



# CANCER IN AFRICAN AMERICAN MEN IN SOUTH CAROLINA



**SOUTH CAROLINA**  
CANCER ALLIANCE



S.C. Department of Health and  
Environmental Control

# Randolph Anderson - My Story

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My name is Randolph J Anderson II. I am a husband and father of four beautiful children (3 girls, 1 boy). I am native of Florence, South Carolina and high school graduate of Florence School District One. I am an ex collegiate athlete (Newberry College) and graduate of South Carolina State University with a BS in Physical Education. I am a District Supervisor for the Richland County Recreation Commission as well as a community servant, youth league coach and mentor. Son, brother, uncle, cousin, church member, neighbor are other titles that I also hold. But the title that I would like you to focus on is, I am a 44-year-old Prostate Cancer Survivor. Now I know that may come as shock for you but it's true.

On August 23, 2018, I went into my doctor's office for blood work to see if my testosterone was still at acceptable levels. It was a normal visit nothing seemed odd, so I spoke with a nurse about my family history. Then I spoke with the doctor; gave my blood samples and was on my way. The next day I received a call from the nurse and was back in the office within a few hours of the call. I was informed that my PSA (Prostate-Specific Antigen) test score was 56.9. My father was fighting a 20-year battle with prostate cancer, so I knew this wasn't good, but I didn't know how bad. I was referred to a urologist and a biopsy was scheduled for September 19, 2018. On September 26, 2018, I returned for the results. Out of the twelve samples that were taken all twelve were cancerous. Instantly my world was upside down and I had to choose treatment or surgery. After a brief few weeks I returned on October 9, 2018 to schedule my surgery. On October 29, 2018, I went in for a robotic prostatectomy and was and will be forever changed.

During my difficult recovery that is ongoing, I lost my father to prostate cancer on March 12, 2019. I never told my father about my situation because he was approaching his finish line. I sat in several doctor visits towards the end with him and the doctors telling him there was nothing else they could do. Hearing this while fighting my own fight was a humbling experience. After his transition to his next chapter I pledged to fight and educate as many people as I can about this misunderstood and underfunded silent killer. So, if you are reading this, I need your help in bringing the awareness needed to fight this epidemic head on.

Randolph James Anderson II



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# A Message from Dr. Rick Toomey, SC Department of Health and Environmental Control

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I am pleased to introduce this important report, *Cancer in African American Men in South Carolina*. The need to formally address cancer incidence and deaths occurring in African American men became evident from the 20-Year Cancer Trend Report from DHEC's South Carolina Central Cancer Registry (SCCCR), released in October 2018. Key findings indicated that while cancer trends have declined over the past two decades for most cancer types in our state, the differences between African Americans and Caucasians persist, especially among men. Clearly, African American men bear a disproportionate share of the cancer burden.

Through a collaboration among the SCCCR, DHEC'S Division of Cancer Prevention and Control, and the SC Cancer Alliance this report was developed to address the complex factors that contribute to the disparities revealed in the data. A multidisciplinary workgroup came together to provide their expertise to document information that will increase knowledge and understanding of these complexities in order to prevent some of these cancers, diagnose cases earlier, and improve the outcomes of patients who are suffering from cancer.

Thanks to our statewide partners, including our healthcare network of hospitals, labs, and physicians who are dedicated to providing their cancer cases to the SCCCR, and then utilize the information provided in reports such as this one to guide their activities that are put into action daily throughout South Carolina. Thanks also to our national partner, the Centers for Disease Control and Prevention for their funding, guidance,

and encouragement to utilize our rich data resources to collect, interpret, and disseminate meaningful information that will ultimately improve the population health of the citizens of South Carolina.

Our goal is health equity for all South Carolinians! Through our collaborative work, we can continue to increase awareness so that proper steps can be taken to reduce the burden that cancer places on African American men as well as other groups within our state.



Richard K. Toomey  
**DHA, FACHE, Director**

# A Message from Marvella Ford, Medical University of South Carolina

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Dear South Carolina Residents:

We are delighted to share this report with you! It highlights the cancer-related health of African American men in South Carolina. We chose to focus on this population for a number of reasons. First, the prostate cancer death rate is almost three times higher among African American men than among white men in our state. Second, few health reports focus specifically on African American men. Third, African American men play a very important and significant role in their families and communities, and too many are dying prematurely and unnecessarily.

South Carolina is making significant strides in combating cancer in our state. It is our desire for these benefits to reach African American men as well. The purpose of this report is to show areas where disparities still exist, and to make some recommendations to develop strategies to reduce, and eventually eliminate, these disparities.

We are pleased to present this collaborative report. The South Carolina Cancer Alliance worked with state, regional, and local academic, community, and governmental partners to develop the report.

We hope this report will serve as a living document for many years into the future, guiding the development and implementation of cancer prevention, control, treatment, and survivorship strategies focused specifically on African American men.



Marvella E. Ford, Ph.D.  
**Professor, Department of Public Health Sciences**  
**Associate Director, Population Sciences and Cancer Disparities, Hollings Cancer Center**  
**Director, Office of Community Outreach and Engagement, Hollings Cancer Center**  
**SmartState Endowed Chair, Cancer Disparities Research**  
**Medical University of South Carolina Hollings Cancer Center**

# About Us

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## South Carolina Cancer Alliance (Alliance)

Since 2003, the South Carolina Cancer Alliance has been dedicated to the prevention and early detection of cancer as well as improving the treatment and quality of life of those diagnosed with cancer.

The Alliance consists of volunteers who represent the state's medical community, academic institutions, public health professionals, nonprofit organizations, and various community groups. Every five years, the volunteers work together to develop the five-year South Carolina Cancer Plan (Cancer Plan). This plan serves as the official road map in the fight against cancer in the state. To view the plan, visit [sccancer.org](http://sccancer.org).

The volunteers of the Alliance are divided into workgroups. These workgroups are responsible for developing, implementing, and evaluating specific projects contained in the Cancer Plan. The Alliance is made up of eight workgroups that address breast, cervical, colon, prostate, and lung cancer, as well as policy and advocacy, health disparities, and survivorship. The Alliance provides annual funding opportunities to the workgroups to implement their section of the Cancer Plan.

The Alliance acknowledges the South Carolina Central Cancer Registry's (SCCCR) findings regarding the disparities in cancer among African American men and supports the efforts of the South Carolina Department of Health and Environmental Control (DHEC) Division of Cancer Prevention and Control and the Centers for Disease Control (CDC) in addressing this public health issue facing South Carolinians. We remain committed to work with the community to address the burden of cancer.



## South Carolina Central Cancer Registry (SCCCR)

The SCCCR is the state's population-based cancer surveillance system that collects, processes, analyzes, interprets, and disseminates cancer incidence (newly diagnosed cases) and cancer mortality (deaths due to cancer) to stakeholders to guide cancer prevention and control efforts, and to researchers in South Carolina and beyond. DHEC's Division of Vital Statistics provides information on cancer mortality to the SCCCR.

Data from the SCCCR are used to study trends in cancer incidence, mortality, and patient survival rates in geographic areas of the state, and how these trends differ by age, race, sex and stage of cancer at diagnosis. Community Cancer Assessments can be provided to local communities to determine if cancer cases or deaths are occurring at a higher rate than expected when compared to the rest of the state. If any excess is found to be actionable based on certain scientific criteria, CDC's guidelines for investigating potential cancer clusters are followed. Treatment patterns and outcomes can also be studied.

The SCCCR is primarily funded by the Centers for Disease Control and Prevention's (CDC) National Program of Cancer Registries (NPCR) along with some state funds. Annually, South Carolina's cancer incidence data are provided to NPCR for inclusion in the official cancer statistics publication for the nation, United States Cancer Statistics. The SCCCR's annual data submissions are "graded" by NPCR and the North American Association of Central Cancer Registries (African American CCR). Measurement of critical data indicators are applied to determine the level of excellence of each state's data. The SCCCR has consistently received the CDC Registry of Distinction award for excellence, as well as Gold Certification from the NAACCR, which is their highest level of excellence for data timeliness, completeness, and quality.



## The South Carolina Division of Cancer Prevention and Control

The Division of Cancer Prevention and Control (DCPC) is composed of the Best Chance Network (BCN) and Comprehensive Cancer Control (CCC) programs. In addition to the administering of the statewide cancer and screening program through BCN, each program is responsible for program monitoring and evaluation; statewide and community coalition building; policy, systems and environmental change; partnership development; and population health and systems changes to ensure that goals and objectives are met according to grant funding objectives, work plans and programmatic policies and state cancer plans. The DCPC also supports the South Carolina Code of Laws, which outlines specific cancer registry and cancer prevention, detection and surveillance programs' objectives along with the formulation and monitoring of the Cancer Control Advisory Committee. Coordinated work is done through the South Carolina Cancer Alliance, the state's cancer coalition, to generate the South Carolina Cancer Plan and advance efforts to educate and inform key stakeholders about the impact of evidence-based policy, health, environmental approaches and community-clinical linkages to address the burden of cancer in South Carolina. DCPC engages in division wide quality improvement initiatives that support the development of division staff, improvement of internal and external processes and support and enhance cancer screening efforts of contracted medical providers through PDSA and lean six sigma methodologies.



# Section 1: The Burden of Cancer in African American Men in South Carolina

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## Background

The SCCCR's 2018 report, *Cancer in South Carolina: 20-Year Trends for Incidence, Mortality, and Survival*, revealed the burden of cancer is highest among the state's African American men. Disparities in the occurrence of cancer is a major concern, so breaking down the data by gender and by racial/ethnic group is a key step to track progress in addressing cancer disparities.

A disparity is defined as a lack of similarity or equality, or in other words an inequality. Health disparities refer to “differences in health outcomes of different groups of people including incidence, prevalence, mortality, and burden of disease and other adverse health conditions” and their causes. Health disparities are preventable differences in the burden of disease, or opportunities to achieve optimal health that are experienced by socially disadvantaged populations.

The 2018 report highlighted the grim reality of higher cancer disparities experienced among African American men in SC, showing that African American men experience substantially higher rates of cancer incidence and mortality compared to other population groups, a South Carolina-based publication has never been produced that focuses on the factors contributing to these specific disparities. This report addresses the issue and supports the urgent need to address cancer disparities and to ensure that statewide cancer prevention and control efforts focus on this priority population.

This report and the supplemental material are structured to provide:

- 1) the data that supports the cancer incidence, mortality, and survival disparities in African American men,
- 2) supporting factors contributing to the fundamental causes of cancer in African American men as defined in the socioecological framework;
- 3) evidence-based recommendations for action.

The good news is that the data from the 2018 report show that the risk of developing cancer in South Carolina is lowest among African American women. (Their higher cancer mortality rates to white women are largely due to access-to-care issues, as well as some potential biological influences.) The 2018 data show that we can become successful in making great strides in reducing cancer risk among African American men, as we have among African American women.

For the purposes of this report, African American or black refers to the ethnic group of Americans with total or partial ancestry from any of the black racial groups of Africa. Most African Americans are descendants of enslaved peoples within the boundaries

of the present United States (US). On average, African Americans are of West/Central African and European descent, and some also have Native American ancestry. South Carolina also includes a unique population of African Americans with Sea Island or Gullah ancestry. They are the most genetically homogenous group of blacks in the US.

According to US Census Bureau data, African immigrants generally do not self-identify as African American. The overwhelming majority of African immigrants identify instead with their own respective ethnicities. Immigrants from some Caribbean, Central American and South American nations and their descendants may or may not also identify as African American.

### **Characterizing Disparities with Cancer Surveillance**

Approach: The goals of the data summarized in this section are two-fold: 1) to describe the cancer burden in African American men, and, 2) to characterize the scope and magnitude of the cancer disparities in African American men. To accomplish this, in addition to the overall cancer rates, emphasis was placed on the top 15 cancers occurring in African American men. The incidence rates (rate of new cancer cases diagnosed) and mortality rates (rate of cancer deaths) were calculated per 100,000 men. To characterize the disparity, these rates were compared to the rates in white men; for these comparisons the rates were adjusted for age. Even though the rank order of the cancers varied for incidence and mortality, the top 15 cancers were the same for both incidence and mortality rates. The top cancers were prostate, lung, colorectum, kidney, pancreas, oral cavity, myeloma, liver, Non-Hodgkin Lymphoma (NHL), stomach, bladder, leukemia, larynx, esophagus, and brain. When the magnitude of disparities differed markedly for cancer incidence versus cancer mortality, cancer mortality was prioritized over cancer incidence because the most important outcome is preventing deaths from cancer.

### **The Overall Burden of Cancer in African American Men in South Carolina**

During the five-year period between 2012 and 2016, a total of 16,043 cancer diagnoses were made in the population of 3,226,524 African American men in South Carolina. This averages to approximately 3,200 cases of cancer diagnosed per year in African American men. During this same five-year period, 6,749 African American men died from cancer, or 1,350 deaths per year.

Cancer incidence: The age-adjusted cancer incidence rates for males by race are shown in Table 1 (page 9). In this table, the cancers are ranked by the number of most commonly occurring cancers for African American men. The top five most diagnosed cancers in African American men were cancers of the prostate, lung, colorectum, kidney, and pancreas. There was marked variation in the occurrence of cancer among these five cancer sites. Prostate cancer was far and away the most common type of cancer in African American men, occurring at a rate double that of lung cancer (176.0 versus 87.6 per 100,000), the second most common cancer. Colorectal cancer (54.2 per 100,000), kidney cancer (24.6 per 100,000), and pancreatic cancer (18.6 per 100,000) round out the top five. The incidence rates of the 6th through 13th most common cancers range from 11.0 (cancer of the larynx) to 18.5 (myeloma) per 100,000, before a marked drop off in incidence rates were seen for the 14th (esophagus, 8.8 per 100,000) and 15th (brain cancer, 4.5 per 100,000) ranked cancers.

**Table 1. Age-adjusted Cancer Incidence Rates for Males by Race, Ranked by African American Male Count, South Carolina 2012-2016\***

		White		African American	
		Rate	Count	Rate	Count
	All Cancer Sites	506.4	52,260	543.4	16,043
1	Prostate	97.8	11,040	176.0	5,497
2	Lung & Bronchus	80.6	8,455	87.6	2,488
3	Colorectum	42.1	4,226	54.2	1,540
4	Kidney & Renal Pelvis	24.1	2,455	24.6	761
5	Pancreas	14.4	1,483	18.6	520
6	Oral Cavity & Pharynx	21.0	2,207	15.4	508
7	Myeloma	8.1	803	18.5	492
8	Liver & Intrahepatic Bile Duct	12.3	1,337	13.8	464
9	Non-Hodgkin Lymphoma	21.3	2,115	15.2	435
10	Stomach	7.6	764	15.2	418
11	Urinary Bladder	37.9	3,753	16.9	411
12	Leukemia	18.4	1,788	12.7	353
13	Larynx	6.9	741	11.0	339
14	Esophagus	7.8	842	8.8	280
15	Brain & Other Nervous System	8.4	806	4.5	134

\*excludes *in situ* cancers, except bladder

Cancer mortality: The age-adjusted cancer mortality rates for males by race are shown in Table 2 (page 10). The cancers are ranked by the number of most common causes of deaths due to cancer for African American men. The five leading causes of cancer deaths in African American men were cancers of the lung, prostate, colorectum, pancreas, and stomach. Lung cancer was the leading cause of cancer death in African American men, causing 51% more deaths than the second leading cause of cancer death, prostate cancer (68.4 versus 45.2 per 100,000). Colorectal cancer (25.0 per 100,000), pancreatic cancer (16.9 per 100,000), and stomach cancer (11.0 per 100,000) round out the top five. The mortality rates of the remaining cancers range from 3.2 (brain cancer) to 9.9 (liver cancer) per 100,000.

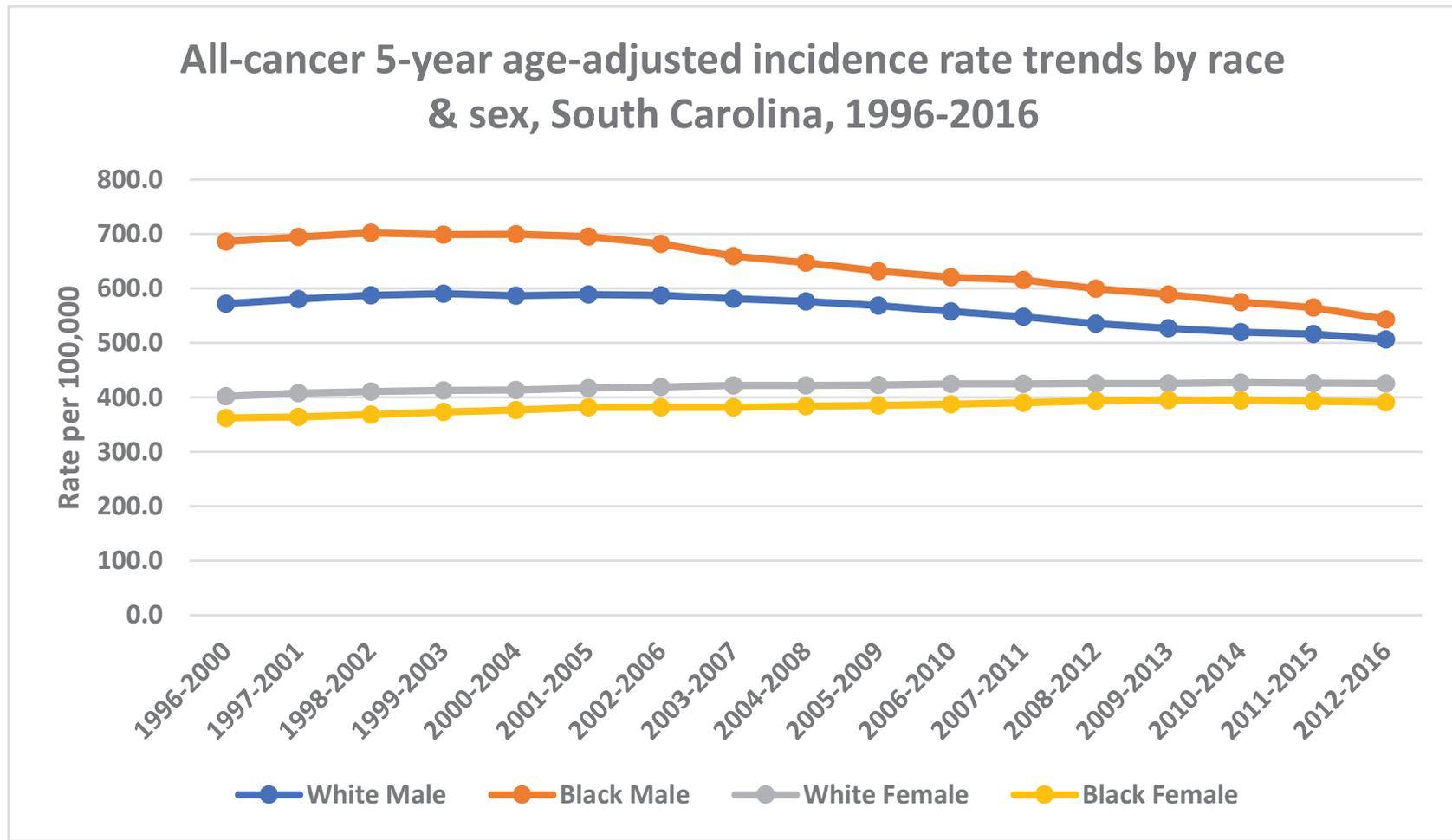
**Table 2. Age-adjusted Cancer Mortality Rates for Males by Race, Ranked by African American Male Count, South Carolina 2012-2016**

		White		African American	
		Rate	Count	Rate	Count
	All Cancer Sites	203.5	20,081	259.1	6,749
1	Lung & Bronchus	60.5	6,197	68.4	1,866
2	Prostate	17.2	1,509	45.2	938
3	Colorectum	15.8	1,546	25.0	669
4	Pancreas	12.1	1,225	16.9	451
5	Liver & Intrahepatic Bile Duct	9.5	1,006	9.9	322
6	Stomach	3.6	362	11.0	282
7	Esophagus	6.7	695	7.8	237
8	Myeloma	4.4	409	8.9	220
9	Oral Cavity & Pharynx	4.4	448	5.8	182
10	Leukemia	9.9	920	7.4	182
11	Kidney & Renal Pelvis	6.2	613	6.1	160
12	Larynx	1.8	188	4.4	128
13	Non-Hodgkin Lymphoma	7.2	686	4.8	124
14	Urinary Bladder	7.7	700	4.5	101
15	Brain & Other Nervous System	6.5	645	3.2	88

### Why Focus Specifically on Cancer in African American Men?

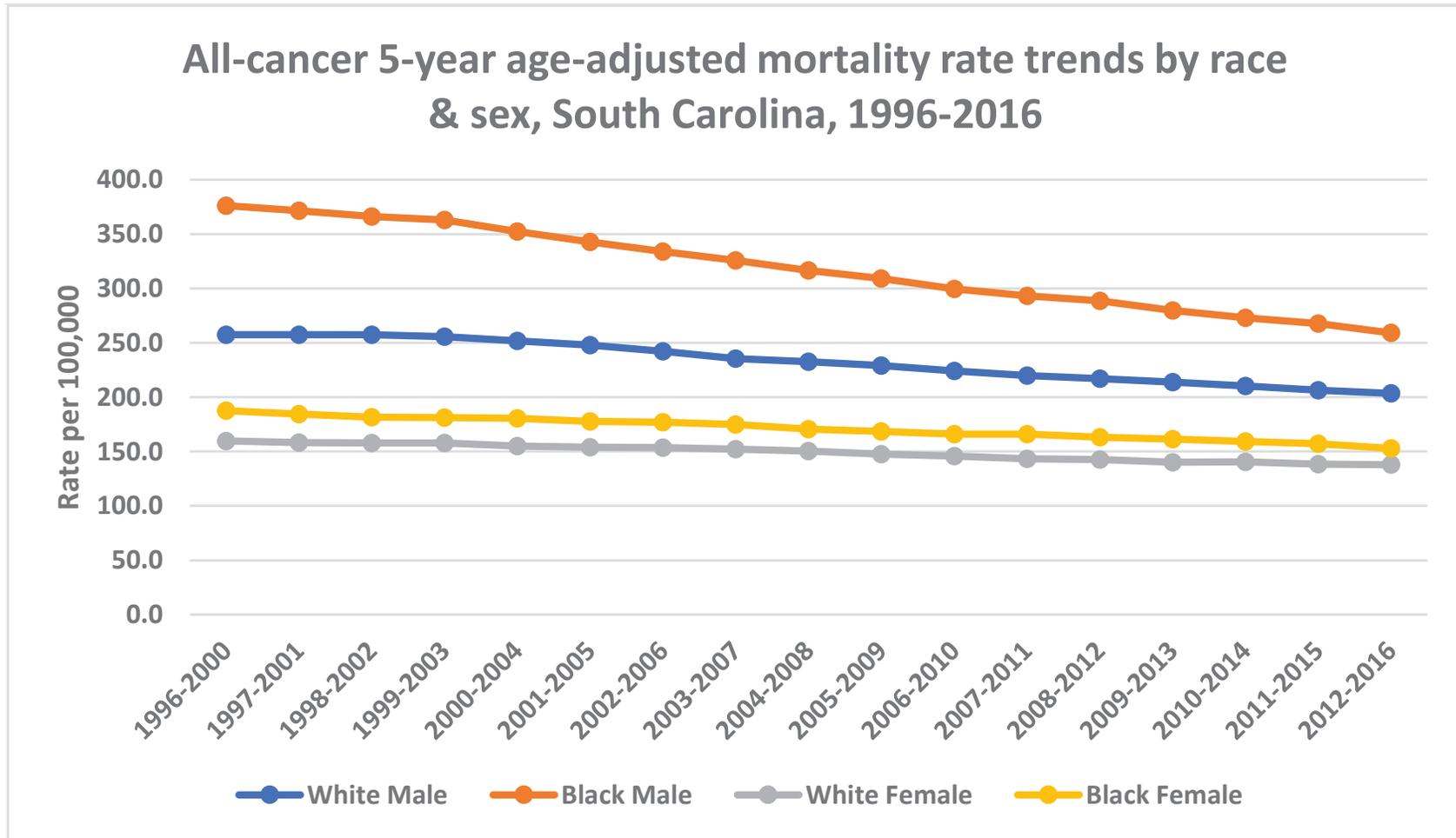
Overall, the risk of developing cancer was greater among African Americans compared with whites and among men compared with women. However, when comparing incidence rates grouped by race and sex from 1996 to 2016, the racial disparity in cancer incidence was clearly due to the high rates in African American males (Figure 1, page 11) as the highest cancer incidence rates were observed among African American men and the lowest rates observed among African American women. The incidence rates of both African American and white males have been decreasing since the early 2000s (down 156.4 and 80.3 per 100,000, respectively), but despite these strong, favorable downward trends the incidence rate for African American males remained the highest of all race and sex groups. The cancer incidence rate for African American males was on average, approximately 81 per 100,000, or 1.15 times higher than white males during the 20-year period.

Figure 1: Incidence Rates of All Cancers by Race and Sex, 1996 to 2016 (Age-adjusted to the 2000 US Std Population)



Overall, the risk of dying from cancer was greater among African Americans compared with whites and among men compared with women. Taking the same approach to evaluate the mortality rates grouped by race and sex from 1996 to 2016, once again African American males had by far the highest cancer mortality rates. The highest cancer mortality rates were observed among African American men while the lowest rates were observed among white women (Figure 2, page 12). While mortality rates declined for both groups of males, the mortality rate of African American males decreased by double the amount of the white males (117.1 versus 54 per 100,000). Despite this favorable decrease, the cancer mortality rate for African American males was on average, approximately 86 per 100,000, or 1.38 times higher than the cancer mortality rate for white males.

Figure 2: Mortality Rates of All Cancers by Race and Sex, 1996 to 2016 (Age-adjusted to the 2000 US Std Population)

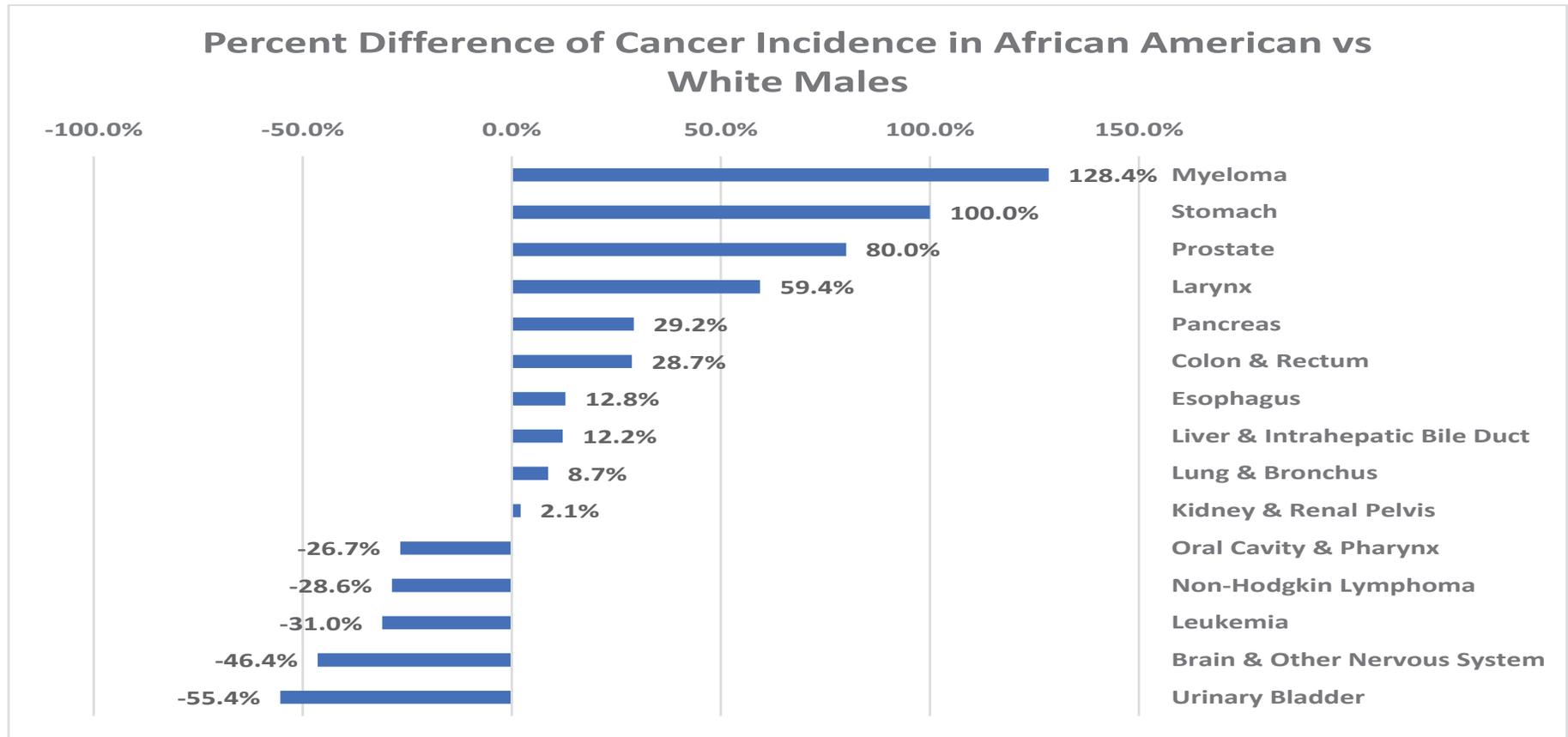


Data such as these provided a strong rationale to examine the issue of the disproportionately high cancer burden in African American men. Over the 20-year period, even though the trend for incidence and mortality rates for African American men was trending favorably downward, the rates remained markedly higher than the other race and sex groups. These observations provided the motivation for the present report.

## Disparities Among Top Cancers for African American and White Males, 2012-2016

For all cancers combined, incidence rates were 7.3% higher in African American men compared with white men. For all-cause cancer mortality the difference was even more striking, with a 27.3% higher cancer mortality in African American males compared with white males. The racial differences for cancer incidence and mortality for the top 15 types of cancer are described below.

**Figure 3: Percent Difference of Cancer Incidence Rates in African American Compared to White Males**



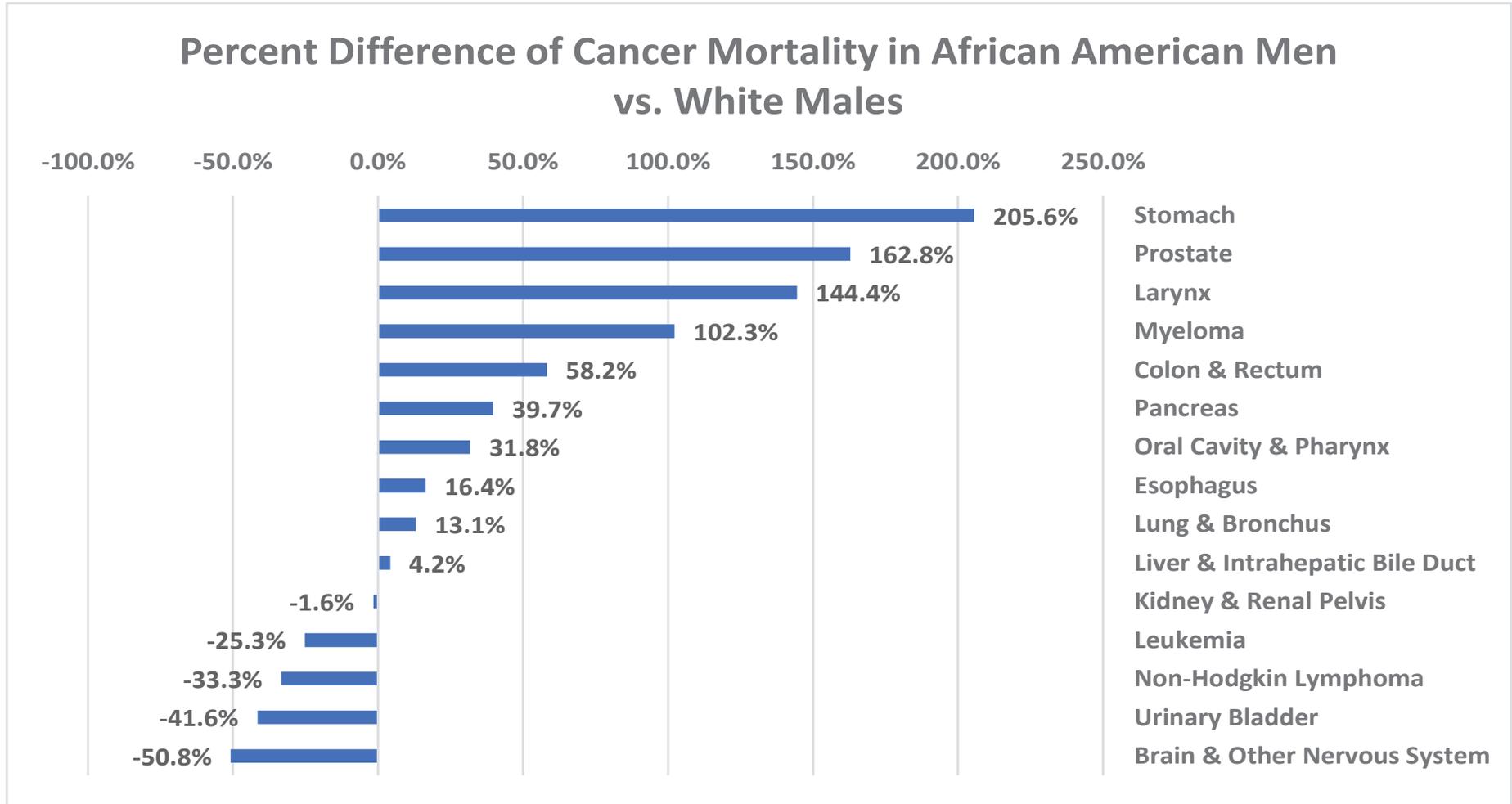
How to interpret this graph: For Myeloma- African American men have an incidence rate that is 128.4% higher than the rate for White men. For Urinary Bladder- the African American rate is 55.4% lower than the rate for White men. Note: The 0.0 line indicates no difference between African American and White rates for men. There is no cancer disparity present between African Americans and White men on the left side of the graph.

**Cancer Incidence:** The percent difference of incidence rates of the top 15 cancers in African American versus white males is summarized in Figure 3 (page 13). The incidence rates of African American males were higher than the incidence rates of white males for 10 of the 15 top cancers during this time period. Of these ten cancers, the most extreme disparities in incidence rates were seen for the following cancers: myeloma (128% difference), stomach cancer (100% difference), and prostate cancer (80% difference). Larynx, pancreas, and colorectal cancer followed with significantly higher incidence rates in African American males when compared to white males (28% difference and greater). The other four cancers with higher incidence rates in African American males than white males had percent differences that ranged from 2% (kidney) to 13% (esophagus). Rates of incidence for the remaining five cancers were lower in African American males, with percent differences ranging from 55% lower (urinary) to 27% lower (oral cavity) when compared to white males.

**Cancer Mortality:** The percent differences of mortality rates of the top 15 cancers in African American versus white males are summarized in Figure 4 (page 15). The mortality rates of African American males were higher than the mortality rates of white males for 10 of the 15 top cancers from 2012 to 2016. The most extreme disparities in rate of mortality were found for cancers of the stomach (206% difference), prostate (163% difference), larynx (144% difference), and myeloma (102% difference). Colorectum, pancreas, and oral/pharynx cancers followed with significantly higher mortality rates in African American males when compared to white males (32% difference and greater). Mortality rates for three other cancers were higher in African American males than white males with differences ranging from 4% (liver) to 16% (esophagus). The mortality rates for the remaining five cancers were lower in African American males, with percent differences ranging from 25% lower (leukemia) to 51% lower (brain); the mortality rate for cancer of the kidney was just 2% lower in African American males compared to white males.

**Integration of Cancer Incidence and Mortality Disparity Data:** These comparisons identify the specific types of cancer contributing to the racial disparities in males in South Carolina. Of the top 15 cancers stomach, prostate, larynx, myeloma, colorectum, pancreas, esophagus, lung, and liver had both a higher incidence rate and mortality rate in African American males compared with white males. Of these, the racial disparities in mortality rates were greater than 100% for myeloma and cancers of the stomach, prostate and larynx. These malignancies were also notable for the large racial disparities in incidence, which ranged from 59% (larynx) to 128% (myeloma). Double digit racial differences in mortality rates were also observed for cancers of the lung, esophagus, oral cavity, colorectum, and pancreas; these differences ranged from 13% (lung) to 58% (colorectum). Except for cancer of oral cavity, for which the incidence rate was 27% lower in African Americans compared with white men, the racial disparity was also present for cancer incidence ranging from 9% (lung) to 29% (pancreas and colorectum) higher in African American than white men. These results lead to the clear inference that to tackle the racial disparities in African American men will require a focus on the following ten malignancies: stomach, prostate, larynx, myeloma, colorectum, pancreas, esophagus, lung, liver, and oral cavity.

**Figure 4: Percent Difference of Cancer Mortality Rates in African American Compared to White Males**



How to interpret this graph: For Stomach Cancer- African American men have a mortality rate that is 205.6% higher than the rate for White men. For Brain and Other Nervous System Cancer- African American men have a mortality rate that is 50.8% lower than the rate for White men.

Note: The 0.0 line indicates no difference between African American and White rates for men. There is no cancer disparity present between African Americans and White men on the left side of the graph.

These results also clearly rule out Non-Hodgkin Lymphoma, leukemia, brain cancer, and bladder cancer as contributors to the racial disparity of cancer in African American men. For all four of these malignancies, the mortality rates in African American men were 25% or more lower than for white men. Kidney cancer also appears to play little role in contributing the racial disparity of cancer in African American males, with an incidence rate that was 2% higher but a mortality rate that was 2% lower in African American males compared with white males.

## **Summary**

The good news is that during the last two decades African American men have experienced strong downward trends in cancer incidence and mortality rates. The bad news is that despite these trends, strong disparities persist that leave African American men with a disproportionately large share of the cancer burden. The incidence and mortality rates for African American males are far higher than any other race-sex subgroup.

The data summarized in this section illustrate the large toll that cancer exacts on African American men, both in terms of morbidity and mortality. The five leading causes of cancer deaths in African American men are cancers of the lung, prostate, colorectum, pancreas, and stomach, with lung cancer far and away the leading cause of cancer death.

The data summarized in this section also point the way forward, by identifying the types of cancer that are contributing to the large burden of cancer experienced among African American men. Of the top 15 cancers assessed, 10 cancers are contributors to the higher cancer mortality rates among African American men; these are stomach, prostate, larynx, myeloma, colorectum, pancreas, esophagus, lung, liver, and oral cavity. Further prioritization within these ten cancers should consider both the incidence rate and the magnitude of the racial disparity. For example, the racial disparity in lung cancer mortality is only 13% but lung cancer is also the leading cause of cancer death in African American males.

Given the magnitude of these racial disparities, only a comprehensive, systematic effort that addresses the root causes of these disparities is likely to have a significant impact in eliminating these disparities.

# Section 2: Understanding and Addressing Health Disparities

## Socioecological Framing of Cancer Disparities among African American Men Recommendations for Potential Interventions Based on the Ecological Framework

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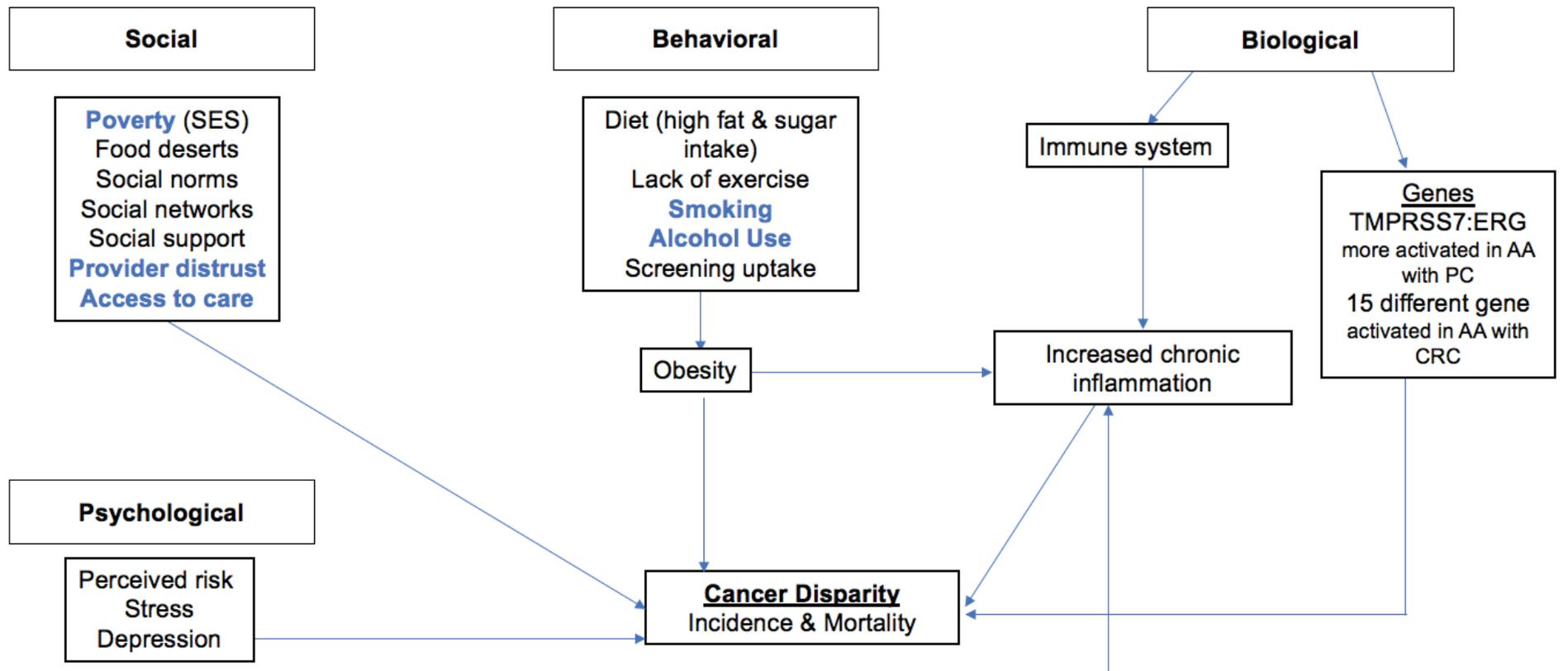
The data tells us that in the last twenty years cancer incidence (frequency or occurrence) and mortality (death) trends have decreased for African American men. And as the data depict, African American men disproportionately share a larger portion of the cancer burden.

These cancer disparities are the result of a complex interplay of socioeconomic factors. This section will focus on disparities between African American and white men.

Health disparities and their corresponding outcomes do not occur in a vacuum. The complexities that lead to health disparities can be best examined and understood using a public health oriented social ecological framework. (Reifsnider et al., 2005) The socioecological framework used in this report structures factors contributing to cancer health disparities at various levels and examines underlying issues. Socioecological frameworks enable an exploration of multiple factors that influence health outcomes, ranging from individual level contributors such as genetics, health behavior, mental health and knowledge and extending to public and health policies such as universal health care.

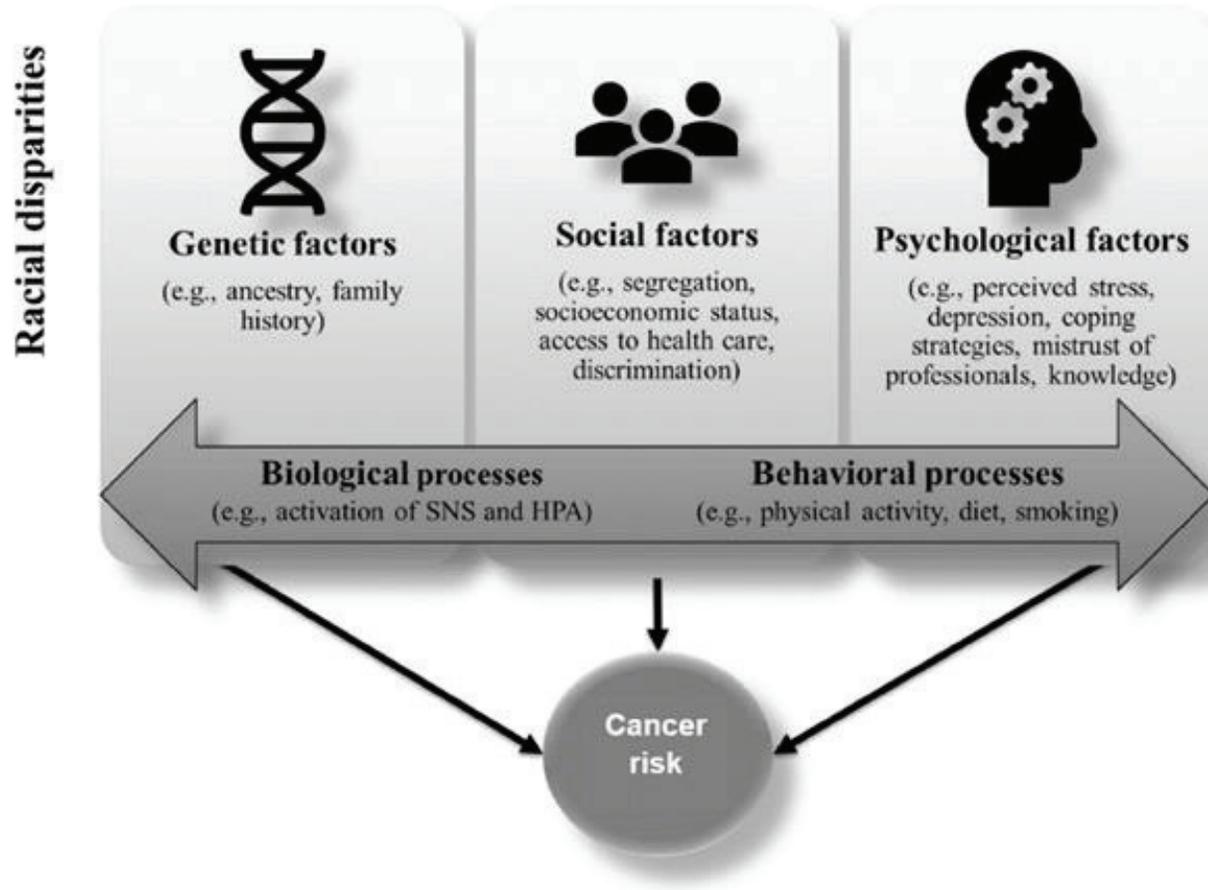
Figure 5 (page 16) depicts the interaction of known psychological, social, behavioral and biology factors and their relationship with cancer disparities. This model does not include a comprehensive list of factors, but rather denotes factors that are broadly used to help better understand racial disparities. Following is a brief description of a few underlying factors and their contributions to cancer disparities that we chose to highlight to facilitate next steps. These factors are also bolded in the socioecological model except for health insurance which is influenced by more than the factors depicted in Figure 5. Please note these factors may interact and overlap and are not meant to be mutually exclusive. As seen in Figure 6 (Cuevas et al., 2019) (page 17), cancer risks are intensified by racial disparities in genetic, social and psychological factors interacting with biological and behavioral processes. This also illustrates the complexities of dynamics in play but also shows opportunity to address this cancer burden as a public health issue in multiple ways.

**Figure 5: Interaction between Psychological, Social, Behavioral, and Biology Factors and Cancer Disparities in AA Men**



**Note:**  
 TMPRSS7:EGF-makes cancer more aggressive  
 PC-prostate cancer  
 CRC-colorectal cancer  
 SES – socioeconomic status

Figure 6. Genetic, psychological and social factors may contribute to increases the prostate cancer risk for African American men; SNS sympathetic nervous system, HPA hypothalamus pituitary adrenal axis



### Social Factors and Cancer Disparities in African American Men

Social factors contribute to disparities, particularly socioeconomic status, which refers to the social standing of an individual or group. Socioeconomic status is typically measured by education, income, wealth, employment, or a combination. (Cuevas et al., 2019)

## **Income**

South Carolina has an estimated population of 5,084,127 people of which 27.1% are African American, predominately living in rural areas. (U.S. Census Bureau, 2018) Overall, the poverty rate for working age men is 12.5% and the state ranked 42nd in the nation for the percentage of people who had incomes below poverty line in 2017. African Americans experience the highest rates of poverty along with Hispanics in South Carolina. (Kaiser Family Foundation, 2017) In 2018, 27.3% of African American had incomes below the poverty line. (Center for American Progress, 2019) A recent study found that African American men with income below poverty status had a 2.66 times higher risk of death compared with African American men living above poverty status (Zonderman et al., 2016). Not only are African Americans more likely to live in poverty, but their poverty status is a trigger for poorer outcomes such as cancer. (Chetty et al., 2018)

## **Access to Healthcare**

Improving access to comprehensive, quality health care services is one of the Healthy 2020 goals. (USDHHS, 2020) The issue of access to quality care is central to disparities in all care including cancer care. Addressing these needs require all groups have access to healthcare services and to obtain equal and appropriate healthcare. Access to care can mean different things to different people. The Agency for Healthcare Research and Quality (AHRQ) measures access to care by examining who has health insurance, a usual source of care, encounters difficulties when seeking care, and receives care as soon as wanted. (AHRQ, 2018) Under the Affordable Care Act, health care access and utilization improved for African Americans overall compared to whites. (Chen et al., 2016) However, little is known about the impact ACA has had on healthcare access and utilization for African American men. For African American men, a lack of access to care results from barriers such as healthcare provider distrust, cost/benefit, clinical experience, fatalism and fear, perceived treatment and lack of culturally competent care (lack of awareness). (Ravenell et al., 2008) These barriers can lead to delays in health care and increased risk of delayed screening, diagnosis and treatment resulting in hospitalizations that may otherwise be preventable. Further, it is crucial that discussions about access to healthcare address healthcare insurance coverage and timeliness of care.

## **Lack of Health Insurance Coverage as a Contributor to Cancer Disparities**

Health insurance coverage is critical to patients securing access to healthcare services. The Census Bureau defines health insurance coverage as a means for financing personal health care expenses. (Berchick et al., 2018). Disparities in health insurance coverage between groups reflects inaccessibility to healthcare. (Lillie-Blanton & Hoffman, 2005) In 2018, approximately 28.5 million (8.8%) Americans were uninsured. Uninsured patients experience poorer health outcomes than insured patients. For example, uninsured patients are less likely to receive healthcare (Hadley et al., 2007) and more likely to have poor health status. (IOM, 2002) The rate of uninsured working aged adults (18 to 64 years old) in 2017 was higher for men than for women. In addition to sex, substantial differences in health insurance coverage have been reported between racial and ethnic groups.

Among adults ≤65, the rate of uninsured was lower for whites at 10.9% compared to African Americans at 14.2%. (Bowers & Gann, 2017) Nationally, 17% of uninsured adults' income-to-poverty ratio is below 100% poverty level. (Berchick et al., 2018) Uninsured persons are less likely to receive preventive care and screening services on a timely basis, more likely to die prematurely due to delayed diagnosis with no insurance. Further, uninsured adults are at higher risk of developing late-stage disease. Those with private insurance have the best health outcomes. (IOM, 2002) In South Carolina, 11% of the population is uninsured. (Berchick et al., 2018) From 2016 to 2017, the uninsured rate for whites and African American adults under age 65 increased in South Carolina and 8 other states. (Bowers & Gann, 2017) Race plays an important role in these outcomes.

## **Healthcare Provider Distrust**

In health care, trust is the “expectation that medical care providers (physicians, nurses, and others) will act in ways that demonstrate that the patient’s interests are a priority.” (Hughes-Halbert et al., 2006) Trust is an essential component of the patient-provider relationship. Healthcare provider distrust refers to the lack or absence of trust or to have no trust or confidence in a healthcare or medical provider. Generally, distrust for healthcare providers is high among patients and has been associated with poorer self-reported health. (Armstrong et al., 2006) When a patient trusts a provider, they are more likely to adhere to medications, seek care, comply with treatment recommendations and return for follow up. (Thom, Hall & Pawlson, 2004) Over the last half century, public trust in medical professionals has declined from 73% to 34%. (Blendon et al., 2014) Among racial and ethnic minority groups, distrust or lower levels of trust have been particularly prevalent among African Americans. (Corbie-Smith et al., 2002; Armstrong et al., 2007) Less trust is associated with African American’s belief that doctors want them to participate in harmful research and expose them to unnecessary risks or treat them as an experiment. (Corbie-Smith et al., 2002; Armstrong et al., 2006) Distrust among African Americans is also related to certain behaviors such as less care seeking and uptake of preventive services (King, 2003; LaViest et al., 2000), which impacts treatment (Dean et al., 2017). African Americans compared to whites are more trusting of hospitals than healthcare providers (i.e., physicians) and insurance plans (Boulware et al., 2003) and tend to place more emphasis on values distrust versus competence distrust for physicians (Armstrong et al., 2008). A national survey among 954 African American and white adults revealed that African Americans (45% of) were more likely to report lower levels of trust in providers than whites (34%). (Hughes-Halbert et al., 2006) Ultimately, it has been suggested that the history of mistreatment and exploitation of African Americans by the healthcare system (Corbie-Smith et al., 2002) is the reason medical provider distrust exists and persists.

## **Behavioral Factors as Contributors to Cancer Disparities**

In addition to the social contributors of cancer disparities described above, lifestyle factors also play a major role. For example, physical activity has been shown to reduce the risk of an initial prostate cancer diagnosis as well as recurrence of this disease. A review of the literature provides compelling evidence in support of physical activity as a treatment intervention that may beneficially impact many of the side effects associated with being a prostate cancer survivor. (Smith et al., 2018; Focht et al.,

2014; Galvao et al., 2014) However, due to historical factors, African American men tend to have lower levels of wealth than their white counterparts (as measured by net worth) which gives them fewer opportunities to engage in physical activities safely in their neighborhoods. Alternatively, African American men may lack the time for exercise due to working more than one job to support their families. According to the National Cancer Institute, higher cancer burden in poor and medically underserved individuals may also reflect different rates of behavioral risk factors for cancer, such as higher rates of tobacco smoking, physical inactivity, obesity, and excessive alcohol intake. In addition, individuals who live in poverty may experience higher rates of exposure to environmental risk factors, such as cancer-causing substances in motor vehicle exhaust in dense urban neighborhoods.

Even among people of higher socioeconomic status, certain racial/ethnic minority groups may experience cancer disparities. These differences may reflect cultural differences such as mistrust of the health care system, fatalistic attitudes about cancer, or apprehension or embarrassment about having certain kinds of medical procedures. They may also reflect geographic or other differences in access to quality care.

## **Alcohol Use**

Alcohol is a cross-cutting risk factor for several cancers including colorectum, breast, liver, throat, mouth esophageal due to its interaction with cigarette smoking. (CDC, 2019) Men are more likely than women to drink alcohol in excess. (CDC, 2015; Esser et al., 2014) Mortality risk from moderate, routine alcohol consumption is higher for African Americans compared to white men. (Jackson et al., 2015) Rates of alcohol use among AA men is lower than Non-Hispanic Whites. (Hasin, et al., 2007; Hedden, et al., 2009) However, greater alcohol use has been reported among older AA men. (DePadilla et al., 2012)

## **Cigarette Smoking**

Cigarette smoking or tobacco use is considered the leading cause of death and disability in the United States. While several factors can increase risk of lung cancer, smoking cigarettes is considered the number one risk factor causing at least 80% of lung cancer deaths nationally (CDC, 2019). The percent of African Americans that smoke is equivalent to whites, yet the impact of their use tobacco use is profound contributing to the three leading causes of death—heart disease, cancer, and stroke (USDHHS, 1998; Kochanek et al., 2016; Heron, 2013) for this group. Additionally, African American men in South Carolina are more likely to die from lung cancer than their counterparts. Some notable contributors of racial disparities in lung cancer outcomes include poverty, comorbidity, lack of access to cessation resources and other treatment, and provider interactions. (Park et al., 2011) Marketing of cigarette and tobacco products through direct marketing in African American communities is thought to also influence the increased likelihood of smoking or use of tobacco products among this population. According to the most recent South Carolina Adult Tobacco Survey (2015) administered by SC DHEC's Tobacco Prevention and Control Division, 13.4% of African American men responded “yes” when surveyed about any current tobacco use, and 11.1% responded yes for current frequent cigarette use.

## **Psychological Stress and Social Adversity as Contributors to Cancer Disparities**

African American men face social adversity and psychological stress, which can lead to chronically high levels of physiological stress. (Kantor et al., 2019; Vines et al., 2009; Williams et al., 1997; Duru et al., 2012) For example, recent data have shown that stress-related signaling signatures occur in human prostate tumors, suggesting that experiencing stressful situations on a daily basis may produce poorer outcomes in prostate cancer patients. (Smith et al., 2018)

## **Genetic/Biological Factors and Cancer Disparities**

As shown in the conceptual framework in Figure 6 (page 19), genetic factors and heredity play a role in cancer disparities. (Whitfield et al., 2013)

Cancer happens when normal cells in the body stop working correctly and as a result grow at a very fast rate. This fast growth of cells forms the recognizable lump often associated with many cancers. The way a normal cell becomes a cancer cell depends upon changes that occur in the cell's "biology", or in other words, changes that alter how a normal cell function. Changes in a cell's biology not only allow cancer cells to grow quicker than normal cells, but they also allow them to acquire other abilities. For example, unlike normal cells, cancer cells can move around and locate themselves in other parts of the body (known as metastasis). Metastasis is the process by which cancer spreads, is most likely no longer curable, and often becomes deadly.

Many factors can change the biology of a normal cell and cause it to become a cancer cell. For example, genes are found in all cells and represent biological instructions for the production of proteins. The proteins themselves do most of the work in the cell and they are required for the correct structure, function, and regulation of our tissues and organs. Occasionally, genes as well as proteins are damaged, or how they work is altered, as the cell performs its everyday function. This is particularly true as we grow older and our bodies start to decline as part of the aging process. This damage can alter the biology of a cell leading to uncontrolled cell growth and the formation of tumors. Occasionally, these damaged genes can even be passed down from the parents to their offspring leading to hereditary cancers which occur more commonly within specific family groups. The way we live our lives and the environments our bodies are exposed to can also affect the biology of cells. While living a healthier lifestyle helps normal cells to function correctly, living an unhealthy lifestyle can damage or alter the biology of cells to increase cancer risk and cause cancer cells to grow more aggressively.

The biology of both normal and cancer cells is very complex and can be affected by many factors. Cancer cell biology even differs between individuals that suffer from the same type of cancer. Cancer researchers have identified and continue to identify many of the biological changes that occur when a normal cell becomes a cancer cell. These discoveries have formed the basis of many of the currently available cancer treatments. Researchers are now focused upon identifying the specific changes in cell biology that occur in minority populations. This work may significantly impact the increased cancer incidence and death rates observed in South Carolina African American men with cancer.

## Section 3: The Biology of Cancer Disparity

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The biology of cancer disparity can be defined as “the changes in cell biology that contribute to the increased incidence and death observed in minority populations”. It can be discussed in two ways:

The first involves the direct effects that the risk factors that contribute to cancer disparity have on the biology of cells. A complex relationship exists between the demographic, socioeconomic and environmental factors that drive cancer disparity and the biology of normal and cancer cells. For example, it is now clear that our lifestyle choices such as the foods we eat and the amount of physical activity we undertake can profoundly affect the biology of cells. This is particularly evident for highly processed high fat, high sugar foods which are also associated with increased risk of cancer. Cancer risk factors that contribute to health disparity in South Carolina men include poverty, obesity, poor diet, and lack of exercise. African Americans are more likely to live in food deserts where there is little or no availability of fresh fruit, vegetables, and other healthful whole foods. African Americans are 1.5 times as likely to be obese as whites and a higher percentage of African Americans report getting little to no exercise. (Zenk et. al.,2009) Poverty status and a lack of readily available affordable healthful foods is associated with the consumption of low cost, highly processed, high fat, high sugar foods that are also associated with obesity and increased risk of cancer. There is consistent evidence that being overweight or obese increases your chances of developing a cancer through changes in cell biology which allow cancers to form or existing cancer to grow quicker.

Other cancer disparity influences also affect cell biology. Racial and ethnic minorities are less likely to have health insurance, so they may not see a doctor regularly. This contributes to poor access to care as well as a failure to get screened which allows cancers to go undiagnosed and untreated. Early diagnosis of cancers often means their biology can be treated with some success. However, untreated cancers change their biology which makes them more aggressive, difficult to treat and even unresponsive to therapies that work if given early. A carcinogen is a substance that causes cancer, often by damaging the genes in our bodies which changes the cells biology. People have a higher risk of getting some cancer types if they live near places like smelters, foundries, chemical factories, and coal mines where carcinogens are abundant. Members of racial and ethnic minorities are more likely to work at or live near such places.

The second way the biology of cancer disparity can be discussed is through the differences that exist in an individual's genes and proteins that are defined by ancestry. Research has shown that even when socioeconomic, demographic and environmental risk factors are accounted for, differences in cancer incidence and death rates persist between minority populations. This indicates that differences in cancer cell biology may exist that may vary depending upon a person's ancestry or ethnicity. Initial evidence that ancestral differences in cancer biology exist was first provided in prostate cancer. A study of autopsy data from men who died of prostate cancer between the ages of 20 to 49 demonstrated that the age at which men develop prostate cancer was similar

between African American and whitemen. (Powell et al., 2010; Martin et al., 2013) This study was then supported by further studies that showed the occurrence of subclinical prostate cancer also did not differ by ancestry at early ages, but more advanced metastatic prostate cancer occurred much more often in African American men. (Martin et al., 2013) These research findings support the concept that prostate tumors in African American men grow quicker and more aggressively due to differences in cancer biology.

Due to advances in the way we examine the genes within our cells, cancer researchers are now identifying ancestry-specific genes that can contribute to cancer growth. Changes in cell biology contribute to the increased incidence and death observed in minority populations. The changes in cell biology that contribute to cancer disparity in African American men are a combination of both demographic, socioeconomic and environmental factors as well as the ancestral differences that exist in any individual's genes and proteins. (Turner et al., 2017) It should be noted that the two are also not mutually exclusive. Cancer disparity factors can damage or alter ancestry-specific genes leading to increased risk of cancer. Additionally, ancestry-specific genes can alter an individual's response to health disparity factors also leading to increased cancer risk. A greater understanding of how these combined factors contribute to changes in cell biology would allow the development of interventional and pharmacological strategies targeted to minority populations.

### **The Immune System and Cancer Disparity**

The human immune system comprises of several cells which normally protect the body from foreign invaders such as bacteria, fungi, and viruses. The immune cells also help the body fight against cancer as it can remove cells that are damaged. However, when the immune system does not function properly, in other words its biology is changed, it can result in infection, inflammation and the increased growth of cancer cells. Cancer-associated changes in immune cell biology largely occur in two ways. In the first, the immune cells do not work correctly and are weakened (known as immune suppression). This means they are unable to help fight the cancer and it grows unchecked by the immune system. This is most associated with leukemia or lymphoma, but it can happen with other cancers too. In the second way, the immune cells are working but at much higher levels than normal (known as immune activation). This often produces a high amount of inflammation at and around the cancer which helps it to grow and become aggressive. (Gonzalez et al., 2018)



For example, a technique known as whole genome analysis examines gene changes that occur in prostate tumors taken from African American patients and compared them the gene changes that occur in prostate tumors taken from white men. While there were no gene differences in normal prostates, they identified that the genes involved in regulating the immune system in African American men with prostate cancer were very different from that seen in white men with prostate cancer. (Kinseth et al., 2014; Rose et al., 2010) Many of these immune response genes identified in African American men were involved in increasing chronic inflammation in the body. Changes in cancer-associated immune suppression or immune activation are brought about by changes in the biology of immune cells. As a cause of cancer, immune-associated inflammation is commonly observed to be worse in African Americans compared with white men. It is not clear at this time if the changes in immune cell biology are brought about by the demographic, socioeconomic and environmental factors which contribute to cancer disparity or the ancestral differences that exist in any individual's genes and proteins, or a combination of both.

Immunotherapy is a treatment that uses one's own immune system to help fight cancer. It has great potential to change how we treat all cancers. A recent clinical trial treated African American and white prostate cancer patients with the immunotherapy drug. The results showed that the African American men receiving the drug lived significantly longer than white men receiving the same drug. (Moses et al., 2019) While in their early stages, these promising results further support the role of the immune system as a driver of cancer disparity in African American men.

## **The Value of Lifestyle**

Prevention is the best medicine. Estimates vary, but between 40 and 80% of cancers are now thought to be preventable by living healthier lives. All disparity risk factors alter the way a cancer is formed and how it grows (i.e., alters cancer biology) which leads to earlier cancer development or its progression to more aggressive disease. By living a healthier lifestyle, it is believed you can prevent or possibly reverse the biological changes that originally help a tumor to form or grow. Living a healthier lifestyle can prevent the damage to our cells that can lead to cancer formation and growth. For example, eating a healthy diet can reduce the inflammation produced by our immune system. This would prevent the damage caused by inflammation which can help cancer form and can reduce the inflammation caused by cancer which helps it grow. Due to the complexity associated with cancer biology and cancer disparity risk factors, what we actually know about cancer prevention and treatment is an evolving process. However, there is now a common consensus that has produced a series of interrelated cancer-prevention guidelines based on simple lifestyle changes:

1. Adopt healthier eating practices. The role of diet in cancer is highly complex and the role of individual food types on cancer risk is controversial. Our individual diets are made up of lots of different food types, so it's difficult to pinpoint the effect of individual foods have on the way cancer grows. However, it is clear that overall diet is very important when it comes to reducing cancer risk, but what does a healthy and balanced diet look like? A healthy diet is high in fruit and vegetables, wholegrains (e.g., brown rice or wholegrain bread) and healthy proteins like fresh chicken, fish or pulses (e.g., lentils or beans), but low in processed and red meats, high calorie foods, sugary drinks and foods and alcohol.

2. Do not smoke or use tobacco products. This includes exposure to secondhand smoke. Poisons in tobacco smoke or products can damage or change the cells in our bodies to promote many types of cancer including lung cancer. Studies show that ten years after you quit smoking, your risk of dying from lung cancer drops by half. Smoking also increases inflammation.
3. Engage in regular physical activity. Physical activity is defined as any movement that uses skeletal muscles and requires more energy than does resting. It can include working, exercising, performing household chores and leisure-time activities such as walking, tennis, hiking, bicycling, and swimming. The American Cancer Society recommends that adults get at least 150 minutes of moderate intensity or 75 minutes of vigorous activity each week (or a combination of these). You can reach these goals by walking briskly on your lunch break for 30 minutes, 5 days a week. Regular physical activity has been linked to a reduced risk for 13 different cancer types. Exercise will help protect you even if you don't lose weight.
4. Stay a healthy weight. Being overweight or obese increases the risk for developing many forms of cancer. Eating a healthy and balanced diet as well as partaking in regular physical activity can help you keep lean and reduce your risk of developing cancer (as discussed above). Obesity increases inflammation also.
5. Avoid unnecessary exposure to radiation. Exposure to the ultraviolet radiation in sunlight increases the risk of melanomas and other skin cancers. Only undergo medical imaging (e.g. X-rays) when needed and check your home for residential radon, which increases the risk of lung cancer.
6. Avoid exposure to cancer associated infections. Hepatitis viruses, HIV, and the human papillomavirus (HPV) are all associated with increased risk of cancer which can be transmitted sexually or through contaminated needles. Talk to your physician about treatments and vaccines against infections.
7. Avoid exposure to environmental toxins. Asbestos, benzene, aromatic amines, and polychlorinated biphenyls (PCBs) are environmental toxins we can be exposed to that are associated with increased cancer risk.
8. Get regular medical screening. Early detection of a cancer is often critical to its successful treatment. Therefore, regular self-exams and medical screenings for various types of cancers can increase your chances of detecting a cancer early in its development. Ask your doctor about the best cancer screening schedule for you and make certain you share your family history of cancer with your doctor so that your risk can be appropriately assessed.
9. Seek community health screenings and clinics. Seek low-to-no cost screening programs in your area.
10. Drink responsibly. If you choose to drink, follow the U.S. Dietary Guidelines on moderate alcohol consumption (no more than 2 drinks per day for men). Choose not to drink too much and help others do same and do not serve alcohol to anyone underage or who has exceeded the recommend limits per day. Support strategies in your community to prevent alcohol abuse. Also, speak with your healthcare provider about your drinking behavior and ask about resources that may be available to you locally.

## In Summary

The first of its kind, this report was developed to bring awareness to the racial disparities that exist and persist in cancer for African American men compared to white men in South Carolina. In the report, we describe the state of cancer disparities among African American men by showing data for the most commonly diagnosed cancers, cancer incidence, and mortality as compared to white men. Next, some key underlying causes of disparities that have been reported in scientific literature are explored along with their connection to biological changes and cancer disparities. Some key takeaway points from this report are:

- Cancer incidence and mortality rates are improving for African American men in South Carolina. However, the mortality rates in African American men remain on average 38% higher than the rates for white men over the last twenty years.
- Cancer incidence and mortality rates are highest among African American men in cancers of the prostate, lung and colorectum.
- Among the top fifteen cancers diagnosed for African American men racial disparities were greatest for myeloma and cancers of the stomach, prostate, and larynx for both incidence and mortality. Remaining cancers showing disparities included: colorectum, pancreas, esophagus, lung, liver, and oral cavity.
- Tackling cancer disparities in South Carolina warrants a focus on ten cancers: stomach, prostate, larynx, myeloma, colorectum, pancreas, esophagus, lung, liver, and oral cavity.
- Several factors play an important role in the risk and development of cancer and cancer development in African American men: Social (e.g., poverty, access to health care and provider distrust); Behavioral (e.g., cigarette smoking, diet and alcohol use); Psychological (e.g., stress) and Biological (e.g., genetics) factors. These factors must be considered and incorporated into initiatives addressing cancer disparities.



In addition to reporting on the state of cancer among African American men in South Carolina, this report was created to prompt action and guide local and statewide community-driven cancer health disparities initiatives. Following the practical solutions provided can help you or someone you know become a health advocate.

### **Next Steps**

Identifying and developing solutions for the factors that contribute to these disparities will likely play a major role in reducing racial cancer disparities in South Carolina and could lead to improvements in cancer outcomes for all South Carolinians and beyond. However, the disparities in African American men's health took decades to create and consequently, will not be corrected swiftly. The South Carolina Cancer Alliance and its partners are committed to long term engagement with the community and stakeholders to help reduce this burden. We understand that community engagement and structural change will require partnerships among the African American community and many partners and supporters.

There are many evidence-based recommendations that can improve the health of African American men. The South Carolina Cancer Alliance has developed supplemental materials to provide practical solutions to reducing health disparities in African American men. The Alliance based this information on the recommendations provided in The Guide to Community Preventive Services (The Community Guide) managed by the US Department of Health and Human Services. The Community Guide is a collection of evidence-based findings used by community, community organizations, businesses, healthcare organizations, policy/decision makers and/or individuals. Please visit [www.sccancer.org](http://www.sccancer.org) for more information.

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*The mission of the South Carolina Cancer Alliance is to reduce the impact of cancer on ALL South Carolinians.*