

# PROSTATE CANCER

in Georgia 2002-2006



GEORGIA DEPARTMENT OF  
COMMUNITY HEALTH

## Prostate Cancer in Georgia, 2002-2006

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## Introduction

Prostate cancer is cancer of the glandular cells of the prostate gland. The prostate gland is part of the male reproductive system, which includes the penis, prostate, and the testicles and surrounds the neck of the bladder and urethra. Glandular cells of the prostate contribute secretions to the seminal fluid that nourishes and transports the sperm. Ninety-nine percent of prostate cancers develop from these glandular cells. Cancer originating in the glandular cells is termed 'adenocarcinoma'.

The urethra, a narrow tube which runs through the length of the penis and prostate, carries both urine and semen out of the body. (Figure 1). The rectum or the lower end of the bowel lies just behind the prostate and the bladder. Sitting directly above the prostate are two small glands called the seminal vesicles, which secrete substances that contribute significantly to the seminal fluid. Nerves run on either side of the prostate gland that controls the erectile function of the penis. A healthy prostate is similar to the size of a walnut. As males age, the gland tends to grow in size. This can cause the urethra to narrow and decrease urine flow.

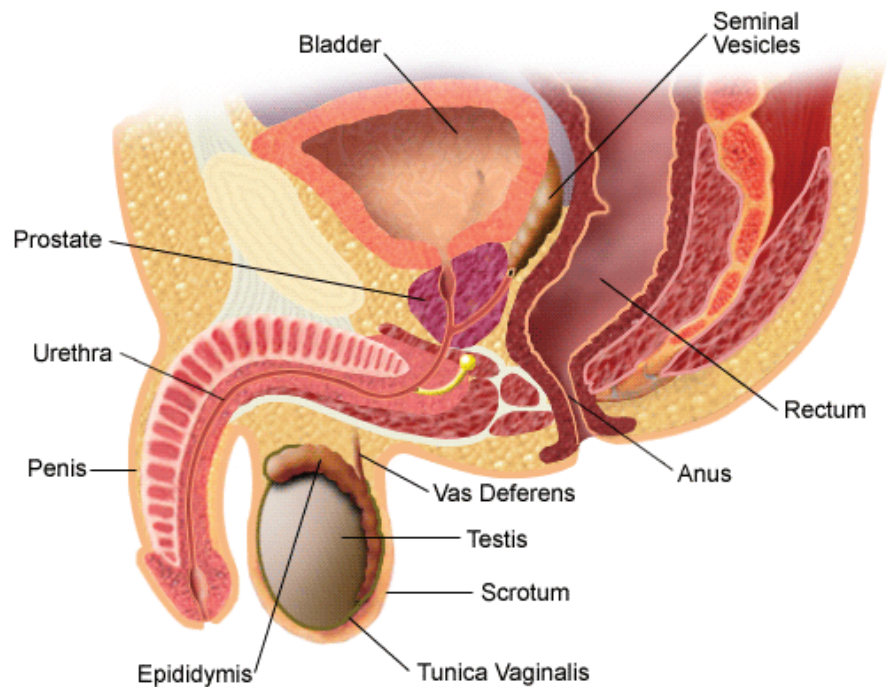
Prostate cancer usually occurs in older males. It is the leading cause of cancer among males in the U.S., across all races. It is also the second most common cause of death due to cancer in the U.S. among black and white males. In Georgia, prostate cancer is also the leading cause of cancer incidence and the second most common cause of cancer death among males. The Georgia Comprehensive Cancer Registry estimates that over 5,500 new cases of prostate cancer will be diagnosed in 2009 and about 730 Georgians will die from this disease.

## Screening and Diagnosis

Screening tests for cancer allow the disease to be detected at its earliest stages, before any symptoms develop. Typically, when males are screened and prostate cancer is detected, the disease is found at an early stage and can be treated most effectively. Since 1990, screening for early detection of prostate cancer has become popular and death rates of prostate cancer have declined. However, studies are still underway to determine whether screening tests or better treatment options are responsible for this decrease in death rates.

Currently, the American Cancer Society (ACS) does not recommend routine screening for prostate cancer. However, ACS does emphasize that doctors discuss benefits and limitations of early detection and treatment of prostate

**Figure 1. Male Reproductive Tract**



cancer with males at average or high risk of developing prostate cancer so that they may make an informed decision about screening.

If males choose to be tested, yearly screening tests for prostate cancer are advised beginning at age 50 for those who have a life expectancy of at least 10 years. Males at high risk (i.e. black males and those with a strong family history of one or more first-degree relatives diagnosed with prostate cancer at an early age) should begin testing as early as age 40. The two screening tests offered are:

- **Prostate-Specific Antigen (PSA) Test:** PSA is a protein produced by the prostate and released in very small amounts into the bloodstream. When prostate cancer develops and grows, it releases PSA in increased amounts into the bloodstream, reaching a level where it can be detected by a laboratory blood test. Levels less than 4 ng/mL are considered normal, between 4 -10 ng/mL are considered intermediate, and more than 10 ng/mL are considered high
- **Digital Rectal Examination (DRE):** During a DRE, the physician inserts a gloved finger in the rectum to feel for any irregular or firm areas in the prostate gland that might be cancerous

However, these tests are not 100% accurate. A PSA test can be elevated due to benign conditions such as benign prostatic hyperplasia (enlargement of the prostate gland) and prostatitis (infection or inflammation of the prostate gland). PSA and DRE tests can detect only an abnormality of the prostate and cannot show whether the problem is cancer or a less serious condition. If the tests are abnormal, the doctor may suggest other tests to confirm a diagnosis. They include:

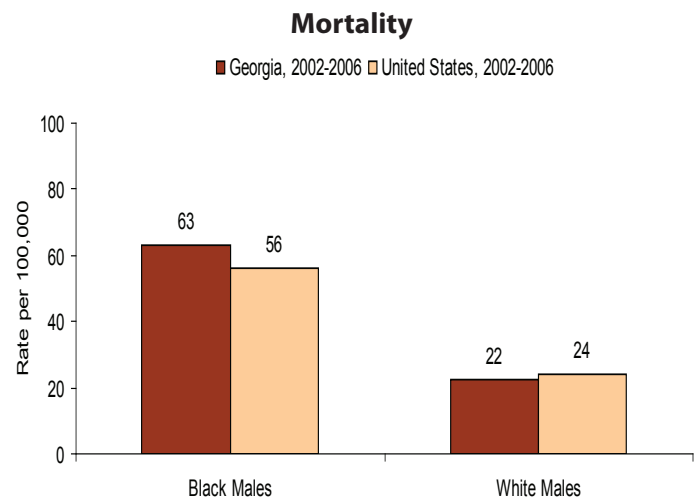
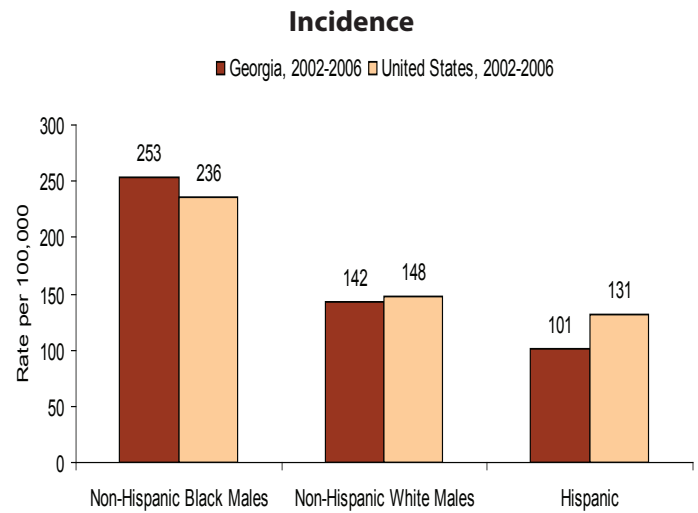
- **Urine Test:** It is used to detect blood or an infection
- **Transrectal Ultrasound (TRUS):** The doctor inserts a probe into the rectum to detect abnormal areas in the prostate. TRUS uses sound waves to create an image of the prostate on a video screen
- **Transrectal Biopsy:** The doctor removes small tissue samples of the prostate to look for cancer cells. During this procedure, the doctor inserts a needle through the rectum into the prostate with or without the guidance of TRUS. It is the only way prostate cancer can be definitively diagnosed



## Incidence and Mortality

- The overall age-adjusted prostate cancer incidence rate in Georgia is 162 per 100,000. The overall age-adjusted prostate cancer mortality rate in Georgia is 30 per 100,000
- In Georgia and the U.S., non-Hispanic black males are more likely to be diagnosed with prostate cancer than non-Hispanic white males (Figure 2). Similarly, black males are more likely than white males to die of prostate cancer in both Georgia and the U.S. (Figure 2). In Georgia, this difference is nearly threefold
- Non-Hispanic black males in Georgia are 7% more likely to be diagnosed with prostate cancer than non-Hispanic black males in the U.S. (age-adjusted rate 253/100,000 vs. 236/100,000)
- Hispanic males in the U.S. are 30% more likely to be diagnosed with prostate cancer than Hispanic males in Georgia (age-adjusted rate 131/100,000 vs. 101/100,000)
- Black males in Georgia are 12% more likely to die of prostate cancer than black males in the U.S (age-adjusted rate 63/100,000 vs. 56/100,000)
- U.S. white males have significantly higher prostate cancer incidence and mortality rates compared to Georgia white males

**Figure 2. Age-adjusted Incidence and Mortality Rates by Race, 2002-2006**



## Leading Causes of Cancer Incidence and Mortality in Males

	<b>Top 5 Causes of Cancer Incidence</b>	<b>Top 5 Causes of Cancer Mortality</b>
1.	Prostate	Lung & Bronchus
2.	Lung & Bronchus	Prostate
3.	Colorectal	Colorectal
4.	Bladder	Pancreas
5.	Melanoma	Leukemia

Prostate cancer is the leading cause of non-skin cancer incidence and second leading cause of cancer death among males in Georgia.

### Causes and Risk Factors

The exact cause of prostate cancer has not been identified. However, research suggests that a combination of factors such as age, race, ethnicity, heredity, hormones, diet, and environment may be linked to the development of prostate cancer. While all males are at risk for prostate cancer, the following factors may increase a person's risk of getting the disease:

- **Age:** The risk of prostate cancer increases with age. Prostate cancer is rare before the age of 45, but the probability of being diagnosed with prostate cancer in the United States increases after the age of 50
- **Race & Ethnicity:** Prostate cancer occurs more commonly among black males than white or Hispanic-Latino males
- **Family History:** Men with a father or brother who has had prostate cancer are at a greater risk for getting the disease than an average person. The risk increases further if several relatives have had the disease, especially if they were young when the cancer was diagnosed
- **Genetics:** It has been found that specific regions on certain chromosomes are linked to an increased risk of prostate cancer. Changes in these genes can lead to the development of prostate cancer. They account for 5-10% of prostate cancers. Certain genes, such as BRCA1 and BRCA2 associated with the occurrence of breast and ovarian cancers, are also known to increase the risk of prostate cancer
- **Certain prostate changes:** Males who have prostate cells with high-grade prostatic intraepithelial neoplasia (abnormal cells) may be at an increased risk of developing prostate cancer

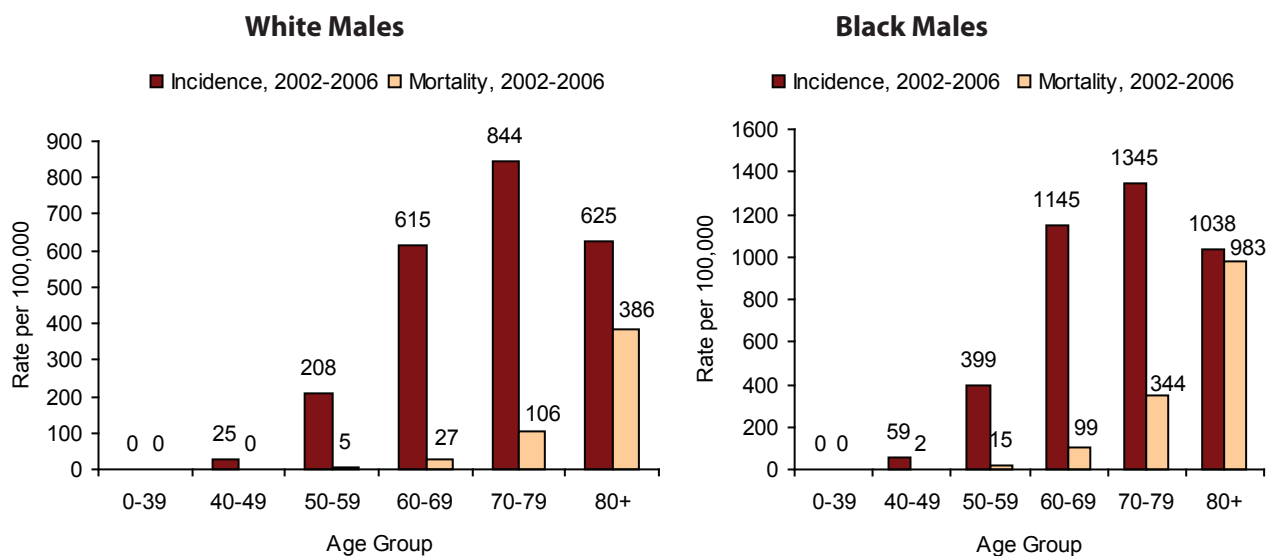
## Symptoms

Prostate cancer diagnosed in its early stages usually does not produce any noticeable symptoms. Signs and symptoms of prostate cancer depend on the extent of the disease. Most often signs and symptoms are caused by less serious prostate problems, such as an enlarged prostate (benign prostatic hyperplasia), prostate infection, or other health problems. For men who do have symptoms, the most common are:

- Difficulty starting or stopping urination
- Weak or interrupted flow of urine
- Not being able to pass urine
- Blood in urine or semen
- Difficulty having an erection
- Painful ejaculation
- Discomfort and persistent pain in the hips, legs, and lower back

## Age at Diagnosis

**Figure 3. Age-specific Prostate Cancer Incidence and Mortality Rates by Race, Georgia 2002-2006**



- The risk of being diagnosed with prostate cancer increases with age for both non-Hispanic black and non-Hispanic white males until 79 years of age. The risk increases sharply between ages 50-59 years of age and decreases at ages 80 years and above (Figure 3)
- The prostate cancer mortality rate increases with age for both black and white males. The risk of dying from prostate cancer increases sharply between 50-59 years of age for black males and between 60-69 years of age for white males (Figure 3)

## Treatment

There are different types of treatment available for patients with prostate cancer. The choice of treatment depends on a number of factors such as age and expected life span of the patient, co-existing medical conditions, stage and grade of the cancer, personal feelings about the need to treat the cancer, doctor's opinion, and the benefits and side effects of each type of treatment.

The standard types of treatment available for patients with prostate cancer are:

**Watchful Waiting/Active Surveillance:** Because prostate cancer often grows very slowly, some men (especially those who are older or who have other major health problems) may choose not to treat their cancer. Instead, their doctor may suggest an approach called watchful waiting or active surveillance. Until recently, watchful waiting meant waiting until the cancer was causing symptoms before starting any treatment. Now, it is more common to watch the patient closely with regular PSA tests, rectal exams, and ultrasounds to see if the cancer is growing. If the cancer does seem to be growing or getting worse, the doctor may suggest starting treatment.

**Surgery:** Surgery is an option for men with early (Stage I or II) prostate cancer. It is sometimes an option for men with Stage III or IV prostate cancer. The surgeon may remove the whole prostate or only part of it. Patients in good health are usually offered surgery as treatment for prostate cancer. Before the surgeon removes the prostate, the lymph nodes in the pelvis may be removed. If prostate cancer cells are found in the lymph nodes, the disease may have spread to other parts of the body. In this case, the surgeon may decide not to remove the prostate and may suggest other types of treatment.

**Radical Prostatectomy:** Radical prostatectomy is surgery that is done to cure prostate cancer. It is used most often if it is thought that the cancer has not spread outside of the gland. In this operation, the surgeon removes the whole prostate gland plus some of the tissue around it, including the seminal vesicles.

- *Retropubic approach:* The prostate gland is taken out through an incision in the lower abdomen. Removal of nearby lymph nodes is also possible at the same time
- *Perineal approach:* The prostate gland is taken out through an incision made between the anus and the scrotum. Nearby lymph nodes may be removed through a separate incision in the abdomen
- *Laparoscopic radical prostatectomy (LRP):* The surgeon removes the entire prostate through small cuts, rather than a single long cut in the abdomen. A thin, lighted tube (a laparoscope) helps the surgeon remove the prostate. This procedure may also be performed with robotic assistance





**Transurethral Resection of the Prostate (TURP):** This procedure may be done to relieve symptoms. The surgeon inserts a long, thin scope through the urethra. A cutting tool at the end of the scope removes tissue from the inside of the prostate. TURP may not remove all of the cancer, but it can remove tissue that blocks the flow of urine. The same operation is used more often to relieve symptoms of non-cancerous benign prostatic hyperplasia.

**Radiation Therapy:** Radiation therapy is an option for men with any stage of prostate cancer. Men with early stage prostate cancer may choose radiation therapy instead of surgery. It also may be used after surgery to destroy any cancer cells that remain in the area. In later stages of prostate cancer, radiation treatment may be used to help relieve pain. Radiation therapy (also called radiotherapy) uses high-energy rays to kill cancer cells. It affects cells only in the treated area. Doctors use two types of radiation therapy to treat prostate cancer. Some men receive both types:

**External Beam Radiation Therapy (EBRT):** The radiation comes from a large machine outside the body. Treatment occurs in a hospital or clinic. Treatments are usually five days a week for several weeks. Today, standard EBRT is used less often than in the past. Newer methods, such as three-dimensional conformal radiation therapy, intensity modulated radiation therapy, and conformal proton beam radiation therapy, allow doctors to be more accurate in treating the prostate gland while reducing the radiation exposure to nearby healthy tissues.

**Brachytherapy (Internal Radiation):** The radiation comes from radioactive material placed directly into the prostate.

- *Permanent or low dose brachytherapy:* Dozens of radioactive seeds are placed inside needles, which are inserted into the prostate. The needles are removed, leaving the seeds behind which gives off radiation for months. Once radiation is complete, the seeds do not need to be removed
- *Temporary or high dose brachytherapy:* Needles are used to place catheters in the prostate. A strong radioactive substance is placed in these catheters for five to fifteen minutes and then taken out (The catheters are left in place). Usually three treatments are given over a couple of days during a hospital stay. After the last treatment, the catheters are removed. This treatment is often combined with external radiation, given at a lower dose than if it were used alone

**Hormone Therapy:** The goal of hormone therapy (also called androgen deprivation) is to lower the levels of the male hormones (or androgens), such as testosterone. Androgens, which are made mostly in the testicles, cause prostate cancer cells to grow. Lowering androgen levels often makes prostate cancer cells shrink or grow more slowly. Drugs, surgery, and/or other hormones are

used to reduce the production of androgens or block them from working. Orchiectomy is a surgical procedure to remove one or both testicles to reduce hormone production. Hormone therapy can control, but will not cure, the cancer. It does not take the place of treatments aimed at curing the cancer.

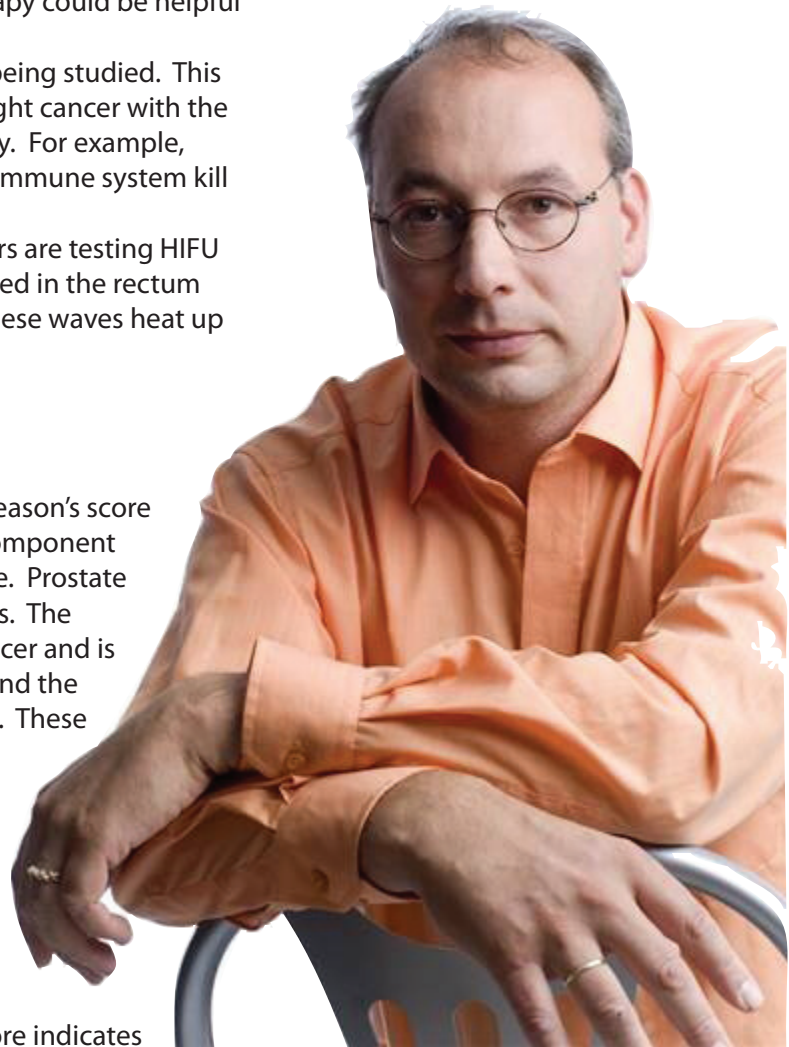
New types of treatments are being studied in clinical trials for their long term benefits. Some of them are:

- Cryotherapy: Surgeons are studying a tool that freezes and kills prostate tissue in men with early state prostate cancer
- Chemotherapy: Researchers are testing anti-cancer drugs and combining them with hormone therapy or biological therapy. Chemotherapy allows some men to live longer and with a better quality of life. It is not a standard treatment for early prostate cancer, but some studies are looking to see if chemotherapy could be helpful if given for a short time after surgery
- Biological Therapy: New biological therapies are being studied. This treatment uses the patient's immune system to fight cancer with the help of substances made in the body or laboratory. For example, doctors are testing cancer vaccines that help the immune system kill cancer cells
- High-Intensity Focused Ultrasound (HIFU): Doctors are testing HIFU in men with early prostate cancer. A probe is placed in the rectum that gives off high-intensity ultrasound waves. These waves heat up and destroy the prostate tumor

## Grade

Most pathologists grade prostate cancer using the Gleason's score or pattern. The Gleason's Pattern is based on a five-component system (5 histologic patterns) ranging from one to five. Prostate cancer generally shows two main histological patterns. The primary pattern occupies greater than 50% of the cancer and is indicated by the first number of the Gleason's grade and the secondary pattern is indicated by the second number. These two numbers are added together to create a pattern score, ranging from two to ten.

Gleason's score is a system of grading prostate cancer tissue based on how the tissue looks under a microscope. It indicates how likely the tumor is to spread. A low Gleason's score indicates that the cancer tissue is similar to normal prostate tissue and the tumor is less likely to spread. A high Gleason's score indicates that the cancer tissue is very different from normal prostate tissue and the tumor is more likely to spread. For the purpose of data analysis, the Georgia Comprehensive Cancer Registry converts the Gleason's score and Gleason's pattern into three different categories with a terminology and histological grade describing the degree of differentiation of the prostate cancer.



**Table 2: Prostate Cancer Grade Conversion**

Gleason Score	Gleason Pattern	Terminology	Histological Grade
2,3,4	1,2	Well Differentiated	I
5,6,7	3	Moderately Differentiated	II
8,9,10	4,5	Poorly Differentiated	III
Undifferentiated and anaplastic corresponds to "grade IV"			
Cell type not determined, not stated, or not applicable corresponds to "Unknown"			

The cells of Histological Grade I tumors resemble normal cells and tend to grow and multiply slowly. Conversely, the cells of Grade III or Grade IV tumors do not look like normal cells. They tend to grow rapidly and spread faster than tumors with a lower grade. Doctors use the cancer grade and many other factors, including cancer stage, to develop an individual treatment plan for the patient and to predict the patient's prognosis.

- For both non-Hispanic black and non-Hispanic white males, more than half of all prostate cancer cases are Grade II tumors. However, the percentage of high grade tumors is higher among non-Hispanic black males than non-Hispanic white males
- Less than 0.5% of prostate cancer among non-Hispanic black and non-Hispanic white males are Grade IV

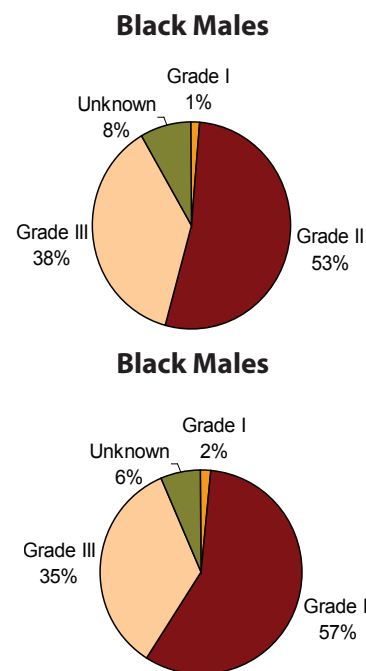
### Survival

The five-year relative survival rate refers to the percent of patients who live at least five years after their cancer is diagnosed. It estimates the effect of cancer to create a standard way of discussing prognosis.

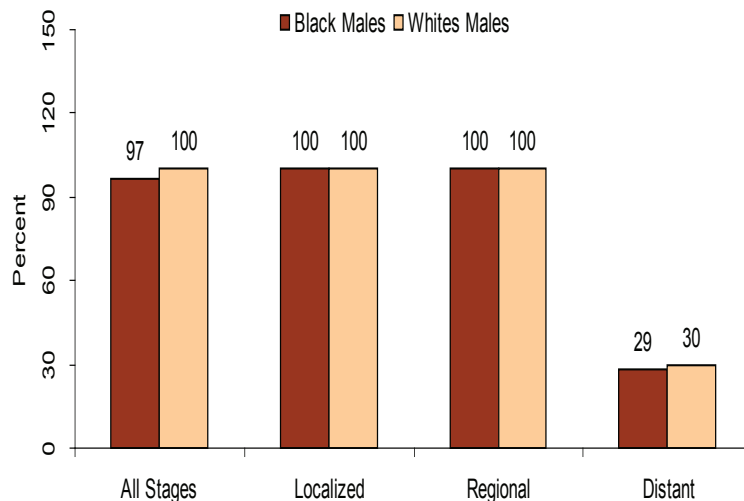
Early detection saves lives. Individuals diagnosed at an early stage (localized) have a better chance of surviving five years after diagnosis than those diagnosed at a later (distant) stage.

Overall, in the U.S, the five year survival rate is similar among black and white males for all stages of prostate cancer (Figure 5). Black (100%) and white (100%) males have similar five-year survival rates when diagnosed at a localized or regional stage. The rates drop significantly for both black (29%) and white (30%) males when diagnosed at a distant stage.

**Figure 4. Percent of Prostate Cancer Cases by Race and Grade, Georgia 2002-2006**



**Figure 5. Prostate Cancer Five-year Relative Survival Rates by Stage of Disease and Race, United States, 1999-2005**



**Table 3: Percent of Prostate Cancer diagnosed by Race and Stage of Disease, United States and Georgia**

	Localized	Regional	Distant
U.S. Black*	78%	12%	6%
U.S. White*	80%	12%	4%
Georgia Black*	83%	7%	5%
Georgia White*	86%	7%	3%

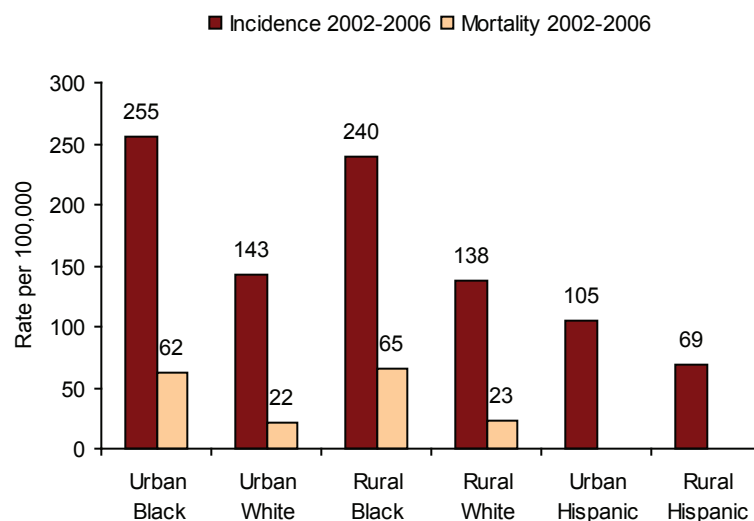
\* U.S. data is for years 1999-2005 and Georgia data is for years 2002-2006

- In the U.S. and Georgia, most prostate cancer is diagnosed in the localized stage
- The percentage of white males diagnosed in the localized stage is slightly higher than black males. The percentage of black males diagnosed in the distant stage is slightly higher than white males

### Urban-Rural Georgia

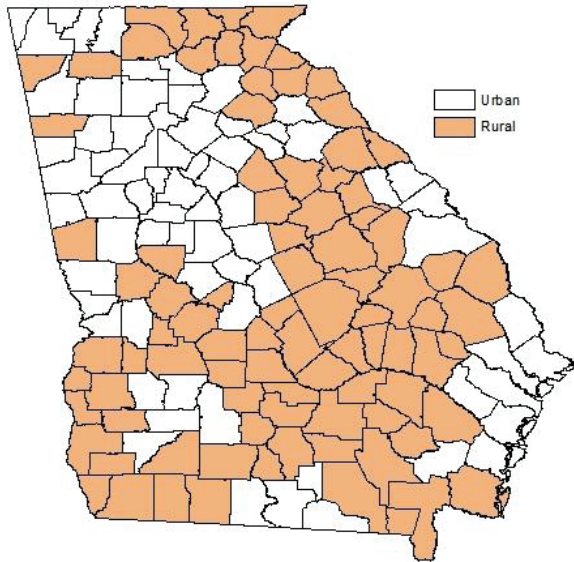
- Age-adjusted incidence rates are consistently higher among non-Hispanic black males than among non-Hispanic white males regardless of whether they live in an urban or rural area (Figure 6)
- Urban non-Hispanic black males have significantly higher incidence rates than rural non-Hispanic black males. Urban non-Hispanic white males have significantly higher incidence rates than rural non-Hispanic white males
- Age-adjusted incidence rates are significantly higher among urban Hispanic males than rural Hispanic males. Mortality rates are not available for Hispanic ethnicity
- Age-adjusted mortality rates are consistently higher among black males than among white males regardless of whether they live in an urban or rural area (Figure 6)
- Urban Black males have significantly higher mortality rates than urban white males. Rural black males have significantly higher mortality rates than rural white males. However, mortality

**Figure 6. Age-adjusted Prostate Cancer Incidence and Mortality Rates by Geography and Race, Georgia 2002-2006**



rates are not significantly different between urban black males and rural black males nor between urban white males and rural white males

**Figure 7. Urban-Rural Counties, Georgia 2003**



Based on the U.S. Department of Agriculture, Georgia has 70 urban counties and 89 rural counties

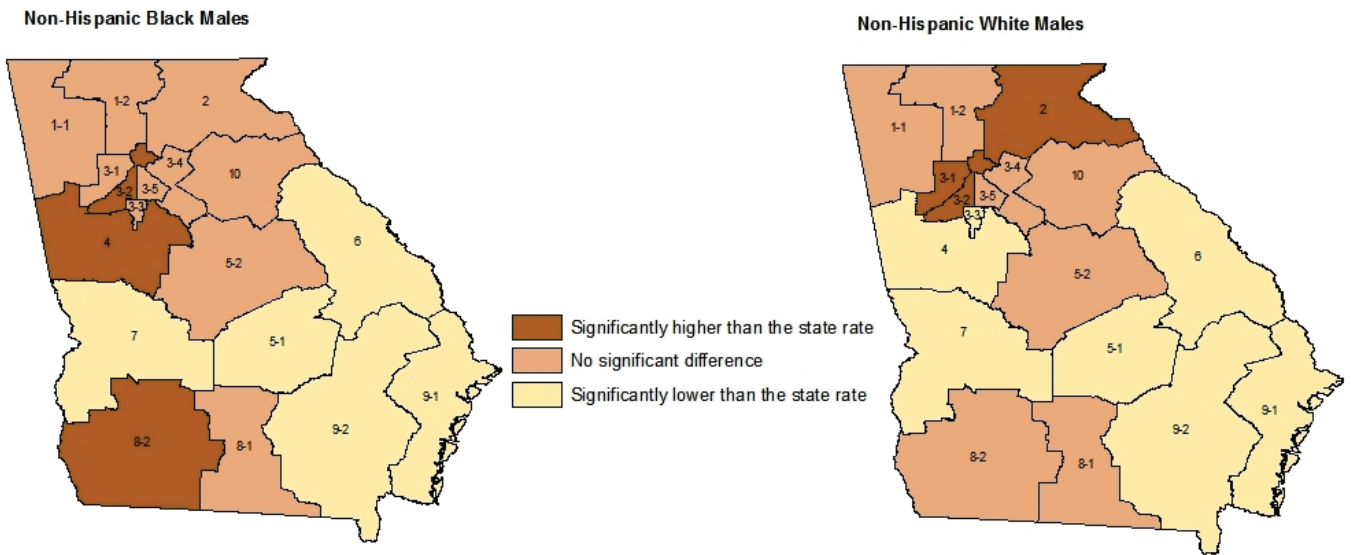
Variation by Race and Geography

**Table 4: Age-adjusted Prostate Cancer Incidence and Mortality Rates by District and Race, Georgia 2002-2006**

Health Districts	Incidence Rate (per 100,000)		Mortality Rate (per 100,000)	
	Non-Hispanic Black Males	Non-Hispanic White Males	Black Males	White Males
1-1 Northwest (Rome)	262	142	66	22
1-2 North Georgia (Dalton)	308	145	***	24
2 North (Gainesville)	310	175	***	24
3-1 Cobb-Douglas	236	151	40	19
3-2 Fulton	269	161	60	27
3-3 Clayton (Jonesboro)	264	127	54	18
3-4 East metro (Lawrenceville)	230	148	42	22
3-5 DeKalb	265	142	60	17
4 La Grange	300	133	61	21
5-1 South Central (Dublin)	171	107	49	22
5-2 North Central (Macon)	246	144	73	23
6 East Central (Augusta)	227	105	69	25
7 West Central (Columbus)	231	120	70	23
8-1 South (Valdosta)	250	142	64	22
8-2 Southwest (Albany)	291	146	67	26
9-1 Coastal (Savannah)	204	133	58	21
9-2 Southeast (Waycross)	220	128	88	24
10 Northeast (Athens)	253	146	60	20

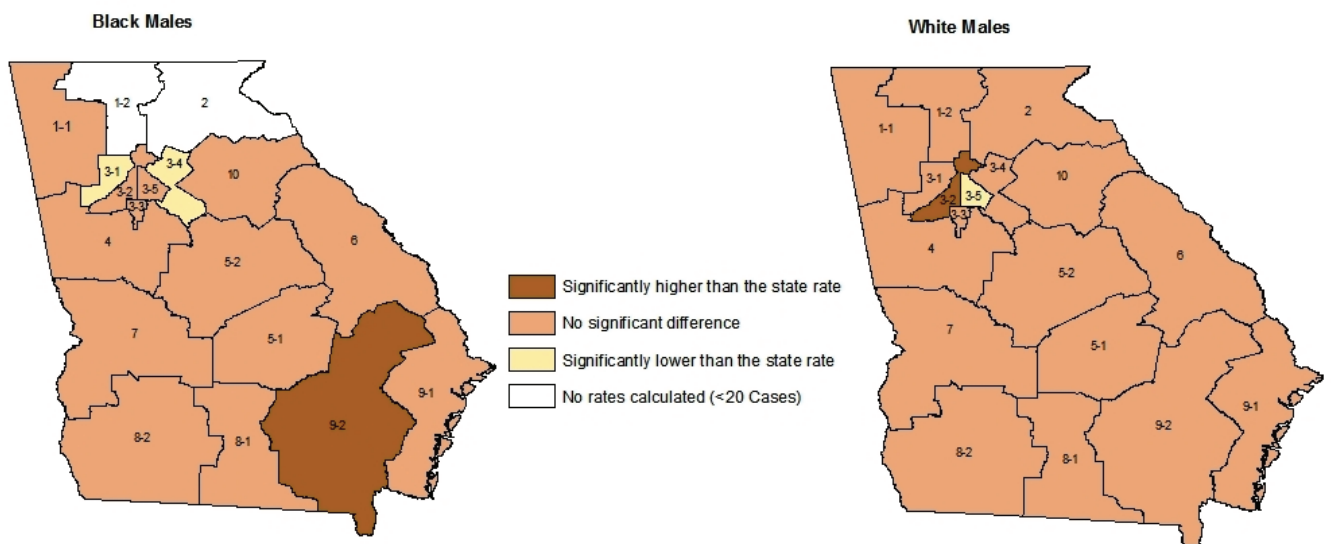
\*\*\* Rates are not calculated for districts with number of cases below 20

**Figure 8. Age-adjusted Prostate Cancer Incidence Rate by Race and Health District, Georgia 2002-2006**



- Non-Hispanic black males living in LaGrange, Fulton, and Southwest (Albany) health districts have significantly higher incidence rates than the state average, whereas those living in West Central (Columbus), South Central (Dublin), East Central (Augusta), Southeast (Waycross), and Coastal (Savannah) health districts have significantly lower incidence rates than the state average (Figure 8)
- Non-Hispanic white males living in North (Gainesville), Cobb-Douglas, and Fulton health districts have significantly higher incidence rates than the state average, whereas those living in LaGrange, West Central (Columbus), South Central (Dublin), East Central (Augusta), Southeast (Waycross), Clayton (Jonesboro), and Coastal (Savannah) health districts have significantly lower incidence rates than the state average (Figure 8)

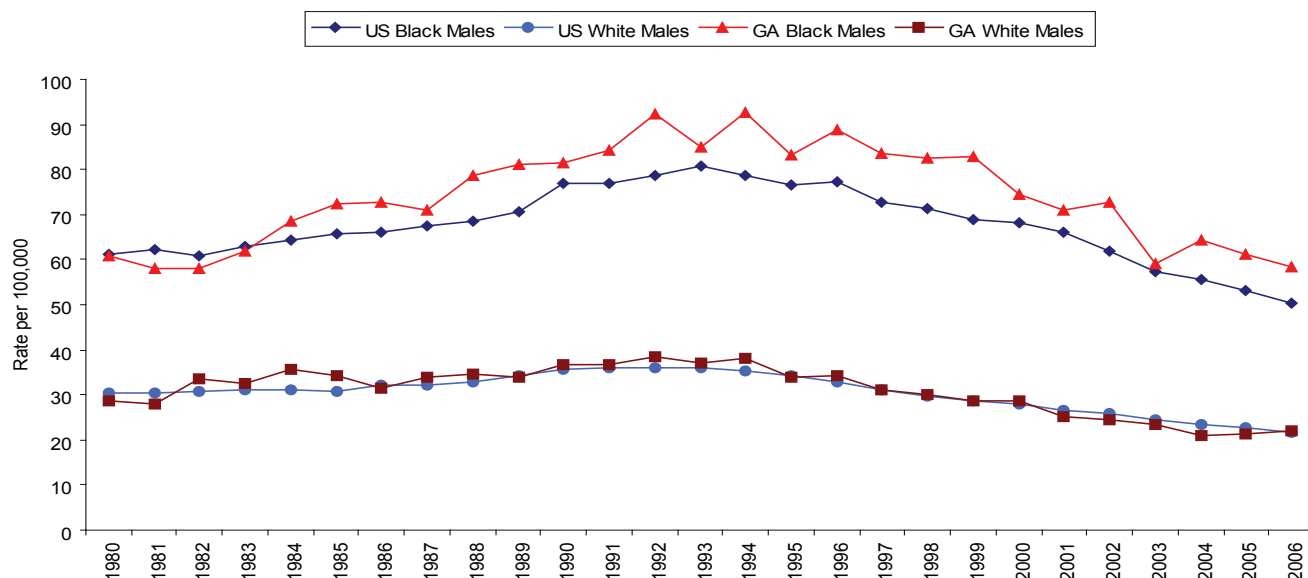
**Figure 9. Age-adjusted Prostate Cancer Mortality Rate by Race and Health District, Georgia 2002-2006**



- Black males living in Southeast (Waycross) health district have significantly higher mortality rates than the state average, whereas those living in Cobb-Douglas and East Metro (Lawrenceville) health districts have significantly lower mortality rates than the state average (Figure 9)
- White males living in Fulton health district have significantly higher mortality rates than the state average, whereas those living in Dekalb health district have significantly lower mortality rates than the state average (Figure 9)

## Mortality Trends

**Figure 10. Age-adjusted Prostate Cancer Mortality Rates by Race, United States vs. Georgia, 1980-2006**



- Mortality rates among white males are generally lower than those among black males, both in Georgia and in the U.S. (Figure 10)
- Among U.S. black males, the prostate cancer mortality rate increased from 1980 to 1993. After peaking in 1993, the prostate cancer mortality rate decreased significantly at an average annual rate of 2.7% until 2001. From 2001 to 2006, the mortality rate decreased at an average annual rate of 5.3%
- Among U.S. white males, the prostate cancer mortality rate increased from 1980 to 1993. Since 1993, there has been an average annual decrease of 4%
- Among Georgia black males, the prostate cancer mortality rate increased at an average annual rate of 3.4% from 1980 to 1994. Since 1994, there has been an average annual decrease of 3.7%
- Among Georgia white males, the prostate cancer mortality rate increased at an average annual rate of 1.8% from 1980 to 1993. Since 1993, there has been an average annual decrease of 4.7%

## Prostate Cancer: Resources

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

American Cancer Society  
Telephone: 1-800-ACS-2345  
Internet Address: [www.cancer.org](http://www.cancer.org)

Centers for Disease Control & Prevention  
Telephone: 1-800-CDC-INFO  
Internet Address: [www.cdc.gov](http://www.cdc.gov)

National Cancer Institute, Cancer Information Service  
Telephone: 1-800-4-CANCER  
Internet Address: <http://www.nci.nih.gov>

American Urological Association Foundation  
Telephone: 1-800-828-7866  
Internet Address: [www.afud.org](http://www.afud.org)

Prostate Cancer Foundation  
Telephone: 1-800-757-CURE  
Internet Address: [www.prostatecancerfoundation.org](http://www.prostatecancerfoundation.org)

Cancer Control Planet  
Internet Address:  
<http://cancercontrolplanet.cancer.gov/>

Us TOO International  
Telephone: 1-800-80-USTOO  
Internet Address: [www.ustoo.org](http://www.ustoo.org)

Fertile Hope  
Telephone: 1-888-994-HOPE  
Internet Address: [www.fertilehope.org](http://www.fertilehope.org)

## Technical Notes

### Definitions:

Age-Adjusted Rate is calculated in a manner that minimizes the effects of differences in age composition when comparing rates derived from populations with different age structures. It is expressed per 100,000 population.

Cancer Incidence Rate is a measure of the development of new cancer cases in a specified population within a specified period of time. It is expressed as a rate per 100,000 population.

Cancer Mortality Rate is defined as the number of deaths due to cancer occurring in a specified population within a specified period of time. It is expressed as a rate per 100,000 population.

Average Risk Population includes most people who develop prostate cancer and have no identifiable risk factors. People at increased risk of prostate cancer consist of black males and those with a strong family history of one or more first-degree relatives diagnosed with prostate cancer at an early age.

### Data Sources:

The number of deaths and mortality rates for the State of Georgia were obtained from the Georgia Department of Community Health, Division of Public Health, Vital Records Branch. The number of deaths and mortality rates for the United States were obtained from the National Center for Health Statistics, Centers for Disease Control and Prevention (CDC). Mortality data were coded using ICD-9 codes (1980-1998) and ICD-10 codes (1999-2006). The ICD-9 code for prostate cancer is 185, while the ICD-10 code for prostate cancer is C619.

The number of new cases, incidence rates, and percent distribution of cancer grade for the state of Georgia were obtained from the Georgia Department of Community Health, Division of Public Health, Georgia Comprehensive Cancer Registry. The number of new cases and incidence rates for the United States were obtained from the North American Association of Central Cancer Registries (NAACCR). Incidence data were coded using ICD-O-3 codes. The ICD-O-3 code used for prostate cancer is 619.



Cancer stage and survival data for the United States were obtained from the Surveillance, Epidemiology, and End Results (SEER) program, National Cancer Institute.

Clinical information on colorectal cancer was retrieved from the Mayo Clinic at [www.mayoclinic.com](http://www.mayoclinic.com) , National Cancer Institute at [www.cancer.gov](http://www.cancer.gov) , and the American Cancer Society at [www.cancer.org](http://www.cancer.org).

**Methods:**

Mortality rates were calculated per 100,000 population and age-adjusted by the direct method to the 2000 US standard population. Except where calculated to show trends, the mortality rates are five-year average annual rates for the period 2002 through 2006.

Incidence rates were calculated per 100,000 population and age-adjusted by the direct method to the 2000 US standard population. Rates were calculated for 2002-2006.

The estimated number of cases for 2009 was calculated by multiplying age-specific incidence rates for 2002-2006 by age-specific population projections for 2009. The estimated number of deaths for 2009 was calculated by multiplying age-specific mortality rates for 2002-2006 by age-specific population projections for 2009.

Trend analysis was performed using the Joinpoint Regression Program Software. Incidence rates for the United States used in the trend analysis were obtained from the CDC Wonder Database.

The Rural-Urban classification of Georgia counties was based on the 2003 Rural-Urban Continuum Codes from the United States Department of Agriculture, Economic Research Service. Information about the Rural-Urban Continuum Codes can be retrieved from <http://www.ers.usda.gov/Data/RuralUrbanContinuumCodes/>.

