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Real-World Treatment Patterns and Outcomes of Patients With Metastatic Castration-Resistant Prostate Cancer Stratified by Prior Novel Hormonal Therapy and Taxane Use

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Objective

As the prostate cancer treatment landscape evolves and systemic therapies are available for use in earlier settings such as mCSPC, it is important to understand the impact on patient outcomes in later settings such as mCRPC. This study aims to examine treatment sequences and outcomes of patients treated for mCRPC and stratified based on treatment(s) received in prior settings

Conclusions

The use of systemic treatment(s) in settings prior to mCRPC has been increasing over time; however, in 2023 (until July 31), 63% of patients had never received prior NHT

PSA progression and unadjusted median OS from mCRPC 1L treatment differed by prior treatment(s) received, suggesting that treatment sequence may impact outcomes. Additional research is needed to better understand the impact of treatment sequencing

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Background

- Novel hormonal therapy (NHT) and taxane-based chemotherapy (ie, docetaxel) were initially approved for the treatment of men with metastatic castration-resistant prostate cancer (mCRPC). Over time, these agents have moved earlier in the disease continuum and are now also used in metastatic castration-sensitive prostate cancer (mCSPC) and nonmetastatic castration-sensitive prostate cancer with high-risk biochemical recurrence
- Patients treated with systemic therapies in earlier stages may face limited options as their disease progresses to mCRPC. This impact on patient outcomes is not well known

Methods

- A non-interventional, retrospective cohort analysis of patients treated for mCRPC in the United States was conducted using data from Flatiron Health's electronic health record from January 1, 2016, to July 31, 2023
- Descriptive data were collected for patient demographics and clinical characteristics, treatment histories/sequences, and outcomes. The index date was the mCRPC diagnosis date, which was defined as the latter of both castration-resistant prostate cancer and metastatic prostate cancer dates. All patients included had received first-line (1L) treatment for mCRPC
- Patients with mCRPC were stratified based on the following prior treatment categories:
  - NHT-exposed but taxane-naïve
  - Taxane-exposed but NHT-naïve
  - Exposed to both NHT and taxane
  - Naïve to both NHT and taxane
- Prostate-specific antigen (PSA) progression was defined as a ⩾25% increase in PSA and an absolute increase of ⩾2 ng/mL within ⩾21 days, or death. Unadjusted overall survival (OS) was defined as the interval (months) between date of 1L treatment initiation until date of death as documented in the Flatiron Health database. Patients with no evidence of death were censored to the last date of contact or study end date

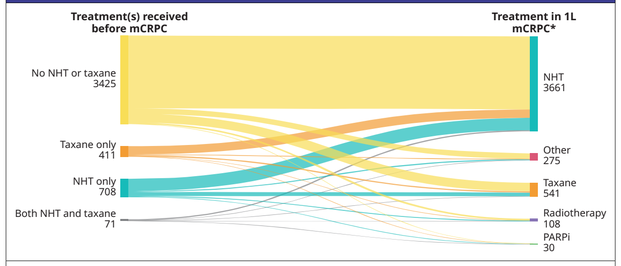
Results

- Overall, most patients were NHT-naïve and taxane-naïve (n=3425, 74.2%). Demographics are reported in **Table 1**
- Only 779 patients (16.9%) had prior exposure to an NHT before the diagnosis of mCRPC during the study period (January 2016–July 2023)
- Of patients who were newly diagnosed with mCRPC in 2023 (until July 31), only 50 patients (37.3%) had any prior exposure to an NHT (**Table 2**)
- Of patients who received prior NHT (N=779), 693 patients (97.9%) received an NHT within 6 months of mCRPC diagnosis
- Time to PSA progression and unadjusted median OS differed by prior treatment(s) received (**Table 3**)
- Of the patients who had not received an NHT before mCRPC, the majority received an NHT in 1L mCRPC. In addition, most patients who received an NHT in a prior setting also received an NHT in 1L mCRPC (**Figure 1**)

Limitations

- Outcomes reported are descriptive only and were not adjusted for confounding factors. Outcomes were not analyzed based on treatment or treatment sequence received in the mCRPC setting. Flatiron data consist of primarily community data, and some variables have high missingness

Figure 1. Treatment Sequence of Patients With mCRPC Treatment History



All treatment(s) include +/- ADT.
1L=first-line; ADT=androgen deprivation therapy; mCRPC=metastatic castration-resistant prostate cancer; NHT=novel hormonal therapy; PARPi=poly(ADP-ribose) polymerase inhibitor.
*Only patients who received 1L treatment for mCRPC were included in the study.

Table 1. Demographics and Clinical Characteristics of Patients Treated for mCRPC and Stratified Based on Prior Treatment(s)

	Treatment(s) Received Before mCRPC				
	Overall	**Prior NHT Only**	**Prior Taxane Only**	**Prior NHT and Taxane**	**NHT-Naïve and Taxane-Naïve**
	N=4615 (100%)	**n=708 (15.34%)**	**n=411 (8.91%)**	**n=71 (1.54%)**	**n=3425 (74.21%)**
Age, mean (SD)	73.31 (8.35)	73.99 (8.11)	67 (8.39)	69 (8.68)	74 (8.05)
Race, n (%)					
White	2797 (60.61)	426 (60.17)	252 (61.31)	47 (66.20)	2072 (60.50)
Black or African American	515 (11.16)	78 (11.02)	55 (13.38)	5 (7.04)	377 (11.01)
Asian	76 (1.65)	18 (2.54)	4 (0.97)	1 (1.41)	53 (1.55)
Hispanic or Latino	183 (3.97)	15 (2.12)	24 (5.84)	4 (5.63)	140 (4.09)
Other	612 (13.26)	87 (12.29)	47 (11.44)	6 (8.45)	472 (13.78)
Not documented	432 (9.36)	84 (11.86)	29 (7.06)	8 (11.27)	311 (9.08)
Treating physician practice type, n (%)					
Community	3864 (83.73)	581 (82.06)	360 (87.59)	59 (83.10)	2864 (83.62)
Academic	556 (12.05)	95 (13.42)	35 (8.52)	8 (11.27)	418 (12.20)
Both	195 (4.23)	32 (4.52)	16 (3.89)	4 (5.63)	143 (4.18)
Insurance status, n (%)					
Commercial health plan	1430 (30.99)	223 (31.50)	165 (40.15)	29 (40.85)	1013 (29.58)
Medicaid	41 (0.89)	3 (0.42)	11 (2.68)	1 (1.41)	26 (0.76)
Medicare	2110 (45.72)	321 (45.34)	148 (36.01)	33 (46.48)	1608 (46.95)
Other payer	226 (4.90)	38 (5.37)	31 (7.55)	3 (4.23)	154 (4.50)
Missing	808 (17.51)	123 (17.37)	56 (13.63)	5 (7.04)	624 (18.22)
ECOG, n (%)					
0	1135 (24.59)	157 (22.18)	166 (40.39)	31 (43.66)	781 (22.80)
1	1052 (22.80)	132 (18.64)	153 (37.23)	26 (36.62)	741 (21.64)
⩾2	340 (7.37)	53 (7.49)	29 (7.06)	7 (9.86)	251 (7.33)
Missing	2088 (45.24)	366 (51.69)	63 (15.33)	7 (9.86)	1652 (48.23)
Gleason score, n (%)					
⩾7	3572 (77.40)	551 (77.82)	310 (75.43)	54 (76.06)	2657 (77.58)
<7	295 (6.39)	46 (6.50)	13 (3.16)	4 (5.63)	232 (6.77)
Unknown/Not documented	748 (16.21)	111 (15.68)	88 (21.41)	13 (18.31)	563 (15.65)
NGS test at any time,* n (%)					
Yes	1920 (41.60)	382 (53.95)	214 (52.07)	44 (61.97)	1280 (37.37)
No	2695 (58.40)	326 (46.05)	197 (47.93)	27 (38.03)	2145 (62.63)

ECOG=Eastern Cooperative Oncology Group; HRR=homologous recombination repair; mCRPC=metastatic castration-resistant prostate cancer; NGS=next-generation sequencing; NHT=novel hormonal therapy; SD=standard deviation.
*Specifically, any somatic HRR test of tumor tissue.

Table 2. Treatment(s) Received Before mCRPC by Year Diagnosed With mCRPC

		Treatment(s) Received Before mCRPC			
Year Diagnosed With mCRPC	**Overall N (100%)**	**Prior NHT Only n (%)**	**Prior Taxane Only n (%)**	**Prior NHT and Taxane n (%)**	**NHT-Naïve and Taxane-Naïve n (%)**
2016	725	28 (3.9)	44 (6.1)	4 (0.6)	649 (89.5)
2017	740	58 (7.8)	82 (11.1)	7 (0.9)	593 (80.1)
2018	675	73 (10.8)	59 (8.7)	7 (1.0)	536 (79.4)
2019	681	96 (14.1)	53 (7.8)	11 (1.6)	521 (76.5)
2020	625	128 (20.5)	62 (9.9)	11 (1.8)	424 (67.8)
2021	552	148 (26.8)	55 (10.0)	9 (1.6)	340 (61.6)
2022	483	132 (27.3)	42 (8.7)	17 (3.5)	292 (60.5)
2023*	134	45 (33.6)	14 (10.4)	5 (3.7)	70 (52.2)

mCRPC=metastatic castration-resistant prostate cancer; NHT=novel hormonal therapy.
*Data collected until July 31, 2023.

Table 3. Time to PSA Progression/Death and Overall Survival of Patients Treated for mCRPC and Stratified Based on Prior Treatment(s)

		Treatment(s) Received Before mCRPC			
	Overall	**Prior NHT Only**	**Prior Taxane Only**	**Prior NHT and Taxane**	**NHT-Naïve and Taxane-Naïve**
	N=4615 (100%)	**n=708 (15.34%)**	**n=411 (8.91%)**	**n=71 (1.54%)**	**n=3425 (74.21%)**
Time to PSA progression or death from 1L, months					
Median (events) [95% CI]	14.77 (3224) [14.17–15.47]	10.30 (469) [9.20–12.20]	17.53 (274) [14.40–20.40]	13.67 (46) [12.27–16.80]	15.43 (2435) [14.77–16.37]
Overall survival from 1L, months					
Median (events) [95% CI]	24.50 (2693) [23.53–25.37]	17.77 (389) [15.63–20.87]	28.67 (220) [24.60–31.93]	19.70 (36) [13.67–32.70]	25.33 (2048) [24.20–26.87]

1L=first-line; CI=confidence interval; mCRPC=metastatic castration-resistant prostate cancer; NHT=novel hormonal therapy; PSA=prostate-specific antigen.