

Association of genetic ancestry and sociodemographic factors with the Genomic Prostate Score (GPS)

Author List: Samuel Carbutaru¹, Adam B. Murphy¹

¹Department of Urology, Northwestern University Feinberg School of Medicine, Chicago, IL

Introduction: The Oncotype DX (ODX) Prostate Cancer Assay is a clinically validated 17-gene assay that provides a Genomic Prostate Score (GPS), which aids in the risk stratification of prostate cancer (PCa) tumors.

Specific aims: The goal of this study is to assess the relationship between genetic ancestry and sociodemographic factors on GPS in a multi-ethnic cohort.

Rationale and background: Among patients with PCa, Black men have been shown to present with more advanced pathology and varied prostate tumor expression, especially in the androgen signaling pathway. Few studies have evaluated the role that sociodemographic factors and genetic ancestry have on GPS results.

Methods and materials: The cohort was derived from two multi-institutional observational studies between 2009-2014. All men underwent ≥ 10 -core transrectal ultrasound biopsy and GPS testing. Bivariate logistic regressions were calculated between sociodemographic factors and genetic ancestry with GPS score. Genetic ancestry was calculated as race-specific quartiles for Black and White men for the following ancestries: Western African (WA), Native American (NA), and European (EUR).

Results: Overall, 215 men were included in the study, out of which 133 (61.9) were Black. On bivariate logistic regressions there was no association between GPS and history of smoking ($p=0.83$), alcohol use ($p=0.59$), income ($p=0.08$), or BMI ($p=0.52$). However, post-secondary education ($\beta = -4.9$; $p=0.002$) was significantly associated with GPS score. When evaluating genetic ancestry, the models did not show an association between GPS score and race-specific genetic ancestries for WA (Black $p=0.89$; White $p=0.67$), EUR (Black $p=0.87$; White $p=0.54$), NA (Black $p=0.16$; White $p=0.72$). The association remained non-significant even after adjusting for National Comprehensive Cancer Network (NCCN) risk group.

Discussion and conclusion: There was no significant association between genetic ancestry and sociodemographic factors on the 17-gene Oncotype DX GPS.