HPR37

Racial Disparities in Homologous Recombination Repair Biomarker Testing in the United States: A Real-World Database Analysis Among Non-White and White Patients With Metastatic Prostate Cancer

Julia Schoenewald[1], Ibrahim Khilfeh[2], Andrea L Stevens[3], Peter Francis[2], Chang Zhang[1], Bernardo Tinajero Ayala[3], Anne CS Heerdegen[3]

[1]Janssen Pharmaceuticals, Titusville, NJ, USA; [2]Janssen Pharmaceuticals, Horsham, PA, USA; [3]Janssen Global Services, Inc., Raritan, NJ, USA

Key Takeaway

Existing real-world racial disparities in frequency and timing of HRR testing should be considered by policy makers, clinicians, and stakeholders to improve testing practices and ensure equitable and timely access to comprehensive testing critical for optimal treatment selection in patients with mPC

Conclusions

- Compared with White patients with mPC, non-White patients had longer median time from mPC diagnosis to first HRR test
- Non-White patients were tested significantly less often for HRR alterations than White patients
- Among assessed HRR alterations, *PALB2* alterations were present in higher proportions of non-White than White patients
- Future research should examine reasons for delays in testing, assess potential impact on treatment and outcomes, and identify solutions to improve timely and equitable testing

Introduction

- In the United States, prostate cancer (PC) is the most common cancer diagnosed in individuals assigned male at birth, inclusive of all gender identities[1]
  - Incidence rate of PC in non-Hispanic Black patients is 76% higher than in non-Hispanic White patients[2]
  - Risk of death from PC for Black patients is twice as high as for White patients[3]
- Racial disparities in PC are associated with various social determinants[4] and variations in molecular tumor profiles and epigenetics, including alterations in homologous recombination repair (HRR) genes.[3,5] The genomic landscape in non-White patients with PC needs further evaluation[5]
- The US clinical guidelines recommend testing for HRR alterations in all patients with metastatic (m)PC.[6] Precision medicines, such as PARP inhibitors for patients with HRR+ alterations, can lead to reduced morbidity and mortality in mPC[7]
- Real-world data on HRR testing among patients with mPC are limited. Herein, we examine real-world racial disparities in HRR testing and HRR alterations in non-White and White patients with mPC in the United States

Methods

- This is a retrospective observational study utilizing the longitudinal, demographically and geographically diverse data from Flatiron Health databases of patients diagnosed with mPC in the United States from January 2013 through August 2023:
  - Flatiron Core Registry (FCR), consisting of electronic health records that contain clinical data of patients with or without documented HRR test
  - Flatiron mPC Clinico-Genomic Database (CGDB), consisting of a subset of patients from FCR, namely, those with HRR test results
  - Both databases were analyzed after their last update in March 2024
- Rates and time of HRR testing were assessed using FCR
- Characteristics of HRR test and HRR gene alterations were assessed using CGDB
- Patients with mPC and disclosed race from FCR and those with HRR test results from CGDB were included in the analyses
  - Patients were grouped into non-White (Black/African American, Hispanic/Latino, Asian, and other races) and White
- HRR mutations of interest were short variant mutations, copy number change, and rearrangements in HRR genes recommended for testing in mPC,[6] including *ATM*, *BRCA1*, *BRCA2*, *BRIP1*, *CHEK2*, *FANCA*, and *PALB2*
- Data were summarized using descriptive statistics. Categorical variables were assessed using χ^2 test. Continuous variables were assessed using Wilcoxon rank sum test with continuity correction

Results

Patient population

- A total of 18,941 patients with mPC from FCR were included; 5527 (29.2%) of them were non-White and 13,414 (70.8%) were White
  - Of non-White patients, 2347 (42.5%) were Black/African American, 324 (5.9%) were Asian, 28 (0.5%) were Hispanic/Latino, and 2828 (51.2%) were of other races
- 4492 patients from CGDB with known HRR results were included in the HRR alterations analysis (1297 non-White and 3195 White)

Table 1: Characteristics of patients with mPC in FCR (N=18,941)

Characteristics and categories	Non-White n=5527 (29.2%)	White n=13,414 (70.8%)
Sociodemographic characteristics		
Age at time of PC diagnosis (SD), years	71 (9.1)	73 (8.6)
Health insurance at time of mPC diagnosis		
Commercial health plan	702 (12.7)	1555 (11.6)
Medicare	212 (3.8)	572 (4.3)
Medicaid	55 (1.0)	45 (0.3)
Dual coverage	218 (3.9)	445 (3.3)
Other	128 (2.3)	270 (2.0)
Unknown	4212 (76.2)	10,527 (78.5)
Socioeconomic status index		
1 - Lowest	1264 (22.9)	1337 (10.0)
2	1039 (18.8)	2061 (15.4)
3	982 (17.8)	2637 (19.7)
4	927 (16.8)	3088 (23.0)
5 - Highest	771 (13.9)	2986 (22.3)
Unknown	544 (9.8)	1305 (9.7)
Patient region of residence		
Northeast	624 (11.3)	1611 (12.0)
Southwest	646 (11.7)	1018 (7.6)
West	574 (10.4)	1091 (8.1)
Southeast	2323 (42.0)	4280 (31.9)
Midwest	357 (6.5)	1615 (12.0)
Unknown	1003 (18.1)	3799 (28.3)
Practice type		
Academic	716 (13.0)	3065 (22.8)
Community	4580 (82.9)	9801 (73.1)
Both	231 (4.2)	548 (4.1)
Clinical characteristics		
Disease stage at initial diagnosis		
≤T2	1213 (21.9)	3362 (25.1)
≥T3	831 (15.0)	2658 (19.8)
Unknown	3483 (63.0)	7394 (55.1)
Gleason score		
≤6	322 (5.8)	867 (6.5)
7	931 (16.8)	2630 (19.6)
≥8	2486 (45.0)	6524 (48.6)
Unknown	1788 (32.4)	3393 (25.3)

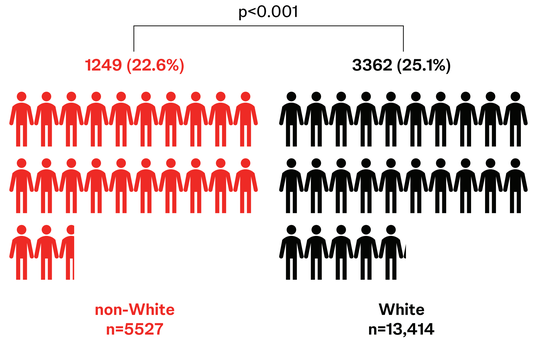
All categories presented as n (%) unless otherwise noted.

- Non-White patients from FCR were younger and more frequently insured by Medicaid than White patients; they also had lower socioeconomic status and higher percentage of unknown disease characteristics (Table 1 and in the Supplement)

Racial disparities in testing practices

- HRR testing occurred at any time in significantly fewer non-White (22.6%) than White (25.1%) patients (p<0.001; Figure 1)
- Compared with White patients, non-White patients had a significantly longer median time from mPC diagnosis to first HRR test: 17 months versus 15 months (p=0.006; Figure 2)

Figure 1: Differences in HRR testing rate between non-White and White patients with mPC (FCR)



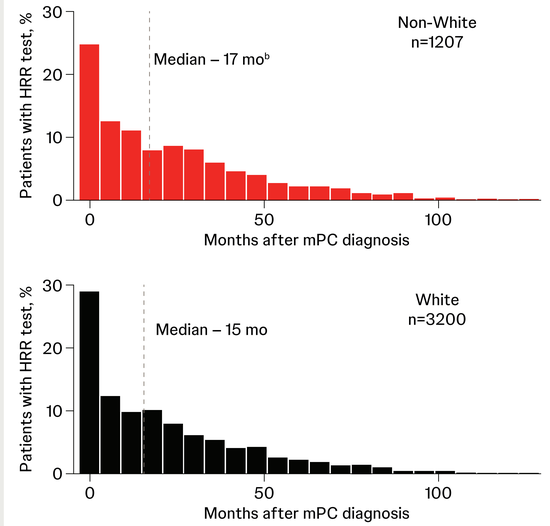
- The majority of HRR tests in both racial groups were performed in patients with metastatic castration-resistant PC (mCRPC) and using tissue samples (Table 2). A higher percentage of non-White patients with mCRPC was tested than White patients. A higher proportion of liquid samples was analyzed in Non-White patients as well

Table 2: Differences in HRR test characteristics between non-White and White patients with mPC (CGDB)

Categories, n (%)	Non-White	White	p Value non-White vs White
Disease stage at first test reported date[a]	n=1038	n=2509	
mCRPC	651 (62.7)	1493 (59.5)	0.03
mCSPC	129 (12.4)	410 (16.3)	0.006
nmCRPC	249 (24.0)	572 (22.8)	0.31
nmCSPC (LPC)	9 (0.9)	34 (1.4)	0.24
Type of sample tested[b]	n=1345	n=3313	
Tissue	748 (55.6)	2109 (63.7)	<0.001
Liquid	597 (44.4)	1204 (36.3)	<0.001

Based on CGDB data that can vary in size from FCR. LPC, localized PC; mCSPC, metastatic castration-sensitive PC; nmCRPC, nonmetastatic CRPC; nmCSPC, nonmetastatic CSPC. Testing dates are based on the first HRR test date. Patients could have multiple samples assessed with different DNA tests on the same date. [a]Data with known date of the first test and with known disease stage are included. [b]Data from tissue and liquid samples only are included.

Figure 2: Differences in time from mPC diagnosis to first HRR test date between non-White and White patients (n=4407[a]; FCR)

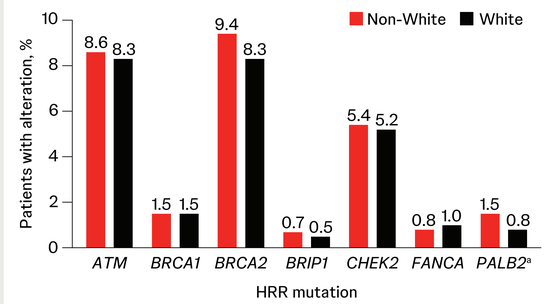


Based on patients from FCR reported to have received an HRR test. [a]Assessed among patients with first HRR test after mPC diagnosis. [b]Median time in non-White vs White, p=0.006.

Differences in HRR alteration rates in non-White and White patients with mPC

- Overall, non-White and White patients had similar frequencies of assessed HRR alterations, except for *PALB2* alterations that had higher rates in non-White versus White patients (p<0.05; Figure 3)

Figure 3: Frequencies of HRR gene alterations in non-White and White patients (CGDB)



[a]p<0.05.

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Disclosures
ACSH is an employee of Janssen and may hold stock in Johnson & Johnson.

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