

## Prostate Cancer Incidence, Mortality, Stage at Diagnosis, and Treatment Patterns among White and African American Men in North Carolina

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### Introduction

Prostate cancer is the most frequently diagnosed cancer among men in North Carolina. In 2014, 6,197 men were diagnosed with and 900 died from prostate cancer. The North Carolina Central Cancer Registry estimates that in 2017, about 7,577 new cases of prostate cancer will be diagnosed and 990 men will die of prostate cancer in North Carolina.<sup>1</sup> African American men have greater prostate cancer incidence and greater mortality than white men.<sup>2</sup> In 2014, the age-adjusted prostate cancer incidence rate for African American men was 167.9 and incidence rate for white men was 91.7. The death rate for African American men was 37.7 and the death rate for white men was 17.6. In 2013, the age-adjusted national (U.S.) prostate cancer incidence rate for African American men was 164.4 (per 100,000) and the incidence rate for white men was 92.6 (per 100,000).<sup>3</sup> The death rate for African American men was 39.1 (per 100,000) and the death rate for white men was 18.0. (per 100,000).<sup>4</sup> Early detection can help in identifying treatment options.

### Methods

#### Data Sources

The most current data on prostate cancer incidence were obtained through the North Carolina Central Cancer Registry (N.C. CCR). Data on prostate cancer deaths were obtained from the Vital Statistics Unit of the State Center for Health Statistics (SCHS). Population data from the National Center for Health Statistics (NCHS) were used in the denominators of the rates, which are expressed per 100,000 population. Five-year (2010–2014) incidence and mortality rates for white men and African American men were calculated to assess racial disparities in prostate cancer. Rates were age-adjusted to the 2000 United States standard population. Localized, regional, distant and unknown categories were used

for defining the cancer stage. The analysis for treatment was performed for the five-year period of 2010–2014. Information about prostate cancer treatment is categorized into surgery, chemotherapy, hormone therapy and radiation therapy. For comparison, 2013 national age-adjusted incidence<sup>3</sup> and mortality<sup>4</sup> rates of prostate cancer were obtained from the CDC Wonder website.

### Results

#### Incidence and Mortality Rates

In 2010–2014 there were 22,783 prostate cancer cases reported for white men and 8,576 reported for African American men. Incidence and death rates by race (2010–2014) are presented in Table 1. The five-year, age-adjusted prostate cancer death rate

**Table 1. 2010–2014 Prostate Cancer Incidence and Mortality Rates per 100,000 Population for White and African American Men in North Carolina**

Race	Incidence		Mortality	
	Cases	Rate*	Cases	Rate*
White	22,783	107.9	2,965	17.8
African American	8,576	189.5	1,306	44.3

\*Rates are age Adjusted and expressed per 100,000 population

The widespread use of prostate-specific antigen (PSA) testing has dramatically changed the epidemiology of prostate cancer. According to the American Cancer Society, incidence rates for prostate cancer spiked dramatically in the United States in the late 1980s and early 1990s, in large part because of increased use of the PSA blood test for screening. Since then, rates have been steadily declining. From 2007 to 2011, incidence rates were stable in men younger than 65 and decreased by 2.8 percent per year in those 65 and older.<sup>1</sup> SEER has reported similar findings. Using statistical models for analysis, rates for new prostate cancer cases have been falling on average 2.4 percent each year over the last 10 years.<sup>2</sup> The decline in rates may represent the effect of screening anticipation: incidence has become lower than expected as cases that were bound to present have already been diagnosed through screening. The decline in the incidence rate observed in North Carolina is consistent with that found in the national statistics and may suggest that the PSA screening prevalence effect is starting to subside. For more information on the PSA Test, see [www.cancer.gov/cancertopics/factsheet/detection/PSA](http://www.cancer.gov/cancertopics/factsheet/detection/PSA).

<sup>1</sup>American Cancer Society, Cancer Facts & Figures, 2015. Atlanta: American Cancer Society; 2015.

<sup>2</sup><http://seer.cancer.gov/statistics/summaries.html> (accessed 1/26/2015).

**Table 2. 2010–2014 Prostate Cancer Incidence Rates per 100,000 Population by Age Groups in North Carolina**

Race	Ages 00–49		Ages 50–64		Ages 65+	
	Cases	Rate	Cases	Rate	Cases	Rate
White Males	625	5.4	8,710	251.5	13,448	557.1
African American Males	413	10.6	4,209	468.5	3,954	935.4

Produced by the N.C. Central Cancer Registry, 05/2017.  
 Numbers are subject to change as files are updated.  
 Cases may not sum to totals due to unknown or other values.  
 Vintage 2014 bridged-race postcensal population estimates were obtained from the National Center for Health Statistics ([www.cdc.gov/nchs/nvss/bridged\\_race/data\\_documentation.htm#vintage2014](http://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm#vintage2014)).

The incidence rates for both white and African American men have been decreasing since 2005, but the incidence rates for African American men have been substantially higher than white men (see Figure 1). The mortality rates for white men have been stable over the years (2005–2014). For African American men, though the mortality rates were fluctuating initially, the rates have been declining steadily since 2011. Similar to incidence rates, African American men experienced substantially higher death rates across the period 2005–2014 (see Figure 2).

**Stage at Diagnosis**

The stage distribution of prostate cancer for 2010–2014 is presented in Figure 3. Four stage categories were used: localized, regional, distant and unknown/unstaged. A higher percentage of African American men were diagnosed with later stage prostate cancer compared

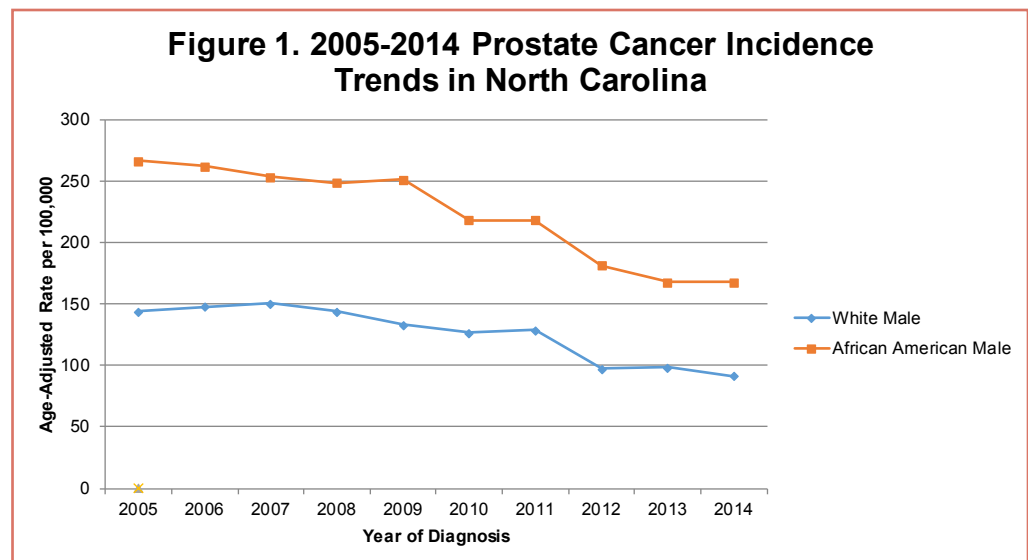
for African American men, (44.3 per 100,000) is 2.4 times the age-adjusted death rate for white men (17.8 per 100,000). The five-year, age-adjusted incidence rate for African American men (189.5) is 1.8 times the age-adjusted incidence rate for white men (107.9).

Prostate cancer age-specific incidence and mortality rates by race for 2010–2014 were also calculated for the following age groups: 0–49, 50–64, and 65 and older. Tables 2 and 3 show that the incidence and mortality rates were highest among the age group 65 and older.

According to the American Cancer Society, In the late 1980s and early 1990s, incidence rates for prostate cancer spiked dramatically, in large part because of widespread screening with the prostate-specific antigen (PSA) blood test. The decline in rates since around 2000 has accelerated in recent years, likely due to recommendations against routine PSA screening beginning in 2008. From 2009 to 2013, the rate decreased by approximately 8 percent per year.<sup>2</sup>

men were diagnosed with later stage prostate cancer compared

**Figure 1. 2005-2014 Prostate Cancer Incidence Trends in North Carolina**



to white men. The stage distribution for white and African American men was similar. The percentages of late stage cancer (distant) were 5.7 percent for African American men and 5.2 percent for white men. Unknown/unstaged cancers were about 4.8 percent for African American men and 4.2 percent for white men.

**Table 3. 2010–2014 Prostate Cancer Mortality Rates per 100,000 Population in North Carolina by Age Groups**

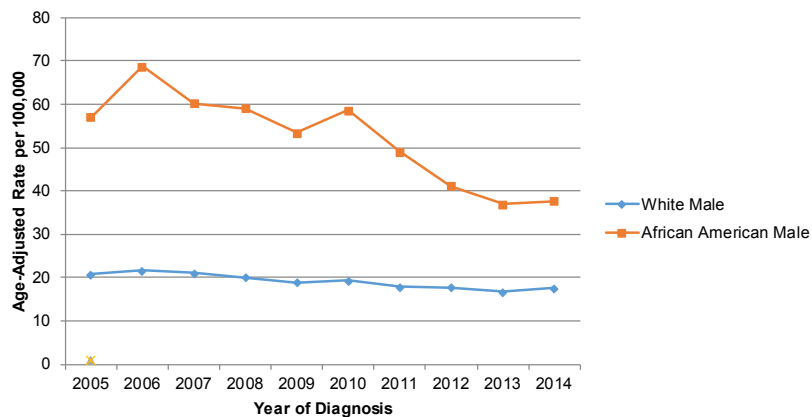
Race	Ages 00–49		Ages 50–64		Ages 65+	
	Cases	Rate	Cases	Rate	Cases	Rate
White Males	18	0.2	273	7.9	2,674	110.8
African American Males	7	0.2	214	23.8	1,085	256.7

Produced by the N.C. Central Cancer Registry, 05/2017.  
 Numbers are subject to change as files are updated.  
 Cases may not sum to totals due to unknown or other values.  
 Rates based on counts fewer than 16 are unstable. Use with caution.  
 Vintage 2014 bridged-race postcensal population estimates were obtained from the National Center for Health Statistics ([www.cdc.gov/nchs/nvss/bridged\\_race/data\\_documentation.htm#vintage2014](http://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm#vintage2014)).

**Treatment by Stage**

Table 4 shows the type of treatments received in each prostate cancer stage among African American men and white men. Four types of treatment were portrayed in this analysis: surgery, radiation therapy, chemotherapy and hormone therapy. Prostate cancer can have a high survival rate if the patient’s cancer is detected and treated at an early stage. The results in Table 4 indicate that African American men were somewhat less likely to receive surgery and chemotherapy and more likely to receive hormone and radiation therapy.

**Figure 2. 2005-2014 Prostate Cancer Mortality Trends in North Carolina**



prostate cancer and more effective treatment for all men in recent years.

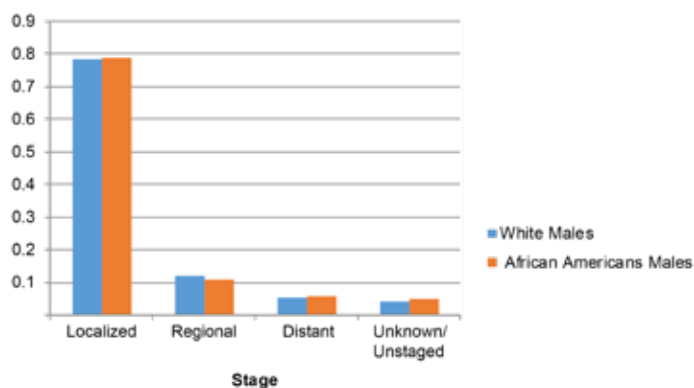
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## Discussion

This paper presents descriptive results for prostate cancer incidence, stage at diagnosis, treatment, and mortality among African American and white men. An individual’s socioeconomic status, particularly his income and education level, is among the major factors that influence health status. Lower-income individuals, regardless of race or ethnicity, are often in poorer health than those in higher income groups.<sup>5</sup> Income and education could influence access in healthcare and treatment for African American men. This certainly contributes to the higher incidence and death rates among African American men. These results suggest the need for increased preventive prostate cancer screening and proper treatment for African American men, so that more cancer cases can be diagnosed at an earlier stage as a means of reducing racial disparities in prostate cancer mortality. The decline in death rates for both white men and African American men may suggest earlier diagnosis of

**Figure 3. 2010-2014 Prostate Cancer Incidence at Stage of Diagnosis by Race in North Carolina**



**Table 4. Percentage of Prostate Cancer Treatments by Race, Type and Stage at Diagnosis, North Carolina 2010–2014**

Race	Treatment Type	Localized (%)	Regional (%)	Distant (%)
White	Chemo	0.6	1.1	17.3
	Surgery	72.4	92.9	20.2
	Radiation	23.2	3.9	14.2
	Hormone	3.8	2.1	48.3
African American	Chemo	0.1	0.3	2.8
	Surgery	27.8	68.8	11.5
	Radiation	64.1	20.2	23.3
	Hormone	8.0	10.8	62.4

Note: The data here pertain to treatments rather than cases; a case is counted more than once within a column if more than one type of treatment was received. Cases with unknown treatment type were omitted from this table.

