

TENNESSEE DEPARTMENT OF HEALTH

**PROSTATE CANCER FACTS & FIGURES,
TENNESSEE, 2002-2006**

OFFICE OF POLICY PLANNING & ASSESSMENT

Office of Cancer Surveillance

Tennessee Cancer Registry

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PROSTATE CANCER FACTS & FIGURES, TENNESSEE, 2002-2006

What Is Prostate Cancer?

The prostate

The prostate is a gland found only in men. As shown in the picture below, the prostate is just below the bladder and in front of the rectum. It is about the size of a walnut. The tube that carries urine (the urethra) runs through the prostate. The prostate contains cells that make some of the fluid (semen) that protects and nourishes the sperm.

The prostate begins to develop before birth and keeps on growing until a man reaches adulthood. Male hormones (called androgens) cause this growth. If male hormone levels are low, the prostate gland will not grow to full size. In older men, though, the part of the prostate around the urethra may keep on growing. This causes BPH (benign prostatic hyperplasia) which can result in problems passing urine. BPH is a problem that must be treated, but it is not cancer.

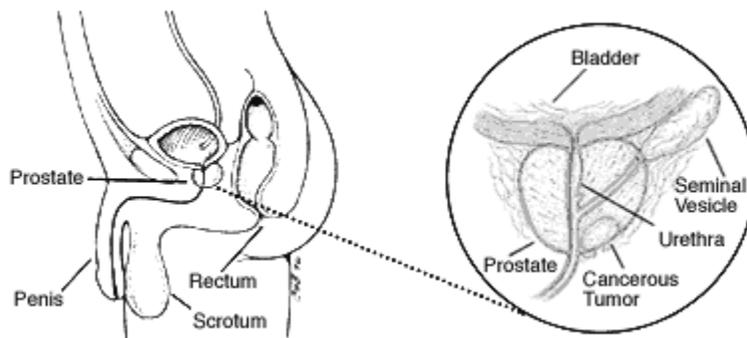


Image courtesy of American Cancer Society

Prostate cancer

There are several cell types in the prostate, but nearly all prostate cancers start in the gland cells. This kind of cancer is known as adenocarcinoma. The rest of the information here refers only to prostate adenocarcinoma.

Most of the time, prostate cancer grows slowly. Autopsy studies show that many older men (and even younger men) who died of other diseases also had prostate cancer that never caused a problem during their lives. These studies showed that as many as 7 to 9 out of 10 men had prostate cancer by age 80. But neither they nor their doctors even knew they had it.

Pre-cancerous changes of the prostate

Some doctors believe that prostate cancer begins with very small changes in the size and shape of the prostate gland cells. These changes are known as PIN (prostatic intraepithelial neoplasia). Almost half of all men have PIN by the time they reach 50. In PIN, there are changes in how the prostate gland cells look under the microscope, but the cells are basically still in place -- they don't look like they've gone into other parts of the prostate (like cancer cells would). These changes can be either low-grade (almost normal) or high-grade (abnormal).

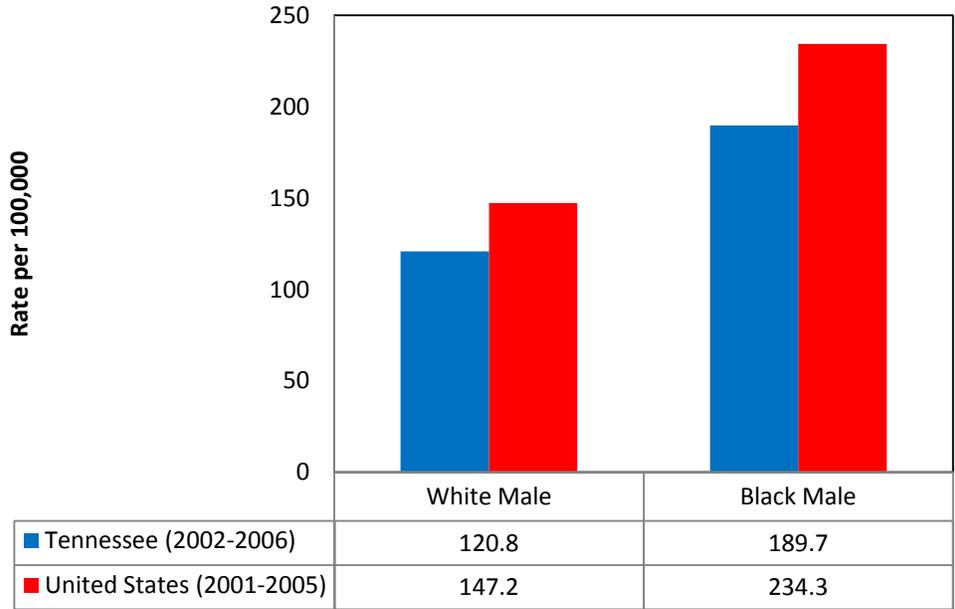
If you have had a prostate biopsy that showed high-grade PIN, there is a greater chance that there are cancer cells in your prostate. For this reason, you will be watched carefully and may need another biopsy.

How Many Tennessee Men Get Prostate Cancer?

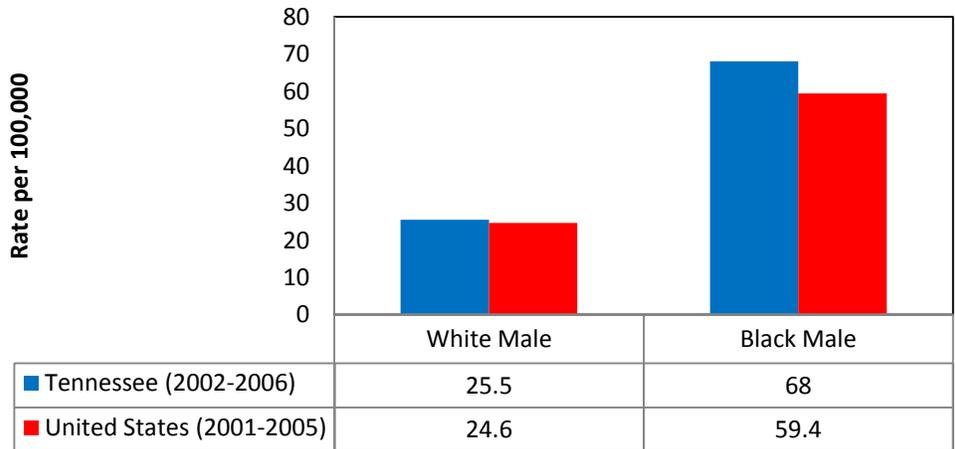
Prostate cancer is the most common type of cancer found in American men, other than skin cancer. Tennessee Cancer Registry suggests there will be above 4,000 new cases of prostate cancer in Tennessee in 2006. There will also be about 600 deaths in Tennessee in 2006 due to prostate cancer. Prostate cancer is the second leading cause of cancer death in men. Lung cancer is the first. One man in 6 will get prostate cancer during his lifetime, and 1 man in 35 will die of this disease. More than 2 million men in the United States who have had prostate cancer at some point are still alive today. The death rate for prostate cancer is going down, and the disease is being found earlier as well.

Overall, prostate cancer incidence and mortality rates are higher in blacks than whites. The incidence rate of prostate cancer is lower in Tennessee compared to the nation's rate. However, the mortality rate of prostate cancer for Tennessee blacks is higher than the nation's rate.

**Prostate Cancer Incidence Rates
Tennessee and United States, by race**



**Prostate Cancer Mortality Rates
Tennessee and United States, by race**



What Causes Prostate Cancer?

Prostate cancer is caused by changes in the DNA of a prostate cancer cell. DNA makes up our genes, which control how cells behave. DNA is inherited from our parents. A small percentage (about 5% to 10%) of prostate cancers is linked to these inherited changes. Prostate cancer may also be linked to higher levels of certain hormones. High levels of male hormones (androgens) may play a part in prostate cancer risk in some men. Some researchers have noted that men with high levels of a hormone called insulin-like growth factor-1 (IGF-1) are more likely to get prostate cancer, too. But others have not found such a link. More research is needed in this area.

While we do not yet know exactly what causes prostate cancer, we do know that certain risk factors are linked to the disease. A risk factor is anything that increases a person's chance of getting a disease. Different cancers have different risk factors. Some risk factors, such as smoking, can be controlled. Others, like a person's age or family history, can't be changed.

But risk factors don't tell us everything. Many people with one or more risk factors never get cancer, while others with this disease may have had no known risk factors. For some of these factors, the link to prostate cancer risk is not yet clear.

Risk factors for prostate cancer

Age: Age is the strongest risk factor for prostate cancer. The chance of getting prostate cancer goes up quickly after a man reaches age 50. Almost 2 out of every 3 prostate cancers are found in men over the age of 65.

Race: For unknown reasons, prostate cancer is more common among African-American men than among men of other races. African-American men are also more likely to have a more advanced disease when it is found and are more likely to die of the disease. Prostate cancer occurs less often in Asian-American and Hispanic/Latino men than in non-Hispanic whites. The reasons for these racial and ethnic differences are not clear, though migration studies support a conclusion that environmental/lifestyle factors are a key to this disparity. For example, Chinese men who emigrate to the U.S. experience significantly higher rates of prostate cancer compared with Chinese men living in China.

Nationality: Prostate cancer is most common in North America, northwestern Europe, and a few other places. It is less common in Asia, Africa, Central and South America. The reasons for this are not clear. More screening in some developed countries likely

accounts for at least part of this difference, but other factors are likely to be important, too.

Family history: Prostate cancer seems to run in some families. Men with close family members (father or brother) who have had prostate cancer are more likely to get it themselves, especially if their relatives were young when they got the disease. This however may not be completely due to genetic factors but rather to a shared lifestyle and/or environment.

Genes: Scientists have found several inherited genes that seem to raise prostate cancer risk, but they probably account for only a small number of cases overall. Genetic testing for most of these genes is not yet available, and more study is needed in this area.

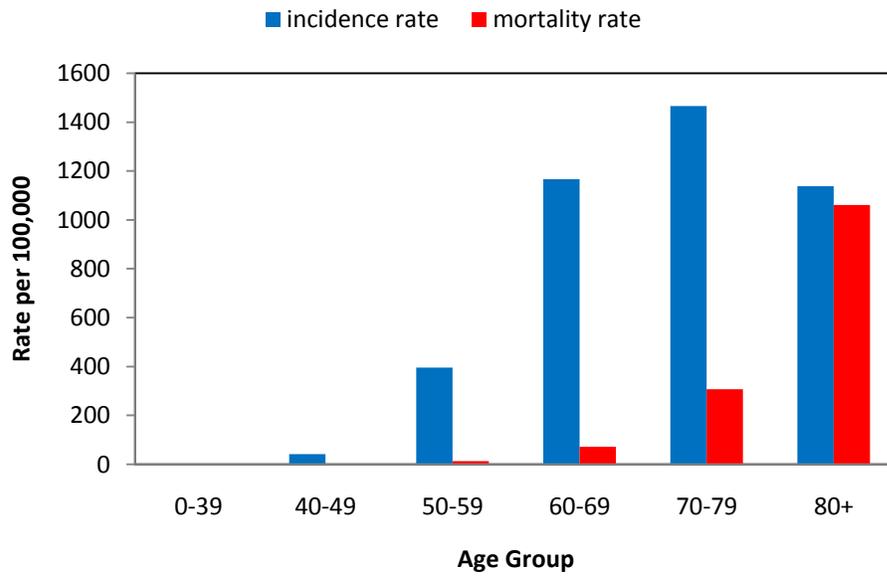
Diet: The exact role of diet in prostate cancer is not clear, but several different factors have been studied. Men who eat a lot of red meat or high-fat dairy products seem to have a greater chance of getting prostate cancer. These men also tend to eat fewer fruits and vegetables. Scientists are not sure which of these factors causes the risk to go up.

Obesity: Most studies have not found that being obese (having a high amount of extra body fat) is linked with a higher risk of getting prostate cancer. Some, but not all, studies have found that obese men may be at greater risk for having more advanced prostate cancer and of dying from prostate cancer.

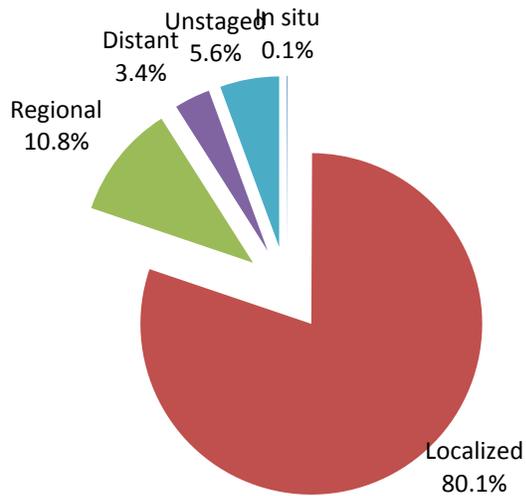
Exercise: Exercise has not been shown to reduce prostate cancer risk in most studies. But some studies have found that high levels of physical activity, particularly in older men, may lower the risk of advanced prostate cancer. More research in this area is needed.

Infection and inflammation of the prostate: Some studies have suggested that prostatitis (inflammation of the prostate gland) may be linked to an increased risk of prostate cancer, but other studies have not found such a link. Some researchers have also looked at whether sexually transmitted infections might increase the risk of prostate cancer. So far, studies have not agreed, and no firm conclusions have been reached.

Tennessee Prostate Cancer Incidence and Mortality by Age Group, 2002-2006



Prostate Cancer by Stage, Tennessee, 2002-2006



Can Prostate Cancer Be Prevented?

Because we don't know the exact cause of prostate cancer, it is difficult to assess the effect of preventive factors on prostate cancer development. But it is clear that some cases of prostate cancer might be prevented.

Diet

While the results of research studies are not yet clear, you may be able to reduce your risk of prostate cancer by changing the way you eat. The American Cancer Society suggests eating less red meat and fat and eating more vegetables, fruits, and whole grains. Eat 5 or more servings of fruits and vegetables each day. These guidelines give you a healthy way to eat that may help lower your risk for some types of cancer, as well as other diseases.

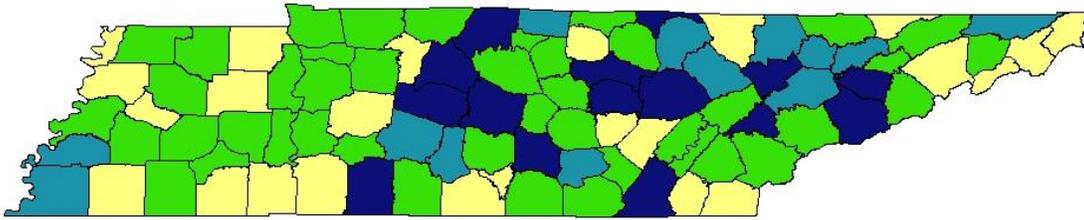
Tomatoes, pink grapefruit, and watermelon are rich in substances called lycopenes. Lycopenes help prevent damage to DNA and may help lower prostate cancer risk. Research on this is still going on.

Some studies suggest that taking vitamin E daily may lower the risk of prostate cancer. But others have found that vitamin E has no impact on cancer risk and might raise the risk for some kinds of heart disease. Selenium, a mineral, may also lower risk. A large study was done to see if vitamin E or selenium lowers prostate cancer risk. After about 5 years of use, the results showed that neither one was found to lower prostate cancer risk.

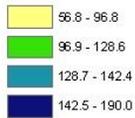
On the other hand, vitamin A (beta-carotene) supplements may actually increase prostate cancer risk. Before starting any vitamins or other supplements, you should talk with your doctor.

How Does Prostate Cancer Vary By Region?

**Prostate Cancer Incidence Rates
by County, Tennessee, All Races, Males, 2002-2006**



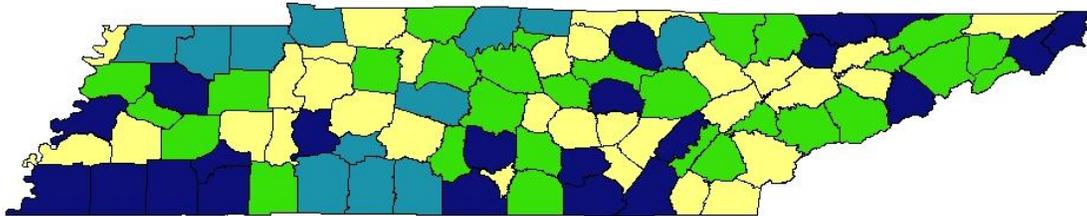
Prostate Cancer Age-adjusted Incidence Rate



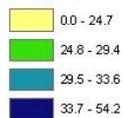
Tennessee Prostate Cancer Incidence Rate (2002-2006): 128.6 per 100,000
U.S. Prostate Cancer Incidence Rate (2005): 142.4 per 100,000

* Five-year average annual rate per 100,000 Tennessee males and females, age-adjusted to the 2000 U.S. standard population
* U.S. rate is from U.S. Cancer Statistics 2005 Incidence and Mortality

Prostate Cancer Mortality Rates
by County, Tennessee, All Races, Males, 2002-2006



Prostate Cancer Age-adjusted Mortality Rate



Tennessee Prostate Cancer Mortality Rate (2002-2006): 29.4 per 100,000
U.S. Prostate Cancer Mortality Rate (2005): 24.7 per 100,000

* Five-year average annual rate per 100,000 Tennessee males and females, age-adjusted to the 2000 U.S. standard population
* U.S. rate is from U.S. Cancer Statistics 2005 Incidence and Mortality

Where Can I Find Out More About Prostate Cancer?

You can learn more about prostate cancer from the following organizations:

American Cancer Society

Telephone: 1-800-ACS-2345

Internet Address: <http://www.cancer.org>

National Cancer Institute, Cancer Information Service

Telephone: 1-800-4-CANCER

Internet Address: <http://www.cancer.gov>

Technical Notes

Data sources:

The primary source of data on cancer incidence is medical records. Staff at health care facilities abstract data from patients' medical records, enter it into the facility's own cancer registry if it has one, and then send the data to the state registry. The Tennessee Cancer Registry (TCR) collects data using uniform data items and codes as documented by North American Association of Central Cancer Registries (NAACCR). Information on primary site and histology was coded according to the *International Classification of Diseases for Oncology, Third Edition (ICD-O-3)*, and categorized according to the revised SEER (stands for the Surveillance, Epidemiology and End Results program of the National Cancer Institute (NCI)) recodes dated January 27, 2003, which define standard groupings of primary cancer sites.

Cancer mortality statistics in this report are based on information from all death certificates filed in the state's vital records processed by Tennessee Division of Health Statistics for deaths that occurred in 2002-2006 and were received as of December, 2008.

The cancer mortality data were compiled in accordance with World Health Organization (WHO) regulations, which specify that member nations classify and code causes of death in accordance with the current revision of the *International Classification of Diseases (ICD)*. Effective with deaths that occurred in 1999, the United States began using the Tenth Revision of this classification (ICD-10).

The Tennessee population estimates for the denominators of incidence and death rates presented in this report are race-specific (all races, whites, blacks) and sex-specific (both sex, males, females) population estimates aggregated to the county level. They are based on single years of age and are summed to form the 5-year age groups. The estimates used in this report are based on the revised Tennessee population estimates effective on February 1, 2008 made by Tennessee Department of Health's Division of Health Statistics.

The 2000 US standard population were obtained from the U.S. Bureau of the Census.

Methods:

SEER*Stat software was used to calculate all rates, and SAS software was used to generate all results. ArcGIS software was used to draw the maps with rate distribution by county.

Definitions:

Incidence rate: The cancer incidence rate is the number of new cancers of a specific site/type occurring in a specified population during a year, usually expressed as the number of cancers per 100,000 persons at risk. That is,

Incidence rate = (New Cancer Counts / Population) * 100,000.

The *numerator* of the incidence rate is the number of new cancers; the *denominator* of the incidence rate is the size of the population.

Mortality rate: The cancer mortality (or death) rate is the number of deaths with cancer given as the underlying cause of death occurring in a specified population during a year, usually expressed as the number of deaths due to cancer per 100,000 persons. That is,

Death Rate = (Cancer Death Counts / Population) * 100,000.

The *numerator* of the death rate is the number of deaths; the *denominator* of the death rate is the size of the population.

Age-adjusted rate: An age-adjusted incidence or mortality rate is a weighted average of the age-specific incidence or mortality rates, where the weights are the counts of persons in the corresponding age groups of a standard population. The potential confounding effect of age is reduced when comparing age-adjusted rates based on the same standard population.

Stage of cancer: Stage provides a measure of disease progression, detailing the degree to which the cancer has advanced. SEER historic describes cancers in five stages:

- **In situ cancer** is early cancer that is present only in the layer of cells in which it began. For most cancer sites mentioned in this report, in situ tumors are excluded from the analysis because of non-uniform classification; the urinary bladder is exception.
- **Localized cancer** is cancer that is limited to the organ in which it began, without evidence of spread.
- **Regional cancer** is cancer that has spread beyond the original (primary) site to nearby lymph nodes or organs and tissues.
- **Distant cancer** is cancer that has spread from the primary site to distant organs or distant lymph nodes.
- **Unstaged cancer** is cancer for which there is not enough information to indicate a stage.

References

American Cancer Society, *Overview: Prostate Cancer*. Available at <http://www.cancer.org>. Accessed March 2009.

U.S. Cancer Statistics Working Group. *United States Cancer Statistics: 1999–2005 Incidence and Mortality Web-based Report*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2009. Available at: www.cdc.gov/uscs. Accessed February 2009.