

Understanding Prostate Cancer



Erlanger Urology

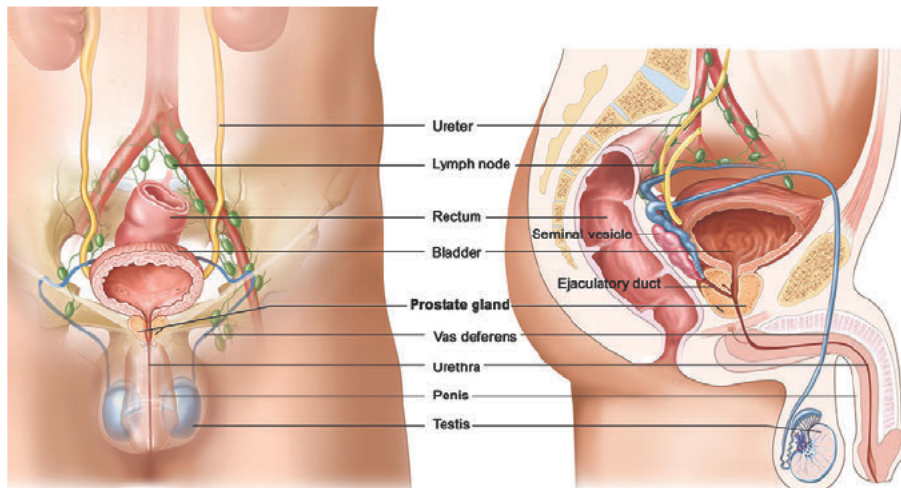
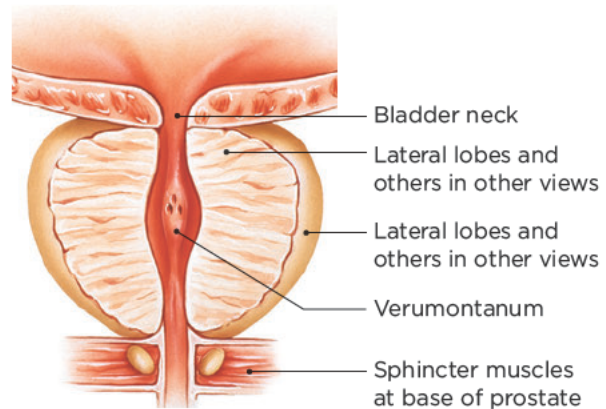
About the Prostate

The prostate is a walnut sized gland located in front of the rectum and underneath the urinary bladder. It is found only in men.

The prostate's job is to make some of the fluid that protects and nourishes sperm cells in semen. Just behind the prostate gland are the seminal vesicles that make most of the fluid for semen.

The urethra, which is the tube that carries urine and semen out of the body through the penis, runs through the prostate. Nerve and hormonal influences control the secretory and muscular functions of the prostate.

Prostate (front view)



Resource illustration above: "Urethral Cancer Treatment." National Cancer Institute. N.p., n.d. Web. 12 July 2017. <https://www.cancer.gov/types/urethral/patient/urethral_treatment_pdq>.

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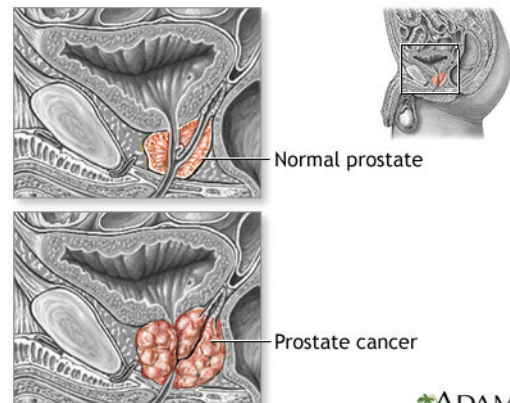
What is Prostate Cancer?

Several types of cells are found in the prostate, but over 99% of prostate cancers develop from the gland cells. Gland cells make the prostate fluid that is added to the semen. The medical term for a cancer that starts in gland cells is adenocarcinoma.

Other types of cancer can also start in the prostate gland, including sarcomas, small cell carcinomas, and transitional cell carcinomas. But because these other types of prostate cancer are so rare, if you have prostate cancer it is almost certain to be an adenocarcinoma. **The rest of this document refers only to prostate adenocarcinoma.**

Some prostate cancers can grow and spread quickly, but most of them grow slowly. In fact, autopsy studies show that many older men (and even some younger men) who died of other diseases also had prostate cancer that never affected them during their lives. In these studies, 70% to 90% of the men had cancer in their prostate by age 80, but in many cases neither they nor their doctors even knew they had it.

Prostate carcinoma is the most common malignant tumor in men. Unlike Benign Prostatic Hyperplasia (BPH), prostate cancer not only enlarges but also metastasizes (spreads) to other parts of the body through lymphatic and venous channels.



Staging

In order to plan treatment, the physician must determine the stage of the disease.

The stage is based on the size and spread of the tumor; the higher the stage, the more advanced the cancer. To determine if the cancer has spread, imaging tests such as a bone scan, CT scan or MRI may be performed. Recurrent cancer is cancer that has come back after a period of being undetectable.

Stage 1

The cancer is not found during a digital rectal exam but is found when doing a biopsy for increased PSA or surgery for another reason. It is located only in the prostate.

Stage 2

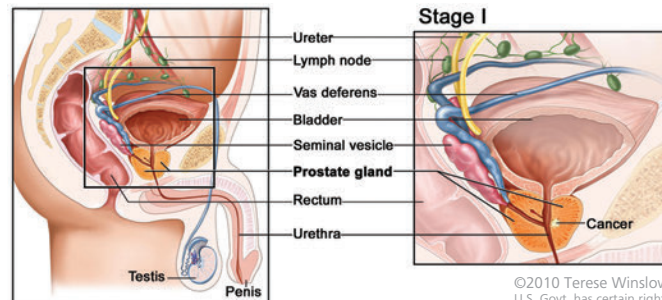
The cancer can be felt on digital rectal exam but has not yet spread outside the prostate.

Stage 3

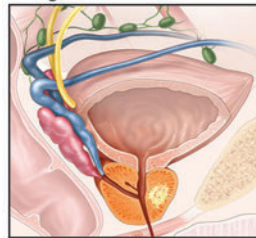
The cancer has spread outside the prostate, perhaps to the seminal vesicles, but not the lymph nodes.

Stage 4

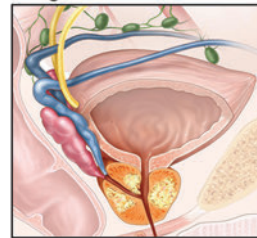
The Cancer may have spread to nearby muscles, organs, lymph nodes or other parts of the body.



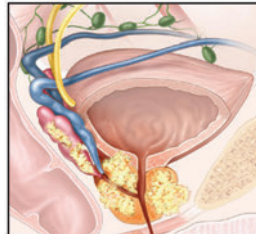
Stage IIA



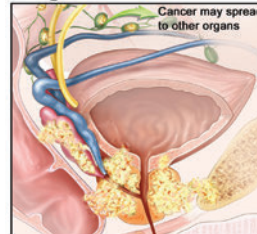
Stage IIB



Stage III



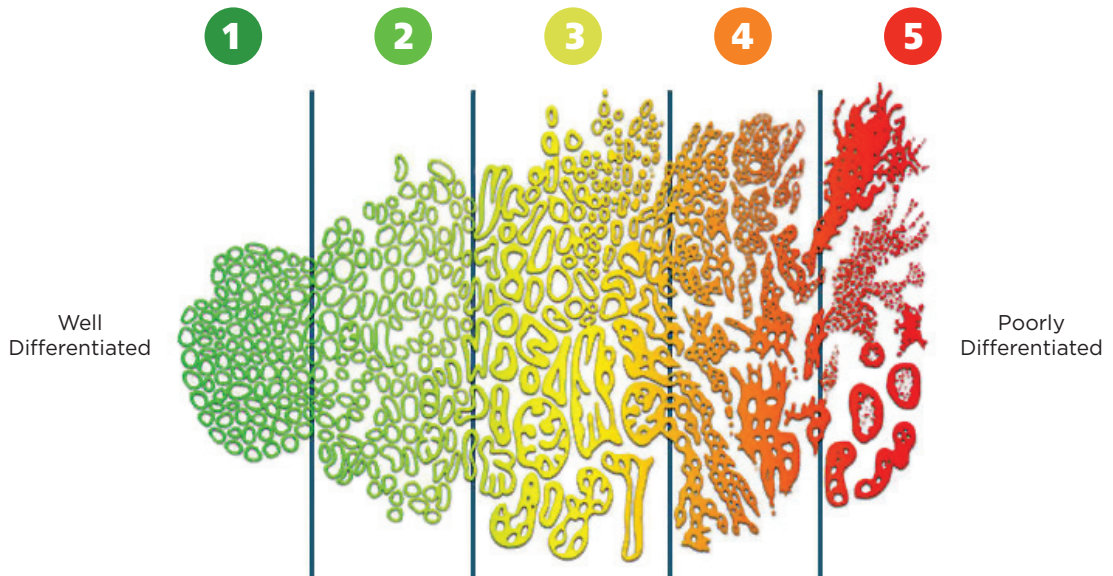
Stage IV



Gleason Pathologic Scoring System

If cancer is not found, medicine to reduce the symptoms caused by an enlarged prostate may be suggested. If cancer is found, the tumor(s) will be graded on the aggressiveness of the disease - how fast the cancer will grow and spread. One system of grading is the Gleason grade, which ranges from 1 to 5. The two most common histological patterns are added together to get a Gleason score between 2 and 10. A lower score indicates a less aggressive cancer, and a higher score indicates a more aggressive cancer.

Histological Patterns



Risk Factors

The exact cause of prostate cancer is not known. Below are some factors, which research has shown can increase a person's risk of developing prostate cancer.

- **Age:** The risk of prostate cancer increases with age.
- **Family History:** The risk of prostate cancer increases if a close male family member (father or brother) has had the disease.
- **Race or Ethnicity:** African American men are more likely to develop prostate cancer.
- **Geographic Location:** There is a higher incidence of prostate cancer in men residing in North America, Northwest Europe and Australia; there is a lower incidence in men residing in Asia and in some developing countries.
- **Diet:** A diet high in fat and red meat may increase a man's risk of developing prostate cancer. Although the data is limited, eating cruciferous vegetables (such as broccoli), tomatoes and soybeans may decrease the risk of this disease.

Signs and Symptoms

Many men with prostate cancer do not experience any symptoms when they are diagnosed. While the symptoms listed below may be due to prostate cancer, they can also be associated with other, non-cancerous conditions.

- Erection difficulties
- Blood in semen
- Pain in lower back, hips, upper thighs
- Urinary problems, which can include:
 - Difficulties starting or stopping the flow of urine
 - Urine flow that starts and stops
 - Needing to urinate often, especially at night
 - Weak urine flow
 - Pain or burning sensation during urination
 - Blood in the urine



Tests

Diagnostic Tests

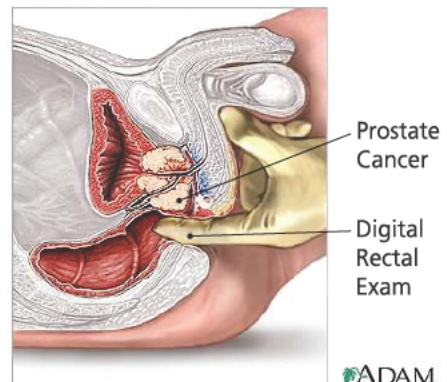
Depending on the results of the screening test(s), the physician will perform additional diagnostic tests, which may include:

- **Transrectal Ultrasound:** A probe is inserted into a man's rectum to check for abnormal areas.
- **Transrectal Biopsy:** By inserting a needle through the rectum to the prostate, tissue is removed to look for cancer cells.

Screening Tests

Screening refers to testing to find a disease such as cancer in people who do not have symptoms of that disease. For some types of cancer, screening can help find cancers in an early stage when they are more easily cured. Prostate cancer can often be found early by testing the amount of prostate-specific antigen (PSA) in the blood. Another way to find prostate cancer is the digital rectal exam (DRE).

- **Blood test for Prostate Specific Antigen (PSA):** Prostate-specific antigen (PSA) is a substance made by cells in the prostate gland (it is made by normal cells and cancer cells). Although PSA is mostly found in semen, a small amount is also found in the blood. Most healthy men have levels under 4 nanograms per milliliter (ng/mL) of blood. The chance of having prostate cancer goes up as the PSA level goes up. When the cancer develops, the PSA level usually goes above 4. Still, a level below 4 does not mean that cancer isn't present – about 15% of men with a PSA below 4 will have prostate cancer on biopsy. Men with a PSA level in the borderline range between 3 and 10, have about a 1 in 4 chance of having prostate cancer. If the PSA is more than 10, the chance of having prostate cancer is over 50%.
- **Digital rectal exam (DRE):** For a DRE, a doctor inserts a gloved finger into the rectum to feel for any bumps or hard areas on the prostate that might be cancer. The prostate gland is found just in front of the rectum, most cancer begins in the back part of the gland, which can be felt during a rectal exam. This exam is uncomfortable, but it isn't painful and only takes a short time.



Treatment

There are several ways to treat prostate cancer, therefore a combination of treatments may be recommended by the physician. Treatment depends on a number of factors, such as the prostate-specific antigen (PSA) level, the Gleason score, which indicates how aggressive the cancer is, the spread (stage) of the cancer, and the age, the symptoms and the general health of the patient.

Treatment options include active surveillance, surgery, radiation therapy, hormone therapy, and chemotherapy.

- **Active surveillance (also called “watchful waiting”):** Prostate cancer can progress slowly in some cases, and the risk or possible side effects of the treatment options may outweigh the benefits. Hence, the physician may recommend close monitoring of the health of the patient rather than initiate treatment. If the cancer progresses or symptoms occur, then the above treatment options may be considered.
- **Surgery:** Procedure can include the removal of all of the prostate gland or part of it. Cryotherapy is minimally invasive and uses controlled freeze and thaw cycles to destroy cancer cells.
- **Radiation therapy:** Radiation treatment can be delivered externally, using high-energy rays from a machine directed at the target area of the body to kill cancer cells, or internally, from small seeds implanted inside the prostate tissue. The latter facilitates the use of a higher total dose of radiation to treat a smaller area over a shorter duration of time than that possible with external beam radiotherapy.

For patients with early or localized prostate cancer, active surveillance, radiotherapy or surgery is the treatment of choice, depending on risk of recurrence and expected survival.

- **Hormone Therapy:** Hormone therapy either inhibits the action or blocks the production of male sex hormones that can stimulate the growth of cancer cells. Hormonal control can be achieved by surgical castration or by medical castration, using hormonal drug therapy.
- **Chemotherapy:** Chemotherapy is a general term for treatments that use chemical agents (drugs) to kill cancer cells. Many different kinds of drugs are used, either alone or in combination to treat different cancers, depending on the type and extent of the cancer.

ERLANGER UROLOGY

Three Convenient Locations

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