerves that control erection. However, men with large tumors or tumors that are very close to the nerves may not be able to have this surgery.

### **Radiation therapy**

Radiation therapy is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells. There are two types of radiation therapy. External radiation therapy uses a machine outside the body to send radiation toward the cancer. Internal radiation therapy uses a radioactive substance sealed in needles, seeds, wires, or catheters that are placed directly into or near the cancer. The way the radiation therapy is given depends on the type and stage of the cancer being treated.

Impotence and urinary problems may occur in men treated with radiation therapy.

### **Hormone therapy**

Hormone therapy is a cancer treatment that removes hormones or blocks their action and stops cancer cells from growing. Hormones are substances produced by glands in the body and circulated in the bloodstream. Some hormones can cause certain cancers to grow. If tests show that the cancer cells have places where hormones can attach (receptors), drugs, surgery, or radiation therapy are used to reduce the production of hormones or block them from working.

Hormone therapy used in the treatment of prostate cancer may include the following:

- Luteinizing hormone-releasing hormone agonists can prevent the testicles from producing testosterone. Examples are leuprolide, goserelin, and buserelin.
- Antiandrogens can block the action of androgens (hormones that promote male sex characteristics). Two examples are flutamide and bicalutamide.
- Drugs that can prevent the adrenal glands from making androgens include ketoconazole and aminoglutethimide.
- Orchiectomy is a surgical procedure to remove one or both testicles, the main source of male hormones, to decrease hormone production.
- Estrogens (hormones that promote female sex characteristics) can prevent the testicles from producing testosterone. However, estrogens are seldom used today in the treatment of prostate cancer because of the risk of serious side effects.

Hot flashes, impaired sexual function, loss of desire for sex, and weakened bones may occur in men treated with hormone therapy.

**New types of treatment are being tested in clinical trials. These include the following:**

### **Cryosurgery**

Cryosurgery is a treatment that uses an instrument to freeze and destroy prostate cancer cells. This type of treatment is also called cryotherapy.

### **Chemotherapy**

Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping the cells from dividing. When chemotherapy is taken by mouth or injected into a vein or muscle, the drugs enter the bloodstream and can reach cancer cells throughout the body (systemic chemotherapy). When chemotherapy is placed directly into the spinal column, an organ, or a body cavity such as the abdomen, the drugs mainly affect cancer cells in those areas (regional chemotherapy). The way the chemotherapy is given depends on the type and stage of the cancer being treated.

### **Biologic therapy**

Biologic therapy is a treatment that uses the patient's immune system to fight cancer. Substances made by the body or made in a laboratory are used to boost, direct, or restore the body's natural defenses against cancer. This type of cancer treatment is also called biotherapy or immunotherapy.

### **High-intensity focused ultrasound**

High-intensity focused ultrasound is a treatment that uses ultrasound (high-energy sound waves) to destroy cancer cells. To treat prostate cancer, an endorectal probe is used to make the sound waves.

This summary section refers to specific treatments under study in clinical trials, but it may not mention every new treatment being studied.

## **Treatment Options by Stage**

### **Stage I Prostate Cancer**

Treatment of stage I prostate cancer may include the following:

- Watchful waiting.
- Radical prostatectomy, usually with pelvic lymphadenectomy, with or without radiation therapy after surgery. It may be possible to remove the prostate without damaging nerves that are necessary for an erection.
- External-beam radiation therapy.
- Implant radiation therapy.
- A clinical trial of high-intensity focused ultrasound.
- A clinical trial of radiation therapy.
- A clinical trial evaluating new treatment options.

This summary section refers to specific treatments under study in clinical trials, but it may not mention

every new treatment being studied.

## **Stage II Prostate Cancer**

Treatment of stage II prostate cancer may include the following:

- Radical prostatectomy, usually with pelvic lymphadenectomy, with or without radiation therapy after surgery. It may be possible to remove the prostate without damaging nerves that are necessary for an erection.
- Watchful waiting.
- External-beam radiation therapy.
- Implant radiation therapy.
- A clinical trial of radiation therapy with or without hormone therapy.
- A clinical trial of ultrasound-guided cryosurgery.
- A clinical trial of hormone therapy followed by radical prostatectomy.
- A clinical trial evaluating new treatment options.

This summary section refers to specific treatments under study in clinical trials, but it may not mention every new treatment being studied.

## **Stage III Prostate Cancer**

Treatment of stage III prostate cancer may include the following:

- External-beam radiation therapy with or without hormone therapy.
- Hormone therapy.
- Radical prostatectomy, usually with pelvic lymphadenectomy, with or without radiation therapy after surgery.
- Watchful waiting.
- Radiation therapy, hormone therapy, or transurethral resection of the prostate as palliative therapy to relieve symptoms caused by the cancer.
- A clinical trial of radiation therapy.
- A clinical trial of ultrasound-guided cryosurgery.
- A clinical trial evaluating new treatment options.

This summary section refers to specific treatments under study in clinical trials, but it may not mention every new treatment being studied.

## **Stage IV Prostate Cancer**

Treatment of stage IV prostate cancer may include the following:

- Hormone therapy.
- External-beam radiation therapy with or without hormone therapy.
- Radiation therapy or transurethral resection of the prostate as palliative therapy to relieve symptoms caused by the cancer.
- Watchful waiting.

- A clinical trial of radical prostatectomy with orchiectomy.

This summary section refers to specific treatments under study in clinical trials, but it may not mention every new treatment being studied.

## Treatment Options for Recurrent Prostate Cancer

Treatment of recurrent prostate cancer may include the following:

- Radiation therapy.
- Prostatectomy for patients initially treated with radiation therapy.
- Hormone therapy.
- Pain medication, external radiation therapy, internal radiation therapy with radioisotopes such as strontium-89, or other treatments as palliative therapy to lessen bone pain.
- A clinical trial of ultrasound-guided cryosurgery.
- A clinical trial of chemotherapy or biological therapy.

This summary section refers to specific treatments under study in clinical trials, but it may not mention every new treatment being studied.

## Glossary Terms

### **abdomen** (AB-do-men)

The area of the body that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs.

### **abdominal**

Having to do with the abdomen, which is the part of the body between the chest and the hips 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.

### **adrenal gland** (uh-DREE-nul...)

A small gland that makes steroid hormones, adrenaline, and noradrenaline. These hormones help control heart rate, blood pressure, and other important body functions. There are two adrenal glands, one on top of each kidney. Also called suprarenal gland.

### **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.

### **anus** (AY-nus)

The opening of the rectum to the outside of the body.

### **benign prostatic hyperplasia** (beh-NINE prah-STA-tik hy-per-PLAY-zhuh)

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 THAYR-uh-pee)

Treatment to stimulate or restore the ability of the immune system to fight cancer, 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.

**blood**

A tissue with red blood cells, white blood cells, platelets, and other substances suspended in fluid called plasma. Blood takes oxygen and nutrients to the tissues, and carries away wastes.

**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.

**buserelin**

An anticancer drug that belongs to the family of drugs called gonadotropin-releasing hormones. In prostate cancer therapy, buserelin blocks the production of testosterone in the testicles.

**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-THAYR-uh-pee)

Treatment with drugs that kill cancer cells.

**clinical trial**

A type of research study that tests how well new medical approaches work in people. These studies test new methods of screening, prevention, diagnosis, or treatment of a disease. Also called a clinical study.

**contrast material**

A dye or other substance that helps show abnormal areas inside the body. It is given by injection into a vein, by enema, or by mouth. Contrast material may be used with x-rays, CT scans, MRI, or other imaging tests.

**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.

**diagnosis**

The process of identifying a disease by the signs and symptoms.

**diagnostic procedure**

A method used to identify a disease.

**digital rectal examination** (DIH-jih-tul REK-tul eg-zam-ih-NAY-shun)

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

**drug**

Any substance, other than food, that is used to prevent, diagnose, treat or relieve symptoms of a disease or abnormal condition. Also refers to a substance that alters mood or body function, or that can be habit-forming or addictive, especially a narcotic.

**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.

**estrogen** (ES-truh-jin)

A type of hormone made by the body that helps develop and maintain female sex characteristics and the growth of long bones. Estrogens can also be made in the laboratory. They may be used as a type of birth control and to treat symptoms of menopause, menstrual disorders, osteoporosis, and other disorders.

**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.

**external-beam radiation** (ray-dee-AY-shun)

Radiation therapy that uses a machine to aim high-energy rays at the cancer. Also called external radiation.

**fluid**

Liquid.

**flutamide** (FLOO-ta-mide)

An anticancer drug that belongs to the family of drugs called antiandrogens.

**gland**

An organ that makes one or more substances, such as hormones, digestive juices, sweat, tears, saliva, or milk. Endocrine glands release the substances directly into the bloodstream. Exocrine glands release the substances into a duct or opening to the inside or outside of the body.

**Gleason score** (GLEE-sun...)

A system of grading prostate cancer tissue based on how it looks 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 tissue is similar to normal prostate tissue and the tumor is less likely to spread; a high Gleason score means the cancer tissue is very different from normal and the tumor is 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.

**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** (HOR-mone THAYR-uh-pee)

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 a certain hormone. Also called

hormonal therapy, hormone treatment, or endocrine therapy.

**hot flash**

A sudden, temporary onset of body warmth, flushing, and sweating (often associated with menopause).

**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.

**impotence**

In medicine, refers to the inability to have an erection of the penis adequate for sexual intercourse. Also called erectile dysfunction.

**incision** (in-SIH-zhun)

A cut made in the body to perform surgery.

**infection**

Invasion and multiplication of germs in the body. Infections can occur in any part of the body and can spread throughout the body. The germs may be bacteria, viruses, yeast, or fungi. They can cause a fever and other problems, depending on where the infection occurs. When the body's natural defense system is strong, it can often fight the germs and prevent infection. Some cancer treatments can weaken the natural defense system.

**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.

**injection**

Use of a syringe and needle to push fluids or drugs into the body; often called a "shot."

**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.

**intestine** (in-TES-tin)

The long, tube-shaped organ in the abdomen that completes the process of digestion. The intestine has two parts, the small intestine and the large intestine. Also called the bowel.

**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.

**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.

**liver**

A large organ located in the upper abdomen. The liver cleanses the blood and aids in digestion by secreting bile.

**lung**

One of a pair of organs in the chest that supplies the body with oxygen, and removes carbon dioxide from the body.

**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.

**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.

**lymphadenectomy**

A surgical procedure in which the lymph nodes are removed and examined to see whether they contain cancer. For a regional lymphadenectomy, some of the lymph nodes in the tumor area are removed; for a radical lymphadenectomy, most or all of the lymph nodes in the tumor area are removed. Also called lymph node dissection.

**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.

**metastatic cancer**

Cancer that has spread from the place in which it started to other parts of the body.

**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 (NMRI).

**orchietomy** (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.

**palliative therapy** (PA-lee-uh-tiv...)

Treatment given to relieve the symptoms and reduce the suffering caused by cancer and other life-threatening diseases. Palliative cancer therapies are given together with other cancer treatments, from the time of diagnosis, through treatment, survivorship, recurrent or advanced disease, and at the end of life.

**pathologist** (pa-THOL-o-jist)

A doctor who identifies diseases by studying cells and tissues under a microscope.

**PDQ**

Physician Data Query. PDQ is an online database developed and maintained by the National Cancer Institute. Designed to make the most current, credible, and accurate cancer information available to health professionals and the public, PDQ contains peer-reviewed summaries on cancer treatment, screening, prevention, genetics, complementary and alternative medicine, and supportive care; a registry of cancer clinical trials from around the world; and directories of physicians, professionals who provide genetics services, and organizations that provide cancer care. Most of this information, and more specific information about PDQ, can be found on the NCI's Web site at <http://www.cancer.gov/cancertopics/pdq>.

**pelvic**

Having to do with the pelvis (the lower part of the abdomen located between the hip bones).

**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.

**perineal prostatectomy** (payr-uh-NEE-ul prah-stuh-TEK-toh-mee)

Surgery to remove the prostate through an incision made between the scrotum and the anus.

**perineum**

The area of the body between the anus and the vulva in females, and between the anus and the scrotum in males.

**prognosis** (prog-NO-sis)

The likely outcome or course of a disease; the chance of recovery or recurrence.

**prostate** (PROS-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 test**

A blood test that measures the level of prostate-specific antigen (PSA), a substance produced by the prostate and some other tissues in the body. Increased levels of PSA may be a sign of prostate cancer.

**prostatectomy** (prah-sta-TEK-toh-mee)

An operation to remove part or all of the prostate. Radical (or total) prostatectomy is the removal of the entire prostate and some of the tissue around it.

**radiation** (ray-dee-AY-shun)

Energy released in the form of particles or electromagnetic waves. Common sources of radiation include radon gas, cosmic rays from outer space, and medical x-rays.

**radiation therapy** (RAY-dee-AY-shun THAYR-uh-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 prostatectomy** (RAD-ih-kul prah-stuh-TEK-toh-mee)

Surgery to remove the entire prostate. The two types of radical prostatectomy are retropubic prostatectomy (surgery through an incision in the wall of the abdomen) and perineal prostatectomy (surgery through an incision between the scrotum and the anus).

**radioactive** (RAY-dee-o-AK-tiv)

Giving off radiation.

**radioactive seed**

A small, radioactive pellet that is placed in or near a tumor. Cancer cells are killed by the energy given off as the radioactive material decays (breaks down).

**radioisotope**

An unstable element that releases radiation as it breaks down. Radioisotopes can be used in imaging tests or as a treatment for cancer.

**receptor**

A molecule inside or on the surface of a cell that binds to a specific substance and causes a specific physiologic effect in the cell.

**rectum**

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

**recur**

To occur again.

**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.

**regional chemotherapy** (REE-juh-nul KEE-moh-THAYR-uh-pee)

Treatment with anticancer drugs directed to a specific area of the body.

**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.

**retropubic prostatectomy** (reh-troh-PYOO-bik prah-stuh-TEK-toh-mee)

Surgery to remove the prostate through an incision made in the wall of the abdomen.

**scan**

A picture of structures inside the body. Scans often used in diagnosing, staging, and monitoring disease include liver scans, bone scans, and computed tomography (CT) or computerized axial tomography (CAT) scans and magnetic resonance imaging (MRI) scans. In liver scanning and bone scanning, radioactive substances that are injected into the bloodstream collect in these organs. A scanner that detects the radiation is used to create pictures. In CT scanning, an x-ray machine linked to a computer is used to produce detailed pictures of organs inside the body. MRI scans use a large magnet connected to a computer to create pictures of areas inside the body.

**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 vesicle** (SEM-in-al VES-ih-kul)

A gland that helps produce semen.

**seminal vesicle biopsy**

The removal of fluid or tissue with a needle from the seminal vesicles for examination under a microscope. The seminal vesicles are glands in the male reproductive tract that produce a part of 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.

**stage**

The extent of a cancer in the body. Staging is usually based on the size of the tumor, whether lymph nodes contain cancer, and whether the cancer has spread from the original site to other parts of the body.

**stage I prostate cancer**

Cancer is found in the prostate only. It cannot be felt during a digital rectal exam and is not visible by imaging. It is usually found accidentally during surgery for other reasons, such as benign prostatic hyperplasia (a condition in which an overgrowth of prostate tissue occurs). Also called stage A1 prostate cancer.

**stage II prostate cancer**

Cancer is more advanced than in stage I, but has not spread outside the prostate. Also called stage A2, stage B1, or stage B2 prostate cancer.

**stage III prostate cancer**

Cancer has spread beyond the outer layer of the prostate to nearby tissues and may be found in the seminal vesicles (glands that help produce semen). Also called stage C prostate cancer.

**stage IV prostate cancer**

Cancer has metastasized (spread) to lymph nodes near or far from the prostate, or to other parts of the body, such as the bladder, rectum, bones, liver, or lungs. Metastatic prostate cancer often spreads to the bones. Also called stage D1 or stage D2 prostate cancer.

**staging** (STAY-jing)

Performing exams and tests to learn the extent of the cancer within the body, especially whether the disease has spread from the original site to other parts of the body. It is important to know the stage of the disease in order to plan the best treatment.

**standard therapy**

In medicine, treatment that experts agree is appropriate, accepted, and widely used. Health care providers are obligated to provide patients with standard therapy. Also called standard of care or best practice.

**stool**

The waste matter discharged in a bowel movement; feces.

**strontium-89**

A radioactive compound that is absorbed by the bone. It is used to treat bone pain associated with prostate cancer.

**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 chemotherapy** (sis-TEH-mik kee-moh-THAYR-uh-pee)

Treatment with anticancer drugs that travel through the blood to 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.

**therapy**

Treatment.

**tissue** (TISH-oo)

A group or layer of cells that work together to perform a specific function.

**transperineal biopsy** (TRANZ-payr-uh-NEE-ul BY-op-see)

A procedure in which a sample of tissue is removed from the prostate for examination under a microscope. The sample is removed with a thin needle that is inserted through the skin between the scrotum and rectum and into the prostate.

**transrectal biopsy** (TRANZ-REK-tul 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** (TRANZ-REK-tul...)

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-thrul 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.

**ultrasound transducer**

A device that produces sound waves that bounce off body tissues and make echoes. The transducer also receives the echoes and sends them to a computer that uses them to create a picture called a sonogram. Transducers (also called probes) come in different shapes and sizes for use in making pictures of different parts of the body. The transducer may be passed over the surface of the body or inserted into an opening such as the rectum or vagina.

**urethra** (yoo-REE-thra)

The tube through which urine leaves the body. It empties urine from the bladder.

**urine** (YOOR-in)

Fluid containing water and waste products. Urine is made by the kidneys, stored in the bladder, and leaves the

body through the urethra.

**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.