

Prostate Cancer

Prostate cancer is the most common cancer, excluding skin cancers, in American men. The American Cancer Society (ACS) estimates that during 2006 about 234,460 new cases of prostate cancer will be diagnosed in the United States. About 1 man in 6 will be diagnosed with prostate cancer during his lifetime, but only 1 man in 34 will die of this disease. A little over 1.8 million men in the United States are survivors of prostate cancer.

Prostate cancer is a leading cause of cancer death in American men. The American Cancer Society estimates that 27,350 men in the United States will die of prostate cancer during 2006. Prostate cancer accounts for about 9% of cancer-related deaths in men.

Among men diagnosed with prostate cancer, nearly 100% survive at least 5 years, 93% survive at least 10 years, and 77% survive at least 15 years. These figures include all stages and grades of prostate cancer. The results are better for men whose cancer is discovered at an early stage. A recent review of death rates in men with localized prostate cancer found that they had the nearly the same 5- and 10-year survival as men without prostate cancer.

More than 90% of all prostate cancers are found in the local and regional stages (local means it is still confined to the prostate; regional means it has spread from the prostate to nearby areas, but not to distant sites such as bone). The 5-year relative survival rate for all of these men is nearly 100%.

Of the men whose prostate cancers have already spread to distant parts of the body at the time of diagnosis, about 34% will survive at least 5 years.

Five-year and 10-year survival rates refer to the percentage of men who live at least 5 or 10 years after their prostate cancer is first diagnosed. Relative (also known as disease-specific) survival rates exclude patients dying of other diseases. This means that anyone who died of another cause, such as heart disease, is not counted. Because prostate cancer usually occurs in older men who often have other health problems, relative survival rates are generally used to produce a standard way of discussing prognosis (outlook for survival).

Unfortunately, it is impossible to have completely up-to-date survival figures. To realistically measure 10-year survival rates, we must have records of patients diagnosed at least 13 years ago. We need 10 years of follow-up plus the time it takes to assemble the data.

Modern methods of detection and treatment now mean that prostate cancers are detected earlier and treated more effectively, which has led to a yearly drop in death rate of about 3.5% in recent years. This means that if you are diagnosed this year, your outlook is probably better than the numbers above.

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Anatomy and Function

The prostate is a small, walnut-sized gland in men. It is located below the bladder and surrounds the upper portion of the urethra. The prostate gland lies in front of the rectum, and its posterior surface can be felt during a rectal examination. The function of the prostate is to secrete a fluid that makes up part of the semen.

Causes and Risks

The exact cause of prostate cancer is not known, however there are certain risk factors that are linked to the disease. While all men are at risk for prostate cancer, the factors listed below can increase the chances of a man having the disease.

- * Age —the chance of having prostate cancer increases rapidly after age 50. About two thirds of all prostate cancers are diagnosed in men over the age of 65.

- * Race — prostate cancer occurs about 60% more often in African-American men than in white American men. Compared with men of other races, African-American men are more likely to be diagnosed at an advanced stage. African-American men are more than twice as likely to die of prostate cancer as white men. Prostate cancer occurs less frequently in Asian men than in whites. Hispanic men develop prostate cancer at similar rates as white men.

- * Nationality — prostate cancer is most common in North America and northwestern Europe. It is less common in Asia, Africa, Central America, and South America.

- * Diet — men who eat a lot of red meat or have many high-fat dairy products in their diet seem to have a greater chance of getting prostate cancer. These men also tend to eat fewer fruits and vegetables. Doctors are not sure which of these factors causes the risk to go up.

- * Exercise — getting enough exercise and keeping a healthy weight may help reduce prostate cancer risk.

- * Family History — prostate cancer seems to run in some families, suggesting an inherited or genetic factor. Having a father or brother with prostate cancer more than doubles a man's risk of developing this disease. (The risk is higher for men with an affected brother than for those with an affected father.) The risk is much higher for men with several affected relatives, particularly if their relatives were young at the time of diagnosis.

- * Vasectomy — some earlier studies suggested that men who have had a vasectomy (surgery to make men infertile) may have a slightly increased risk for prostate cancer, but this link has not been consistently found. Among the studies that noticed an increase in risk, some found this risk to be highest in men who were younger than 35 when they had a vasectomy. Research to resolve this issue is still in progress. However, most recent studies have not found any increased risk among men who have had this operation, and fear of an increased risk of developing prostate cancer should not be a reason to avoid a vasectomy.

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Symptoms

In its early stages, prostate cancer often causes no symptoms. Problems with urinating could be a sign of prostate cancer, but more often this problem is caused by a less serious disease known as Benign Prostatic Hyperplasia (BPH).

Symptoms of advanced prostate cancer include the following:

- * Trouble having or keeping an erection (impotence)
- * Blood in the urine
- * Pain in the pelvis, spine hips, or ribs

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Diagnosis

Currently, digital rectal examination (DRE) and Prostate Specific Antigen (PSA) tests are used to detect prostate cancer. Screening guidelines for prostate cancer generally recommend that all men over the age of 50 undergo annual DRE and PSA testing. Screening should occur earlier, at age 40 to 45, in those who are at a higher risk for prostate cancer such as African-American men or those with a family history of prostate cancer.

Digital Rectal Exam (DRE): A DRE is a simple screening technique in which a doctor inserts a gloved, lubricated finger into the rectum to feel the size, contour and consistency of the prostate. The prostate should feel soft, smooth, and even. The doctor examines for lumps or hard, irregular areas of the prostate that may indicate the presence of prostate cancer. When an abnormality is detected on DRE, a prostate biopsy should be performed to rule out prostate cancer, even if the PSA is normal.

Prostate Specific Antigen (PSA): Prostate-specific antigen (PSA) is a substance made by the normal prostate gland. Although PSA is mostly found in semen, a small amount is also present in the blood. Most men have levels under 4 ng/mL of blood.

When prostate cancer develops, the PSA level usually goes above 4. If your level is in the borderline range between 4 and 10, you have about a 25% chance of having prostate cancer. If it is more than 10, your chance of having prostate cancer is over 50% and increases further as your PSA level increases. But it is important to remember that about 15% of men with a PSA below 4 will have prostate cancer on biopsy.

Your PSA level can also be affected by other factors:

- * It increases with non-cancerous enlargement of the prostate (called benign prostatic hyperplasia, or BPH), something many men have as they grow older.
- * It can also increase with prostatitis, an infection or inflammation of the prostate gland.

* Your PSA will also normally go up slowly as you age, even if you have no prostate abnormality.

* Ejaculation can cause a temporary increase in blood PSA levels, so some doctors will suggest that men abstain from ejaculation for 2 days before testing.

* Some medicines may affect blood PSA levels. You should tell your doctor if you are taking finasteride (Proscar or Propecia) or dutasteride (Avodart), as these medicines may falsely lower PSA levels and require the doctor to adjust the reading.

* Herbal preparations may also affect blood PSA levels. Herbal mixtures that are dietary supplements marketed "for prostate health" may affect PSA levels. For example, they could potentially mask an elevated PSA level, which is why it is important to let your doctor know if you are taking any type of supplement. Saw palmetto (an herb used by some men to treat BPH) does not seem to interfere with the measurement of PSA.

If your PSA level is high, your doctor may recommend a prostate biopsy to determine if you have cancer. Before doing that, however, there are some new types of PSA tests that might help determine if you need a prostate biopsy.

Not all doctors agree on how to use these additional PSA tests. If your PSA test result is not normal, ask your doctor to discuss your cancer risk and your need for further tests.

* Percent-free PSA: PSA occurs in 2 major forms in the blood. One is complexed (attached) to blood proteins and the other circulates free (unattached). The percent-free PSA test indicates how much PSA circulates free compared to the total PSA level. The percentage of free PSA is lower in men who have prostate cancer than in men who do not. If your PSA results are in the borderline range (4-10 ng/mL), a low percent-free PSA (less than 10%) means that your likelihood of having prostate cancer is about 50% and that you should probably have a biopsy. In fact, many doctors recommend biopsies for men whose percent-free PSA is 25% or less. A recent study found that if men with borderline PSA results had prostate biopsies only when their percent-free PSA was 25% or less, about 20% of unnecessary prostate biopsies could be avoided, and about 95% of cancers would still be detected. Although this test is widely used, not all doctors agree that 25% is the best "cutoff point" to decide on a biopsy.

* PSA velocity: The PSA velocity is not a separate test. It is the change in PSA values over time. Even when the total PSA value isn't over 4 ng/mL, a high PSA velocity suggests that cancer may be present and a biopsy should be considered. This can be useful if you are having the PSA test every year. If it goes up faster than 0.75 ng/mL per year (for example, if values went from 2 to 2.8 to 3.6 over the course of 2 years), it is considered high, and a biopsy should be considered. Most doctors believe that in order to be valid, the PSA velocity should be measured over a minimum of 18 months.

* PSA density: The PSA density (PSAD) is used for men with large prostate glands. The doctor determines the volume of the prostate gland with transrectal ultrasound and divides the PSA number by the prostate volume. A higher PSA density (PSAD) indicates greater likelihood of cancer. PSA density has not been that useful. The percent-free PSA test has thus far been shown to be more accurate.

* Age-specific PSA ranges: A PSA result within the borderline range might be very worrisome in a 50-year-old man but cause less concern in an 80-year-old man. It is

known that PSA levels are normally higher in older men than in younger men, even in the absence of cancer. For this reason, some doctors have suggested comparing PSA results with results from other men of the same age. But because the usefulness of age-specific PSA ranges is not well proven, the manufacturers of the PSA tests, most doctors and professional organizations do not recommend their use at this time.

Transrectal Ultrasound (TRUS): Transrectal ultrasound (TRUS) uses sound waves to make an image of the prostate on a video screen. When a small probe is placed in the rectum, sound waves enter the prostate and create echoes that are picked up by the probe. A computer turns the pattern of echoes into a picture.

You might feel some pressure when the TRUS probe is placed in your rectum. The procedure takes only a few minutes and is done in a doctor's office or outpatient clinic.

TRUS is usually not recommended as a routine test by itself to detect prostate cancer because it doesn't often spot early cancer. Instead, it is most commonly used during a prostate biopsy. TRUS is used to guide the biopsy needle into exactly the right area of the prostate.

TRUS is useful in other situations as well. It can be used to measure the size of the prostate gland, which can help determine the PSA density and may also affect which treatment options a man has. It is also used as a guide during some forms of treatment, such as cryosurgery.

Biopsy: The DRE and PSA cannot diagnose prostate cancer. Abnormal results of a DRE or PSA only indicate that further testing is needed. If one or both of these tests are abnormal a prostate biopsy should be considered to rule out the presence of prostate cancer. A biopsy is a procedure in which the doctor uses transrectal ultrasound (TRUS) to view and guide a needle into the prostate to take small samples of tissue from various areas. These tissues are then examined for the presence of cancer. A biopsy is the only way to confirm or diagnose the presence of prostate cancer.

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Cancer Grading and Staging

The Gleason Grading System is used to evaluate or "grade" prostate cancer cells obtained by needle biopsy. The cells are assigned a number between 1 and 5. Nearly normal cells are Grade 1 and the most abnormal are Grade 5. Then the grades of the two most common cell patterns are added together to determine the Gleason score. Gleason scores range from 2 to 10. Scores of 2 to 4 indicate that the cells are well differentiated, meaning the tissue is not too abnormal; 5 to 7 moderately differentiated; 8 to 10 poorly differentiated. Higher scores suggest aggressive tumors that likely require aggressive treatment.

Once prostate cancer is diagnosed, additional tests such as a radionuclide bone scan, CT scan or MRI, may be required to accurately stage the cancer and determine whether it has spread to the lymph nodes and/or the bones.

The most commonly used system for staging prostate cancer is the TNM Systems developed by The American Joint Committee on Cancer.