



# Eradicating Health Care Disparities in the Surgical Management of Prostate Cancer

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## Abstract

Racial disparities in the arena of prostate cancer epidemiology and survival outcomes are conjectured to extend to the surgical management of this disease, particularly to the extent that African-American men encounter less favorable curative opportunities and disease control impact among racial groups in this regard. A literature review was performed to examine the utilization trends and therapeutic efficacy aspects of radical prostatectomy for clinically localized prostate cancer in African-American men. African-American men carry an adverse prostate cancer risk profile, with distinctive tumor biologic implications, although multiple risk factors across disease, patient, and provider domains are contributory. Delayed screening for this disease in African-American men, relative to Caucasian-American men, coupled with racial variations in patterns and quality of care, are highly relevant variables accounting for decreased radical prostatectomy utilization. Reports exist both in support of and in opposition to therapeutic efficacy equivalence among racial groups after radical prostatectomy. The racial variation in surgical care for prostate cancer can be addressed by applying both pattern and quality of care improvements in the delivery of surgical treatment. Future research advances will also be beneficial for advising optimal treatment based on targeted risk profiles.

**Keywords:** African-American; Prostate cancer; Radical prostatectomy; Survival; Utilization

## Introduction

Racial disparities in prostate cancer epidemiology and survival outcomes generally have been well documented, with assorted facts and figures indicating that African-American men are disadvantaged with regard to disease control and therapeutic gains associated with this disease relative to their Caucasian-American counterparts. Prostate cancer is a daunting disease state for all Americans: it represents the most commonly diagnosed malignancy and the second most common cause of cancer-related deaths in the United States [1,2]. However, for African-American men, the public health implications of this disease are all the more sobering: the disease incidence is 1.62-fold greater for African-American men than for Caucasian-American men and the mortality rate-ratio is 2.45-fold greater, respectively [3]. In blunt absolute terms, 1 in 3 African-American men will be at risk for developing clinically significant prostate cancer and as much as 1 in 5 African-American men >50 years of age will die of this disease [4].

The emergent paradigm of prostate cancer in America has been that of an entity having an early stage (low risk) clinicopathologic threat, yielding increased opportunities for treatment with curative intent [5]. According to current estimates, greater than 90% of prostate cancer diagnoses are clinically localized or regional disease presentations [6]. The inception of widespread prostate-specific antigen (PSA) screening in the early 1990s is credited largely with this evolutionary occurrence. The effect of PSA screening is demonstrable by an estimated 40% reduction in mortality rate observed for prostate cancer [3,7]. Despite these advances, remarkably the United States Preventive Services Task Force recently issued a position statement recommending against the

use of PSA screening, ostensibly to counteract disquieting apparent trends of prostate cancer overdiagnosis and overtreatment [8]. This recommendation for action would influence the landscape of prostate cancer healthcare even further, predictably in the direction of reduced opportunities for curative management. Altogether, these shifting directives predictably raise concerns with respect to their potential impact on prostate cancer disease outcomes in general, although the weight of these concerns may be even greater for the African-American population.

Among contemporary treatment options with curative intent for clinically localized prostate cancer, radical prostatectomy (RP) is recognized as an effective therapeutic approach. This treatment option became increasingly accepted in the mid-1980s owing indisputably to the pioneering advance of nerve-sparing anatomic technique, which has reduced historically high rates of functional complications of the previous surgical era. RP is performed in approximately 60,000 men yearly in the United States with improved surgical outcomes [9]. Acceptably reduced long-term complication rates of such functional complications as urinary incontinence and erectile dysfunction are regularly observed today [10]. Survival outcomes in men undergoing this surgery are also dramatically improved in the current era, in part due to the role of RP in prostate cancer management [3,7].

Whether prevailing surgical treatment patterns for prostate cancer and their influence on survival outcomes of this disease carry impact for African-Americans is an open question. Various reports have indicated that African-American men underutilize RP, which may be explained by many possible factors from patient mistrust of the health system and disapproval of quality of life effects of surgery to type and quality of treatment access for prostate cancer [11-13]. This article explores disparities in the utilization and survival impact of RP for clinically localized prostate cancer in African-American men. It begins

with an assessment of the risk profile of prostate cancer in African-American men, in a broad view and in the context of some unique features of this disease among malignant conditions that may contribute to this racial disparity. It continues with a review of risk factors possibly influencing the utilization of clinically localized prostate cancer treatment, centering further on factors likely accounting for RP utilization trends in the African-American population. The presentation then proceeds with an evaluation of outcomes reports in African-American men, identifying and reconciling conflicting information. It concludes with a proposal of action items that may address existent disparities associated with the poor utilization of RP for African-Americans.

### Prostate cancer risk profile

Prostate cancer is included among a range of diseases that adversely impacts minority populations to a disproportionate extent with respect to morbidity and mortality [14,15]. It is well known that for African-Americans among all racial/ethnic groups, for example, rates of mortality are the highest for heart disease, cancer, stroke, and HIV/AIDS. With respect to cancer sites aggregately, African-Americans experience increased mortality outcomes [1,2,6]. Various determinants have been attributed to this situation, ranging from disease biological factors to cultural factors to treatment access factors.

With respect to decreased prostate cancer survival in African-Americans in particular, several factors are relevant. A major consideration pertains to the role of regular screening procedures for this disease, which impacts on this statistic. In fact, disparities in mortality uniformly exist for cancers for which regular screening procedures have been developed (i.e., colorectal, breast and prostate) [16], and the extent of this difference was shown to have escalated between 1975 and 2003 [17]. This observation correlates precisely with the late diagnosis and management of prostate cancer commonly reported in African-Americans, relative to their Caucasian-American counterparts, with the manifestation of more likely advanced disease upon presentation and worse prognosis in the former [18-21]. The public health policy ramifications of this observation are obvious, including the inference that the just endeavor of applying prevention, diagnosis and treatment efforts should extend equivalently across all ethnic groups. Highlighted in this context is the generally lengthy natural history of prostate cancer, which affords possible opportunities for its early detection and intervention.

Multiple analyses have been undertaken to discern the basis for the adverse disease risk profile of prostate cancer for African-American men. Disease factors (i.e., grade, stage, tumor volume, PSA), patient factors (i.e., values, beliefs or preferences, demographics, comorbidities, education status, access to care), and provider factors (i.e., experience, specialty, case volume, practice setting, geographic location) have been identified and viewed to characterize a likely multifactorial basis for adverse outcomes [22]. However, investigation in this arena has supported the ongoing likelihood of a race-specific determinant. After controlling for individual risk factors such as stage and grade of disease, socioeconomic status, healthcare access, and comorbidity status, racial differences in outcomes persist suggesting that other factors are indeed still in play [23-25]. Biological factors, including genetic predispositions and differences in tumor biology in different hosts, remain significant considerations to explain racial differences [26,27].

### Radical prostatectomy utilization

Besides tumor biology as a cogent basis for prostate cancer survival disparity for African-Americans, variation in treatment patterns represents an additional source likely contributing to this outcome. Numerous studies have documented that as a whole African-American men are not aggressively or timely treated for prostate cancer and the quality of prostate cancer healthcare afforded African-American men is deficient, even with adjustment for co-morbid conditions and socioeconomic status indicators [13,23,28-31]. Lack of treatment access itself has been demonstrated to be a fundamental contributor to decreased utilization of definitive care in minority populations, relating to such underlying factors as lack of health insurance, overall differences in socioeconomic status, and inequitable spatial distribution of high-volume specialists [31-34].

Several reports have nonetheless indicated that when controlling for prostate cancer pathology stage or grade and systemic barriers in prostate cancer diagnosis and treatment, disease outcomes across racial groups are equivalent [35,36]. Meta-analyses on racial disparities in cancer survival broadly have too suggested equivalent outcomes among different racial groups when healthcare access is equivalent [37-40]. However, others have concluded these data are inconsistent [25]. It is not surprising that controversy surrounds the issue of racial variation in outcome after clinically localized prostate cancer management as well. With respect to RP specifically having impact on disease control and survival outcomes, surgical efficacy has been debated [41-48]. A more complete examination of the elements of this debate serves to clarify this discussion further.

### Survival outcomes after radical prostatectomy

Arguments exist on both sides of the debate regarding the equivalence of survival outcomes following RP in African-American men. Reports increasingly affirm that if localized prostate cancer is treated adequately and appropriately across all grades and stages survival outcomes are equivalent across racial groups [46-48]. Adding to this sense of optimism is the observation by some investigators that with respect to the utilization of RP trends are occurring toward improved availability and efficiency of this treatment across racial groups [49,50]. However, it is noteworthy that one such study in this camp identified a compensatory basis for the observed similarities in prostate cancer severity at presentation in their cohort: African-American men presented at younger ages than their counterparts with similar stage and grade cancers [46]. This observation importantly acknowledges that high-risk tumor biology persists as a fundamental disease risk differentiator in the African-American population.

Opposing reports assess non-equivalence of survival outcomes after RP: African-American men display significantly shorter overall and cancer-specific survival times, regardless of treatment for localized disease and after adjustment for multiple covariates including age, comorbidity score, stage and grade of prostate cancer, treatment site, and proxies for socioeconomic status [51,52]. Investigators from this camp explain the poorer disease control in their cohorts as reflecting the possibilities of technically inadequate treatment or tumors with more aggressive biological behavior that account for racial differences.

### Synthesis

Although the subject of utilization and outcomes of RP for clinically localized prostate cancer in African-Americans is contentious, an overarching supposition is that racial variations in this arena likely

exist. A host of factors are known to be at play and exert roles of variable extent. Viewpoints may differ as to the impact of RP on survival outcomes, as discussed, despite the rigor of exercises on both sides that have controlled for race-non-specific risk factors. In the context of patterns of care, treatment access is a central differentiator in the debate, and although it is likely a major basis for underutilization of RP by African-Americans principally this matter presumably differs from a race-specific variable. Tumor biology constitutes a likely race-specific risk determinant, and further investigation in the field may yield a calculation of its magnitude in causing racial variations. Quality of care when utilizing RP (e.g., provider's qualifications and experience) also warrants consideration as a possible contributing factor leading to putative survival outcome differences across racial groups, and healthcare researchers are increasingly striving to understand and weigh the extent of RP quality indicators in this overall appraisal [24,53,54].

### Take-action considerations

Assuming the likelihood of racial variation in the surgical care for prostate cancer, steps can be taken to eradicate this disparity. Precisely, both pattern of care and quality of care improvements should be sought and are consistent with clarion calls for policy change in prostate cancer management from such institutions as the Institute of Medicine [14,15].

Pattern of care improvements refers to such opportunities as enhancing early detection, diagnosis and treatment of prostate cancer and enabling access to prostate cancer healthcare and health insurance. The increased utilization of PSA testing in minority populations over recent eras of its use, for instance, has been shown to lessen the racial gap in the delivery and outcomes of treatment for prostate cancer [51]. This assessment adds mightily to the counterargument against current recommendations for disbanding PSA testing for prostate cancer screening [8].

Quality of care improvements refers to such opportunities of bringing and adhering to quality indicators of healthcare across structure, process and outcome domains within the arena of prostate cancer management [24,53,54].

Besides these healthcare programmatic initiatives, ongoing activities to study risk factors for racial disparities across biological, genetic, social, environmental, dietary, and lifestyle domains can be expected to be gainful. Such efforts would in turn foster the development of disease risk biomarkers, diagnostic and therapeutic technologies and other innovations that may be introduced to the surgical arena of prostate cancer in hopes of reducing racial disparities of this disease.

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