Economic Burden of Prostate Cancer in the US: A Disease Stage-based Cost Analysis

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INTRODUCTION

- Prostate cancer (PC) is associated with a high economic burden in the US, reaching an estimated \$22.3 billion in 20201
- The total cost of care associated with PC is largely influenced by the stage of the disease and other notable factors such as disease progression, development of complications such as bone metastases, and drug costs²⁻⁴
- Economic data in PC are not fully reflective of current management strategies and are largely limited to advanced metastatic stages
- As treatments have evolved, there is a need for updated cost burden data across all disease stages to further understand the total costs of care of people with PC and the impact of disease stage and disease progression on the overall cost burden of PC

OBJECTIVES

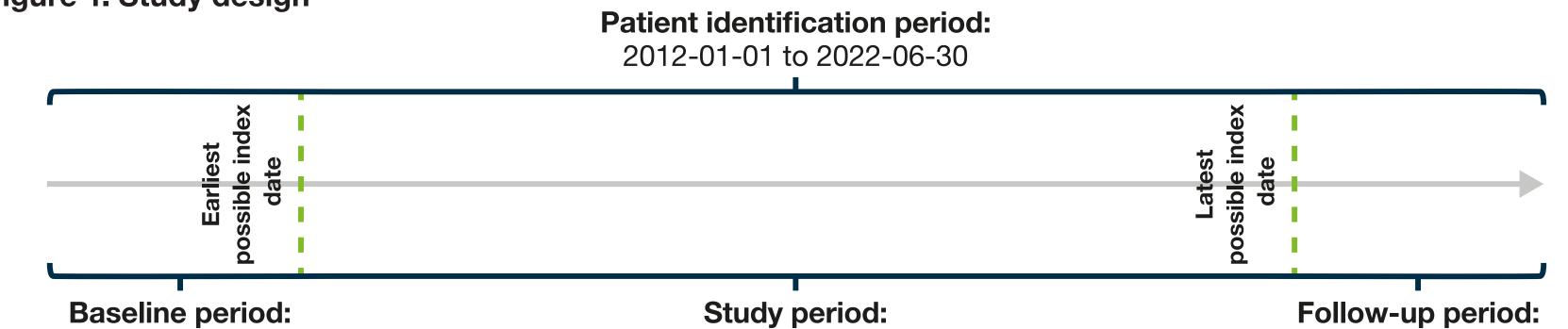
- The primary objective of this analysis was to describe the total cost burden of PC within the first year after diagnosis and from a longitudinal perspective over time by disease stage in a US healthcare setting
- The secondary objective was to describe the total and incremental costs associated with disease progression in PC, including cost differences between non-metastatic and metastatic disease, and cost differences between hormone-sensitive and castration-resistant disease

METHODS

- This was a retrospective, observational cohort study of patients enrolled in the US-based Optum[®] Clinformatics Data Mart database between January 2015 and December 2021 (**Figure 1**), from a broader database population (**Figure 2**)
- This database includes statistically-deidentified administrative health claims from members with commercial and Medicare Advantage plans and covers ~67 million people from all 50 US states
 Medical, pharmacy, inpatient confinement, and laboratory claims are captured

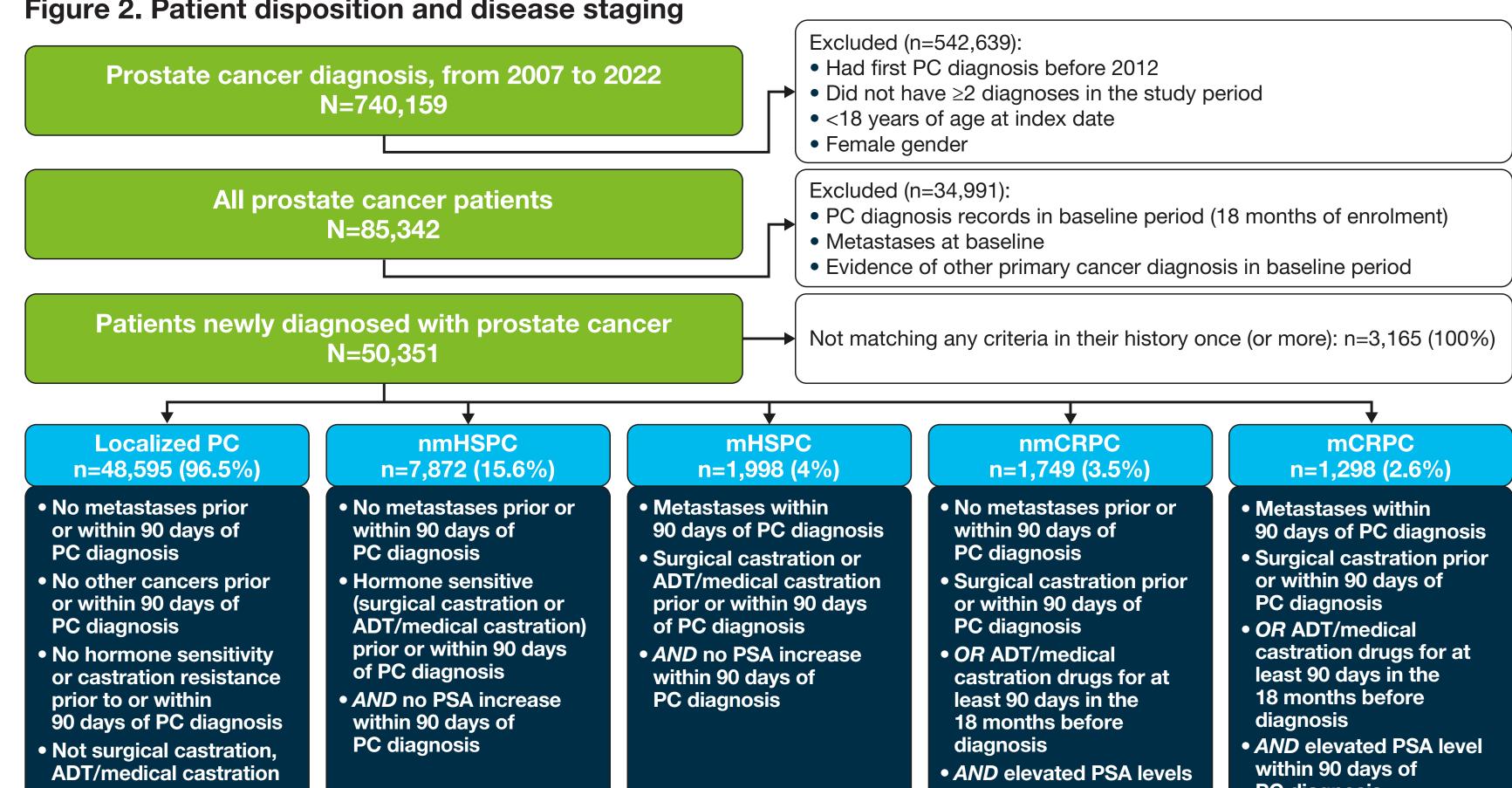
Figure 1. Study design

18 months before index date



2015-01-01 to 2021-12-31

Figure 2. Patient disposition and disease staging



ADT, androgen deprivation therapy; mCRPC, metastatic castration-resistant prostate cancer; mHSPC, metastatic hormone sensitive prostate cancer; nmCRPC, non-metastatic castration-resistant prostate cancer; nmHSPC, non-metastatic hormone sensitive prostate cancer; PC, prostate cancer; PSA, prostate-specific antigen

- Participants were male, aged ≥18 years, with a diagnosis of PC, evidence of at least two diagnostic claims for PC, continuous enrolment in medical benefits from baseline to at least the first 6 months of the follow-up period, and at least one diagnosis, procedure, and laboratory value during the study period (**Figure 2**)
- The index date was defined as the date of the starting point of the disease stage of interest
- Annual all-cause costs of care for each disease stage subgroup were determined prior to and following the index year (2018)
 Costs included all PC-related diagnostic, treatment, laboratory, hospital, pharmacy, and procedural claims
 Costs were adjusted to 2022 US dollars using the Medical Consumer Price Index to account for inflation
- All analyses are descriptive and exploratory

RESULTS

• A total of 50,351 patients were included in the current analysis (**Table 1**)

Table 1: Population size

Cohort	N % Total N=50,351
Localized PC	48,595 (96)
BCR/nmHSPC	7,872 (15.6)
mHSPC	1,998 (4)
nmCRPC	1,749 (3.5)
mCRPC	1,298 (2.6)

BCR, biochemical recurrence; mCRPC, metastatic castration-resistant prostate cancer; mHSPC, metastatic hormone-sensitive prostate cancer; nmCRPC, non-metastatic castration-resistant prostate cancer; nmHSPC, non-metastatic hormone-sensitive prostate cancer; PC, prostate cancer.

Median cost at the beginning of each disease stage

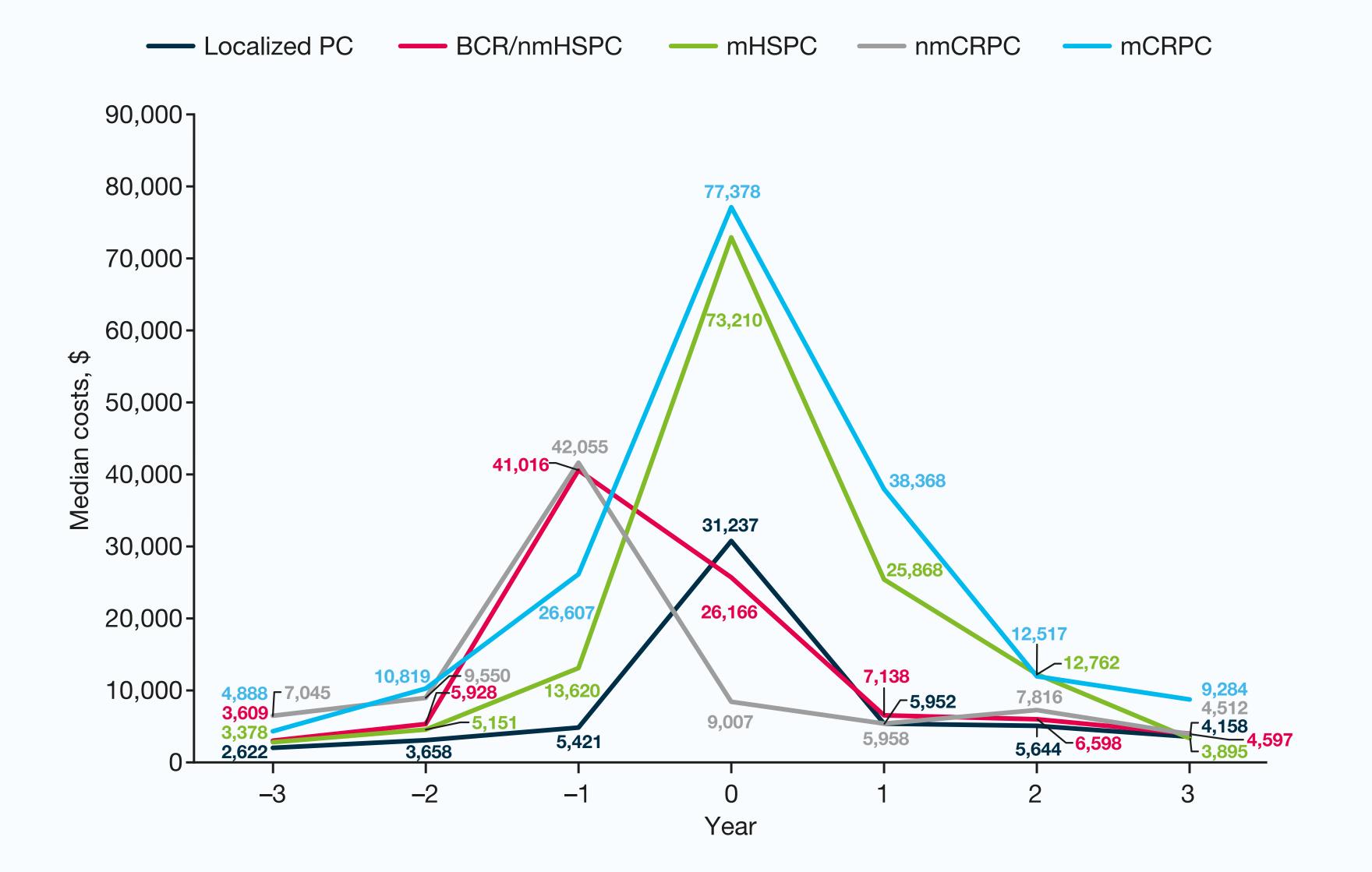
- The median cost of care was highest for those with metastatic disease (mCRPC and mHSPC), followed by localized PC, nmHSPC, and nmCRPC
- The median cost of care in the index year across disease stage subgroups ranged from \$9,007 in patients with nmCRPC to \$77,378 among those with mCRPC (**Table 2; Figure 3**)
- A maximum in costs was observed in the index year for the mCRPC, mHSPC, and localized PC subgroups, and the year before the index year for the nmHSPC and nmCRPC subgroups
- High interquartile range was observed, with elevated 3rd Quartile depicting the skewness and increased costs for this segment of the population

Table 2: Median cost of care in the index year and the three follow-up years

Cohort	Median cost in the index year, \$ (IQR)	Median cost in the 1 st follow-up year, \$ (IQR)	Median cost in the 2 nd follow-up year, \$ (IQR)	Median cost in the 3 rd follow-up year, \$ (IQR)
Localized PC	31,237	5,952	5,644	4,158
	(9,139–56,728)	(1,784–20,637)	(1,596–19,871)	(1,268–13,902)
BCR/nmHSPC	26,166	7,138	6,598	4,597
	(8,722–55,887)	(2,267–24,450)	(1,716–23,805)	(1,267–15,332)
mHSPC	73,210	25,868	12,762	3,895
	(35,139–125,086)	(4,749–84,138)	(2,206–47,044)	(1,041–28,398)
nmCRPC	9,007	5,958	7,816	4,512
	(3,612–29,948)	(2,177–17,515)	(2,510–27,029)	(1,455–12,561)
mCRPC	77,378	38,368	12,517	9,284
	(27,967–138,976)	(7,649–113,730)	(2,667–62,125)	(2,052–24,684)

BCR, biochemical recurrence; IQR, interquartile range; mCRPC, metastatic castration-resistant prostate cancer; mHSPC, metastatic hormone-sensitive prostate cancer; nmCRPC, non-metastatic castration-resistant prostate cancer; nmHSPC, non-metastatic hormone-sensitive prostate cancer; PC, prostate cancer.

Figure 3: Median costs of care by PC disease stage

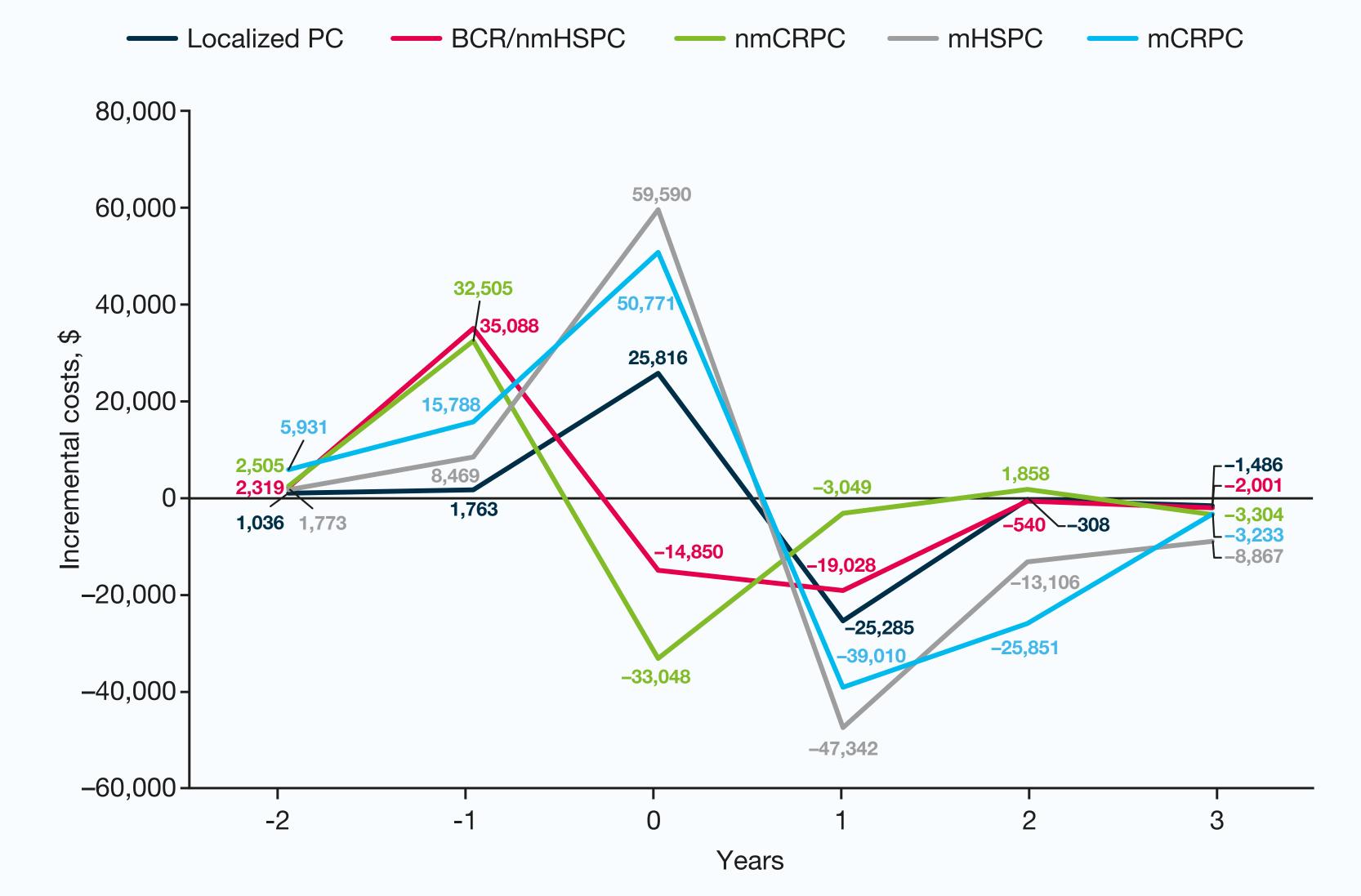


BCR, biochemical recurrence; mCRPC, metastatic castration-resistant prostate cancer; mHSPC, metastatic hormone-sensitive prostate cancer; nmCRPC, non-metastatic castration-resistant prostate cancer; nmHSPC, non-metastatic hormone-sensitive prostate cancer; PC, prostate cancer.

Incremental costs for each disease stage

- Maximum costs were observed in the year of stage identification or the year before, and showed a lower trend in the subsequent three years (**Figure 4**)
- Incremental costs associated with metastatic disease trended higher than for non-metastatic disease

Figure 4: Incremental costs of care by PC disease stage



BCR, biochemical recurrence; mCRPC, metastatic castration-resistant prostate cancer; mHSPC, metastatic hormone-sensitive prostate cancer; nmCRPC, non-metastatic castration-resistant prostate cancer; nmHSPC, non-metastatic hormone-sensitive prostate cancer; PC, prostate cancer

RESULTS (cont'd)

Mean per patient per year (PPPY) costs

• The mean PPPY costs were highest for metastatic disease and ranged from \$109,536 for mCRPC to \$33,694 for nmCRPC in the index year and a general decreasing trend in costs was observed in the follow-up years (**Table 3**)

Table 3: Mean PPPY costs in the index year and the three follow-up years

Cohort	Mean PPPY costs in the index year, \$	Mean PPPY costs in the 1 st follow-up year, \$	Mean PPPY costs in the 2 nd follow-up year, \$	Mean PPPY costs in the 3 rd follow-up year, \$
Localized PC	47,313	23,918	23,089	17,565
BCR/nmHSPC	50,079	27,779	28,037	18,933
mHSPC	99,411	62,915	48,770	24,725
nmCRPC	33,694	28,330	28,120	15,424
mCRPC	109,536	78,685	53,071	27,830

BCR, biochemical recurrence; mCRPC, metastatic castration-resistant prostate cancer; mHSPC, metastatic hormone-sensitive prostate cancer; nmCRPC, non-metastatic castration-resistant prostate cancer; nmHSPC, non-metastatic hormone-sensitive prostate cancer; PC, prostate cancer; PPPY, per patient per year.

LIMITATIONS

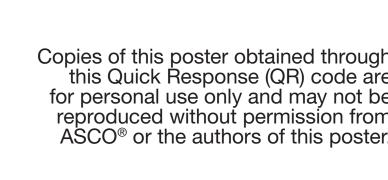
- Given the study design, the study results may only be generalizable to insured male patients in the US who are 18 or older with prostate cancer
- Claims data were collected primarily for billing of health care services and are not specifically intended for research purposes
- Pharmacy claims provided information regarding filled prescriptions but not necessarily drugs utilized by the patient

CONCLUSIONS

- PC treatment incurs high costs generally while metastatic PC accrues the highest cost burden, irrespective of hormone sensitivity
- These data support the need for appropriate management strategies to optimize potential delay of disease progression, including effective screening, diagnosis, and early intervention

The cost of caring for people with prostate cancer was highest for those whose cancer had spread beyond the prostate (metastatic disease).

Most of the costs of care occurred during the first year after diagnosis of each stage of the disease or during the year before diagnosis





6 months post index date