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Getting back to equal: The influence of insurance status on racial disparities in the treatment of African American men with high-risk prostate cancer

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Abstract

Objectives: Treating high-risk prostate cancer (CaP) with definitive therapy improves survival. We evaluated whether having health insurance reduces racial disparities in the use of definitive therapy for high-risk CaP.

Materials and methods: The Surveillance, Epidemiology, and End Results Program was used to identify 70,006 men with localized high-risk CaP (prostate-specific antigen level > 20 ng/ml or Gleason score 8–10 or stage > cT3a) diagnosed from 2007 to 2010. We used multivariable logistic regression to analyze the 64,277 patients with complete data to determine the factors associated with receipt of definitive therapy.

Results: Compared with white men, African American (AA) men were significantly less likely to receive definitive treatment (adjusted odds ratio [AOR] = 0.60; 95% CI: 0.56–0.64; $P < 0.001$) after adjusting for sociodemographics and known CaP prognostic factors. There was a significant interaction between race and insurance status ($P_{interaction} = 0.01$) such that insurance coverage was associated with a reduction in racial disparity between AA and white patients regarding receipt of definitive therapy. Specifically, the AOR for definitive treatment for AA vs. white was 0.38 (95% CI: 0.27–0.54, $P < 0.001$) among uninsured men, whereas the AOR was 0.62 (95% CI: 0.57–0.66, $P < 0.001$) among insured men.

Conclusions: AA men with high-risk CaP were significantly less likely to receive potentially life-saving definitive treatment when compared with white men. Having health insurance was associated with a reduction in this racial treatment disparity, suggesting that expansion of health insurance coverage may help reduce racial disparities in the management of aggressive cancers. © 2014 Elsevier Inc. All rights reserved.

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1. Introduction

Excluding skin cancers, prostate cancer (CaP) represents the most common cancer diagnosed in men. In 2014, there will be approximately 233,000 new diagnoses of CaP and

29,480 deaths owing to CaP in the United States [1]. Risk groups based on prostate-specific antigen (PSA), Gleason score, and clinical T category aid in predicting outcomes for patients with CaP [2–4]. High-risk disease is the most lethal form of localized CaP and is responsible for a large proportion of CaP-specific mortality [1]. Definitive therapy with either radical prostatectomy or radiation improves survival for patients with high-risk CaP [5–10]. Based on this evidence, well-defined guidelines for treating high-risk disease have been developed by the National Comprehensive Cancer Network (NCCN) [4].

African American (AA) men have a greater incidence of CaP and more than twice the risk of CaP-specific mortality compared with white men [1,11]. The degree to which biologic/genetic differences, socioeconomic determinants, delayed diagnosis, access to care, and patterns of care contribute to poorer CaP outcomes for AA men is largely unknown [12]. Although efforts have been made to elucidate the effect of these factors on racial disparities in CaP outcomes [13–16], there is a paucity of literature examining the relationship between insurance status and racial disparities and its association with cancer care patterns in the context of aggressive cancers. With the implementation of the Affordable Care Act (ACA) and ongoing expansion of health insurance coverage, it is critically important to understand the influence health insurance may have on racial treatment patterns in cancer care [17].

We used the Surveillance, Epidemiology, and End Results (SEER) database to evaluate whether having health insurance is associated with a reduction in racial disparities in the receipt of definitive therapy for high-risk CaP.

2. Methods

2.1. Patient population and study design

Sponsored by the National Cancer Institute, The SEER program collects and publishes cancer incidence, survival, and treatment data from population-based cancer registries; SEER captures approximately 97% of incident cancers, and the 17 tumor registries encompass nearly 26% of the US population [18]. The SEER program was used to identify 70,006 white and AA men with localized high-risk CaP (PSA level >20 ng/ml or Gleason score 8–10 or stage >cT3a) [3,4], with known insurance status diagnosed from 2007 to 2010. The inclusion period was limited to 2007 to 2010, as 2007 represents the year data on insurance status was introduced, and 2010 represents the most recent year for which full information is available.

Our primary independent variables of interest were race and insurance status. Race was classified as either white or AA, as designated by the SEER program [18]. We analyzed insurance coverage as a dichotomous variable given that SEER does not provide information on the specific type of

insurance coverage that patients have. Specifically, a patient was considered "insured" if he was classified by SEER as "insured," "insured/no specifics," or "any Medicaid," and a patient was considered "uninsured" if he was classified as such.

Gleason scores, as provided by the SEER program, represent the highest Gleason score identified at surgery or biopsy (for nonsurgically managed patients). Stage was determined using the AJCC 6th edition as provided by the SEER program [18]. Income (computed as median household income) and educational status (computed as the percentage of residents >25 y of age with at least a high school education) were determined at the county level by linking to the 2000 United States Census [19]. Residence type was also determined at the county level by linking to the 2003 United States Department of Agriculture Rural-Urban Continuum Codes [20].

Initial management was defined as definitive treatment vs. nondefinitive treatment. Definitive treatment was classified according to the NCCN guidelines and included radical prostatectomy, external beam radiation therapy (EBRT), brachytherapy, or any combination thereof [4].

2.2. Statistical analyses

The primary outcome measure of this study was the use of definitive treatment for patients with high-risk CaP diagnosed from 2007 to 2010. Baseline clinical and demographic characteristics were compared using the t test and chi-square test, as appropriate. Management type (no definitive treatment, radical prostatectomy, radiation [EBRT or brachytherapy], or combination therapy) was analyzed stratified by race and insurance status, with chi-square pairwise comparison tests performed to compare across stratified groups. After adjusting for demographic factors (age, race, insurance status, residence [urban vs. rural], income, education, Gleason score, and cancer stage), multivariable logistic regression was used to determine the association between race and the receipt of definitive treatment. We then evaluated whether there was a statistical interaction between insurance status and race with respect to the use of definitive treatment. Sensitivity logistic regression analyses were used to determine whether any observed interaction remained significant by insurance type (Medicaid vs. uninsured and privately insured [no specifics] vs. uninsured). Furthermore, Fine and Gray's [21] multivariable competing-risks regression (adjusting for the aforementioned covariates in addition to receipt of definitive therapy) was used to assess the association of other-cause (non-CaP specific) mortality as a proxy for comorbidity among uninsured men with at least 3 years of follow-up, given the lack of comorbidity information in SEER. Men were only included ($n = 64,277$; 54,091 white and 10,186 AA men) in analyses if data on the aforementioned covariates were available ($n = 5,729$; excluded: 928 AA and 4,801 white). Chi-square analysis was used to determine whether