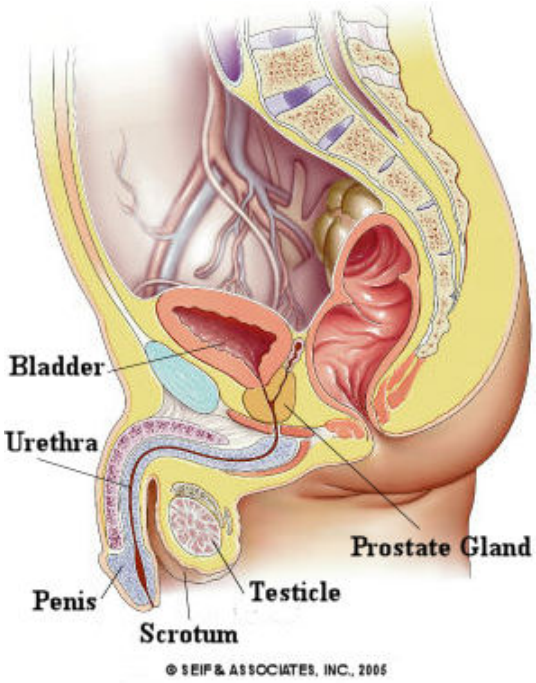
Cancer of the Prostate

The prostate is a male gland that is involved in the production of semen. It is located between the bladder and the rectum. The normal prostate gland is the size of a walnut and surrounds the tube that carries urine from the bladder (*urethra*). Prostate cancer is the abnormal growth of cells in the gland.



Next to skin cancer, prostatic cancer is the most common cancer in men. One out of 6 men will be diagnosed with this in their lifetime. Although the number with this disease is large, the majority of men diagnosed with prostate cancer do not die from it.

CAUSES

Age is the biggest risk factor for this disease. Growing older increases the chances of developing prostate cancer. The second most common risk factor is genetics. That means if a man has a father or brother with prostate cancer then he has twice the risk of developing prostate cancer. Estimations are that 5 to 10 percent of all prostate cancer cases are hereditary.

SYMPTOMS

Most older men suffer from an enlarged prostate gland called BPH. Because prostate cancer occurs in this population the symptoms that a man has with prostate cancer are almost always secondary to the enlarged prostate gland and not directly caused by the cancer. The symptoms listed below (except for the pain in the back hips and thighs) are usually caused by the enlarged prostate gland and do not indicate that you have cancer of the prostate. Prostate cancer is usually found because the doctor is evaluating symptoms below or because a blood test indicates prostate cancer without the symptoms.

- Frequent urination.
- Difficulty starting or stopping urination.
- Inability to urinate.
- Weak or interrupted flow of urine.
- Painful or burning urination.
- Painful ejaculation.
- Blood in urine or semen.
- Persistent pain in lower back, hips, upper thighs.

Symptoms actually caused by the cancer only occur in extremely advanced cases. Therefore, regular exams are especially important.

DIAGNOSIS

Screening

During the last few years screening for prostate cancer by PSA testing has become somewhat controversial. This has created confusion not only for the general public but for some groups of physicians as well.

The American Cancer Society (ACS) found that an annual testing of PSA can lead to unnecessary treatments that do more harm than good. Mass screening of PSA at health fairs is falling out of favor. However, the American Urologic Association (AUA) believes that the ACS may not be placing enough emphasis on individual results, and that testing for PSA can be part of understanding prostate cancer risk when all factors are taken into consideration.

Because of newer testing methods, prostate cancer is being diagnosed at earlier stages in the disease. Several types of screening tests are available:

- Prostate Specific Antigen (PSA)
  - Total PSA
  - Free PSA - PSA that is not attached to a protein in the blood. The higher the percentage of free PSA, the lower the risk of cancer.
  - PSA velocity - how fast the PSA changes.
  - PSA density - how much PSA is present compared to the size of the prostate gland.
- Digital rectal examination (DRE). Your caregiver slides a gloved, lubricated finger into the rectum and feels the part of the prostate that lies next to it. The ACS also recently recommended that a DRE is not recommended as a routine screening test for cancer of the prostate.
- Transrectal ultrasound (a test that uses low volume, high frequency sound waves to produce an electrical "picture" of internal organs on a screen). For prostate screening, the device used to produce the sound waves must be placed inside the rectum so it is close to the prostate gland. This test is not usually painful.

Testing

If there is concern about prostate cancer, your caregiver may ask for tests in addition to those listed above. These could include:

- X-rays.
- CT scan.
- MRI.
- Blood tests other than PSA.
- Urine tests.

The only way to make a final diagnosis of prostatic cancer is to get a tissue sample (*perform a biopsy*). A biopsy is done by putting a fine needle into the prostate. It is guided into position by an ultrasound probe that has been placed into the rectum. Usually 8 to 12 samples are taken samples are taken. This test is not usually done with any anesthesia. This test is not particularly painful. Most people who undergo a biopsy find that the first few biopsies are hardly felt at all. As the number of biopsy specimens are increased a slight burning sensation is described. The specimens are then sent to a pathologist. A pathologist is a specialist who looks at tissues and cells. This expert will look at the sample under a microscope to determine if the tissue is cancerous.

The cancer is also given a Gleason score by the pathologist. This is a system of grading prostate cancer tissue based on how it looks under a microscope. The score indicates how likely it is that a tumor will spread. The pathologist looks for two patterns and gives a number to each pattern. The first pattern represents the majority of the tumor. The second pattern represents the pattern of the smaller amount of the tumor. When you look at the report you will see a number such as Gleason 3+4. These are the two patterns that are added together to give the total score. In this example the total Gleason scores is 7. This means that the tumor is mostly low-grade with some high-grade tumor. A low total Gleason score means the cancer tissue looks more like normal prostate tissue and the tumor is less likely to spread. A high Gleason score means the cancer tissue is very different from normal. This high score means the tumor is more likely to spread.

STAGING

If a diagnosis of cancer has been established by the biopsy, the next step is to stage the cancer. This means it is put in a category based on how far the cancer has spread. This is important for helping your caregivers plan appropriate treatment. Accurate staging may require one or more of the following tests:

Pre-surgery staging tests (Tests done with image machines)

- Radionuclide bone scan: A test to detect any cancer cells in bone.
- MRI (magnetic resonance imaging): An imaging test that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the body.
- CT scan (CAT scan): A test that uses a computer linked to an x-ray machine to make a series of detailed

pictures of areas inside the body, taken from different angles.

- ProstaScint Scan - A test to see if the cancer has spread to other non bone tissues.

Tests that require a procedure:

- Pelvic lymphadenectomy: This is a lymph node biopsy. This biopsy is performed during an open surgical procedure. Most of the time it is done as a routine part of the surgery to remove the prostate.
- Laparoscopic Biopsy - in this case the surgeon makes little tiny holes in the abdominal wall and places long thin instruments with a camera into the area of the lymph nodes to remove some of them.
- Fine needle aspiration - a radiology doctor with special training may insert a long needle through the skin and take a small sample of a lymph node for pathology examination.

The following are the different stages of prostate cancer:
Stage I -- Cancer is found in the prostate only. It cannot be felt during a DRE and is not visible by imaging. It is usually found accidentally, such as during surgery for other prostate problems. The Gleason score is low.
Stage II -- Cancer is more advanced than in stage I but has not spread outside the prostate.
Stage III -- Cancer has spread beyond the outer layer of the prostate to nearby tissues. Cancer may be found in the seminal vesicles.
Stage IV -- Cancer has spread (metastasized) to lymph nodes near or far from the prostate or to other parts of the body. The cancer may have spread to the bladder, rectum, bones, liver, or lungs. Metastatic prostate cancer often spreads to the bones.

TREATMENT

Treatments such as surgery, medications, and radiation may be recommended based on the stage of the cancer and Gleason score. If a cure is not likely, your caregiver may prescribe hormonal treatment or external beam radiation. These can slow the growth of cancer. Your caregiver will help you with these decisions. Unfortunately, as with all cancers, there is nothing simple about the treatment. Many times, it becomes a judgment call that is based upon the most knowledgeable guess.

Once cancer of the prostate has been diagnosed, your caregiver will discuss your treatment with you. Your caregiver will help you decide the best course of treatment. Treatment often depends on your age, health, and other risk factors. The more common methods of treatment are:

- Watchful Waiting: Active Surveillance -- In this type of treatment a decision for treatments such as radiation or surgical treatment is temporarily or perhaps permanently deferred. This decision depends upon the prostate cancer progression and other factors such as: age, personal preferences, and other disease problems. The disease is followed by routine monitoring with PSA tests, digital rectal examinations, possible biopsies and perhaps imaging examinations to include MRIs bone scans CT scans and ultrasounds. The risk is primarily that the time of best opportunity for treating cancer may pass.
- Open surgical -- This involves an operation to remove the prostate. It is accomplished through several different incisions. The most common approach is a horizontal incision just above the pubic hairline. Another less commonly used is through the skin between the anus and scrotum. Your caregiver will discuss which procedure may be best for you. Possible common side effects of surgical treatment are:
  - Impotence.
  - Problems with control of urination.
- Laparoscopic prostatectomy -- 4 to 5 small incisions (1/2 inch) are made in the skin of the abdomen and tiny instruments including tiny cameras are inserted to remove the prostate and lymph nodes.
- da Vinci Robotic Prostatectomy -- The prostate and lymph nodes are removed by surgical instruments that are inserted through tiny incisions in the abdomen wall and connected to a three-dimensional computer to allow the surgeon to manipulate the robotic arms. Magnification allows the surgeon to better perform nerve sparing procedures. This decreases the chance of urine-leaking problems after the surgery.
- Orchiectomy -- this is the removal of the testicles which is done to reduce the male hormone testosterone. This hormone is known to stimulate the growth of prostate cancer. This treatment is used less often now. Occasionally silicone prostheses are placed in the scrotum with this treatment.

- Radiation, External Beam -- This form of radiation aims beams of radiation from outside the body at the prostate. It is often as successful as surgery. It has the advantage of being more gentle than surgery. It is more useful for elderly and those in frail health. The disadvantages are that it is not as quick as surgery. It also causes some damage to surrounding tissue. For example, it can cause inflammation of the bladder and rectal areas. Possible side effects are bowel problems such as diarrhea, stool leakage, and blood in the stool. These problems usually but not always go away in time. Bladder problems including urgency and frequency and occasional leakage of urine. Impotence is also possible. Occasionally fluid buildup in the legs or in the genitals occurs.
- Radiation, Internal -- (brachytherapy) This form of radiation differs from the external beam. Tiny radioactive needles, seeds (in the form of pellets- 40 to100), wires, or catheters are implanted directly into the prostate gland. This is accomplished by ultrasound guidance. It usually requires anesthesia and a combined effort by a radiation oncologist and a urologist. This treatment may not be possible in men with large prostate glands or a prostate gland that has been trimmed down by previous surgery. It can deliver a higher dose of radiation in a localized area. This treatment causes little damage to surrounding tissues. Its usual complications include urgency of urination and frequency of urination. These complications generally subside after about two weeks. Bowel problems urinary problems and impotence may occur but are less likely to develop then the external beam radiation treatment.
- High-intensity Focused Ultrasound -- This treatment uses a type of high-energy sound waves (ultrasound) to destroy cancer cells. To treat prostate cancer, a device is placed inside the rectum and near the prostate (endorectal probe). This probe is used to make the sound waves.
- Cryosurgery -- This is a treatment that uses an instrument to freeze and destroy prostate cancer cells. This procedure is not widely used because of a high-risk of damage to the rectum and urethra tube. In addition there is a significant risk of impotence that is higher than many other treatments.
- Chemotherapy -- Cancer treatment that uses drugs that stop the growth of cancer cells either by killing them or by stopping them from multiplying. It may be used in advanced cancer of the prostate if the disease has spread to other parts of the body. Side effects depend on which chemical is used. Traditionally side effects include:
  - Nausea.
  - Vomiting.
  - Hair loss.
  - Sores in the mouth.
- Hormone Therapy -- (a form of chemotherapy using hormones) In prostate cancer, male sex hormones can cause prostate cancer to grow. This treatment removes hormones or blocks their action and can stop cancer cells from growing. Hormones are substances produced by glands in the body and circulated in the bloodstream. Some side effects include:
  - Loss of sex drive.
  - Weakened bones.
  - Weight gain.
  - Heart disease.
  - Hot flashes.
  - Loss of muscle mass.
  - Erectile dysfunction.
  - Fatigue.
  - Loss of calcium in the bones (osteoporosis).

SUMMARY OF CONSIDERATIONS.

Prostate cancer diagnosis and treatment is a complicated topic. The controversy over whether or not to get a PSA blood test and what to do if the blood test is positive requires an intense consultation with a specialist who treats prostate cancer. Many questions need to be answered and therefore need to be asked. The topics are more likely to be covered by a physician who routinely takes care of patients with prostate cancer. Such questions as how important is my age, how important are my activities in both my personal and professional life, how much time do I have to make a decision for either getting a PSA test, getting a prostate biopsy, and getting definitive

therapy if I have cancer. How likely is my cancer to spread, where the risks and benefits of each possible treatment, how long does each treatment take, what is the expense of each treatment, how much of that expenses covered by an insurance policy, and do I need to get a second opinion? Is my PSA test not being performed because of a general recommendation for the population to save money and to decrease possible side effects or is it being done because my individual circumstances have been totally taken into consideration and in fact I do not need a PSA test at this time? Am I satisfied that all of my questions have been answered based upon complete knowledge by my doctor and by the time spent in providing those answers? Do I understand everything that has been told to me? What about my family and how does my decision to either have or not have a PSA blood test, biopsy, and our other major treatment affect them? Have I been talked into or talked out of having a PSA blood test or biopsy? Am I totally comfortable with my doctor? Am I totally comfortable with whatever outcome occurs if I do or do not have a PSA blood test or biopsy?

HOME CARE INSTRUCTIONS

Care at home will depend upon your specific symptoms and the course of treatment agreed upon between you and your caregiver. There are many ways that the prostate cancer can affect someone. Patients recover in home environments that vary widely. There are also many helpful resources available for each patient. For these reasons, home care must and can be customized for each individual patient.

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