ORIGINAL RESEARCH

Costs and Healthcare Resource Utilization Associated with Hospital Admissions of Patients with Metastatic or Nonmetastatic Prostate Cancer

Krishna Tangirala, MPH; Sreevalsa Appukkuttan, MPH, MBBS; Stacey Simmons, MD

BACKGROUND: Limited published information exists that compares the costs of metastatic prostate cancer with nonmetastatic prostate cancer. Although most research has focused on the costs of metastatic prostate cancer, delaying metastases in patients with nonmetastatic prostate cancer can reduce or delay healthcare resource utilization and any associated expenditures.

OBJECTIVE: To compare the costs and healthcare resource utilization of patients with metastatic or nonmetastatic prostate cancer who were receiving care in an inpatient or an outpatient hospital setting.

METHODS: Claims from between June 2010 and September 2016 of patients with metastatic or nonmetastatic prostate cancer were retrospectively identified from the Premier Healthcare Database. Patients with a primary diagnosis of malignant neoplasm of the prostate in the inpatient or outpatient setting during the study period were included. Admissions were categorized as metastatic or nonmetastatic prostate cancer based on the presence or absence of an *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*) and/or *ICD-10-CM* code for metastatic prostate cancer on discharge. Patients with a secondary diagnosis of distant skeletal, lymph node, or visceral metastasis or who received ≥1 treatments indicative of bone metastasis on the same admission were considered to have metastatic prostate cancer.

RESULTS: The study included prostate cancer admissions totaling 78,667 inpatient (4576 with metastatic disease) and 874,366 outpatient (71,545 with metastatic disease) admissions. Among the metastatic prostate cancer inpatient admissions, 72.6% of the patients were aged ≥65 years (mean age, 72 years for metastatic disease vs 63 years for nonmetastatic disease) and approximately 77.5% of these patients had bone metastases. The mean total cost per inpatient admission was $12,324 (standard deviation [SD], $13,506) for metastatic prostate cancer versus $10,987 (SD, $6912) for nonmetastatic disease. The mean total cost per outpatient admission was $1627 (SD, $6182) for metastatic versus $909 (SD, $3458) for nonmetastatic prostate cancer.

CONCLUSIONS: The results of this study demonstrate the increased economic burden associated with hospital admissions, particularly inpatient admissions, for patients with metastases compared with patients without metastases. In addition to the clinical burden on patients, these findings further highlight the importance of implementing treatment strategies that can delay progression to metastatic prostate cancer and subsequent increases in healthcare resource utilization and cost.

Am Health Drug Benefits. 2019;12(6):306-312
www.AHDBonline.com

Manuscript received May 1, 2019
Accepted in final form August 12, 2019

Disclosures are at end of text

KEY WORDS: healthcare costs, healthcare resource utilization, metastatic prostate cancer, nonmetastatic prostate cancer

Prostate cancer is one of the most common cancers in men worldwide, accounting for an estimated 174,650 new cases diagnosed in the United States in 2019, and is the second-leading cause of cancer-related mortality among men in the United States.[1-3] Although the majority of men with prostate cancer present with early-stage disease, approximately 5% of patients have metastases at diagnosis, and a proportion of men with early-stage disease will eventually have metastases.[2,4] The presence of metastases is associated with a poor prognosis; in fact, metastatic prostate cancer has a 5-year survival rate of approximately only 30%.[2]

Ms Tangirala is Associate Director, Data Generation and Observational Studies, Dr Appukkuttan is Deputy Director, Data Generation and Observational Studies, and Dr Simmons is Director, US Medical Affairs, all at Bayer HealthCare, Whippany, NJ.
The abstract of this study was presented at the 2018 ISPOR annual meeting, May 19-23, 2018, Baltimore, MD.

KEY POINTS

- Metastases can be expected to increase healthcare resource utilization and associated costs in patients with prostate cancer, but few studies investigated the costs from a hospital perspective.
- This retrospective study compared the costs and healthcare resource utilization related to inpatient and outpatient care for patients with metastatic or nonmetastatic prostate cancer.
- The study included 78,667 inpatient and 874,366 outpatient admissions (of which 4576 and 71,545, respectively, had metastatic disease).
- The mean total cost per inpatient admission was significantly lower for patients with nonmetastatic prostate cancer than for those with metastatic prostate cancer.
- The mean total cost per outpatient admission was $718 more for patients with metastatic disease than for those with nonmetastatic prostate cancer.
- Among inpatients, treatment-related costs were $7854 for patients with metastatic prostate cancer versus only $265 for patients with nonmetastatic disease.
- These cost differences bring into focus the economic implications of metastatic prostate cancer, further highlighting the importance of delaying progression to metastatic disease.
- Treatment strategies need to be implemented to delay metastases and subsequent increases in healthcare resource utilization and cost.

To date, the focus of cost and healthcare resource utilization research in prostate cancer has been on patients with metastatic disease, which has resulted in limited to no published information that compares the cost of metastatic prostate cancer with nonmetastatic prostate cancer. Metastases are costly and burdensome to the healthcare system, in addition to the patient, because of increased hospitalizations, emergency department visits, pharmacologic therapy, diagnostic and monitoring tests, and other costs.[5-8] Thus, delaying metastases in patients with nonmetastatic prostate cancer is expected to reduce or delay healthcare resource utilization and the associated expenditures.

Although the body of literature is limited that describes the hospital costs associated with metastatic prostate cancer compared with nonmetastatic prostate cancer, the high economic burden and healthcare resource utilization associated with metastatic disease, especially bone metastases and subsequent skeletal-related events, have been well reported.

Bone is the most common (84%) site of metastasis for prostate cancer, followed by the lymph nodes and visceral metastasis.[9] Of patients with bone metastases, approximately 16% have at least 1 skeletal-related event.[10] Although bone is the most common site of metastasis, and bone metastases can incur an additional $21,000 in direct medical costs,[5] the presence of metastasis at any site is challenging, because of the associated high morbidity, reduced quality of life, high healthcare resource utilization and costs, and lower survival.[6-8] Although studies have reported a considerable economic burden of metastatic prostate cancer treatment in the real world (ie, healthcare resource utilization, direct costs), these studies differ greatly in design, study setting, types of metastases included, and outcomes considered.[11-13]

Previous studies in metastatic prostate cancer have been informative and have shown high costs and resource utilization for patients with metastatic prostate cancer to payers[12-16]; however, few studies have quantified the differences in healthcare resource utilization and costs based on metastatic status.

To address this gap in the literature and to understand the difference in economic burden between metastatic prostate cancer and nonmetastatic prostate cancer, we conducted a retrospective study using hospital discharge records to compare and quantify the costs and levels of resource utilization at the hospital level for patients with metastatic and those with nonmetastatic prostate cancer. The objective of this study was to compare the inpatient and outpatient costs and healthcare resource utilization of admitted patients with metastatic versus nonmetastatic prostate cancer in the hospital setting.

Methods

We performed a retrospective cohort study based on medical and pharmacy administrative claims using the Premier Healthcare Database, a large US hospital-based, service-level, all-payer database containing information on inpatient discharges, primarily from geographically diverse, nonprofit, nongovernment community and teaching hospitals and health systems from rural and urban areas.[17] The Premier Healthcare Database is one of the most comprehensive electronic healthcare databases in the United States, with 738 contributing hospitals and healthcare systems and data for more than 208 million unique patients. The Premier Healthcare Database represents approximately 45% of annual US inpatient discharges and includes more than 71 million outpatient visits annually.[17]

Patient Population

Men with a primary discharge diagnosis of prostate

cancer and/or distant metastasis who were admitted in the inpatient or outpatient setting between June 1, 2010, and September 30, 2016, were included in the study. For inpatient and outpatient admissions for nonmetastatic prostate cancer, admissions with at least 1 claim of an *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*) code 185.xx or *ICD Tenth Revision, Clinical Modification* (*ICD-10-CM*) code of C61 (malignant neoplasm of prostate) in the outpatient or inpatient setting any time during the study period were included. Nonmetastatic prostate cancer admissions were excluded if there was evidence of an *ICD-9-CM* or *ICD-10-CM* code indicating distant metastases on that admission or if patients had at least 1 treatment that was indicative of bone metastases on that admission in the inpatient or outpatient database.

For admissions for metastatic prostate cancer, the inclusion criteria consisted of an inpatient or outpatient admission with at least 1 claim of *ICD-9-CM* code 185.xx or *ICD-10-CM* code of C61 (malignant neoplasm of prostate) any time during the study, and an inpatient or outpatient admission of a patient with at least 1 claim with a *ICD-9-CM* or *ICD-10-CM* code that indicates distant skeletal metastasis, lymph node metastasis, or visceral metastasis on the same admission or at least 1 treatment that is indicative of bone metastases on the same admission.

For the groups with nonmetastatic or metastatic prostate cancer, patients were excluded if they had a diagnosis of any other cancer on the same admission (*ICD-9-CM* codes 140.XX-171.XX, 174.XX-184.XX, 186.XX-195.XX, 200.XX-209.3, and 230.XX-239.XX or *ICD-10-CM* codes C00-C60, C62-C76, C7A, C7B, C76-C96) or if they were aged <18 years.

The patients' demographic and hospital characteristics were extracted at the time of the inpatient or outpatient visit. Each admission was evaluated separately and was not linked to follow the patient's journey longitudinally. Healthcare resource utilization and costs were assessed across the inpatient and outpatient admissions. Healthcare resource utilization included the length of stay for each admission; each admission was the unit of analysis, and length of stay was assessed for a single admission. The all-cause costs were defined as the total costs to the hospital for all healthcare resource use and were estimated at the admission level (outpatient and inpatient hospital).

Statistical Analysis

A descriptive analysis of the inpatient and outpatient cohorts was conducted using standard summary statistics, such as means, standard deviations (SDs), and proportions. Categorical variables, such as baseline characteristics, were measured as percentages. The all-cause costs for the patients with metastatic or nonmetastatic prostate cancer were compared for inpatient and outpatient admissions. The differences in costs were assessed using a generalized linear model with gamma distribution that controlled for differences in age, race, insurance, hospital admission type, and hospital bed size. To further adjust for baseline differences, a propensity-matched analysis was conducted as a sensitivity analysis. A 1:4 propensity score matching method was used to adjust for the baseline patient differences, and the costs were compared between the matched cohorts with metastatic prostate cancer and nonmetastatic prostate cancer. Matching was done for all of the baseline patient characteristics, including age, race, marital status, and payer type.

Results

A total of 78,667 inpatient and 874,366 outpatient admissions in men with prostate cancer were included (**Table 1**). Of these admissions, 4576 and 71,545 patients, respectively, had metastatic disease. Among the inpatient admissions of patients with metastatic prostate cancer, 72.6% of the patients were aged ≥65 years (mean age, 72 years vs 63 years for patients with nonmetastatic prostate cancer) and approximately 77.5% had bone metastases. Among the outpatient admissions of patients with metastatic prostate cancer, 78.7% of the patients were aged ≥65 years (mean age, 73 years vs 71 years for nonmetastatic prostate cancer) and approximately 94.6% had bone metastases (Table 1).

Among the inpatient admissions, the mean total cost was higher for metastatic prostate cancer than for nonmetastatic prostate cancer ($12,324 vs $10,987, respectively; **Table 2**). The highest costs reported among inpatient admissions for patients with metastatic disease, not including other miscellaneous costs, were room and board ($5403), surgery ($1467), and pharmacy costs ($1128). The highest costs reported among inpatient patients with nonmetastatic disease were surgery ($4527), central supply ($2439), and room and board ($1695; **Figure 1**).

Pharmacy costs, laboratory costs, room and board costs, radiation therapy, and emergency department costs were higher in the metastatic prostate cancer cohort, whereas surgery and central supply costs were higher among the nonmetastatic prostate cancer cohort. Differences in the mean total costs and the sum of mean individual costs are a result of differences in sample sizes between groups.

Among the outpatient admissions, the mean total cost was higher for patients with metastatic prostate cancer than for those with nonmetastatic prostate cancer ($1627 vs $909, respectively; Table 2). The highest costs reported among outpatient admissions for patients with metastatic disease, not including other miscellaneous

Table 1 Baseline Patient Characteristics

Characteristics	Inpatient metastatic prostate cancer (N = 4576)	Inpatient nonmetastatic prostate cancer (N = 74,091)	Outpatient metastatic prostate cancer (N = 71,545)	Outpatient nonmetastatic prostate cancer (N = 802,821)
Age, mean, yrs (SD)	71.88 (11.02)	62.85 (7.95)	72.51 (9.66)	70.64 (9.49)
Race, N (%)				
White	2865 (62.61)	53,158 (71.75)	52,399 (73.24)	582,789 (72.59)
Black	983 (21.48)	9155 (12.36)	10,072 (14.08)	97,565 (12.15)
Hispanic	28 (0.61)	273 (0.37)	164 (0.23)	2320 (0.29)
Other	686 (14.99)	11,176 (15.08)	8582 (12.00)	117,036 (14.58)
Marital status, N (%)				
Married	2257 (49.32)	50,259 (67.83)	43,347 (60.59)	532,651 (66.35)
Single	1735 (37.92)	13,943 (18.82)	19,930 (27.86)	187,159 (23.31)
Other	576 (12.59)	9778 (13.20)	8199 (11.46)	82,190 (10.24)
Payer type, N (%)				
Commercial	971 (21.22)	40,143 (54.18)	11,820 (16.52)	206,350 (25.70)
Medicare	3839 (62.04)	28,368 (38.29)	53,569 (74.87)	542,830 (67.62)
Medicaid	379 (8.28)	1814 (2.45)	3419 (4.78)	20,417 (2.54)
Self-pay	137 (2.99)	1018 (1.37)	952 (1.33)	11,466 (1.43)
Other	250 (5.46)	2748 (3.71)	1785 (2.49)	21,758 (2.71)
Region, N (%)				
Northeast	951 (20.78)	14,515 (19.59)	7206 (10.07)	128,615 (16.02)
Midwest	830 (18.14)	12,028 (16.23)	15,385 (21.50)	184,774 (23.02)
South	2133 (46.61)	36,215 (48.88)	35,901 (50.18)	353,789 (44.07)
West	654 (14.29)	11,276 (15.22)	12,823 (17.92)	134,192 (16.72)
Hospital type, N (%)				
Teaching	2097 (45.83)	35,555 (47.99)	27,348 (38.22)	343,398 (42.77)
Non-teaching	2471 (54.00)	38,479 (51.93)	43,967 (61.45)	457,972 (57.05)
Rural	516 (11.28)	4713 (6.36)	15,530 (21.71)	141,644 (17.64)
Urban	4052 (88.55)	69,321 (93.56)	55,785 (77.97)	659,726 (82.18)
Bed size, N (%)				
0-99	160 (3.50)	702 (0.95)	2908 (4.06)	38,874 (4.84)
100-199	515 (11.25)	5792 (7.82)	14,834 (20.73)	126,922 (15.81)
200-299	788 (17.22)	14,410 (19.45)	13,824 (19.32)	151,590 (18.88)
300-399	879 (19.21)	13,608 (18.37)	13,409 (18.74)	177,374 (22.09)
400-499	650 (14.20)	10,184 (13.75)	8640 (12.08)	118,790 (14.80)
≥500	1576 (34.44)	29,338 (39.60)	17,700 (24.74)	187,820 (23.40)
Admission type, N (%)				
Elective	1279 (27.95)	66,299 (89.48)	53,677 (75.03)	589,172 (73.39)
Emergency	2611 (57.06)	1413 (1.91)	639 (0.89)	1833 (0.23)
Other	21 (0.46)	222 (0.30)	15,879 (22.19)	189,025 (23.55)
Urgent	665 (14.53)	6157 (8.31)	1350 (1.89)	22,791 (2.84)
Attending physician specialty, N (%)				
Internal medicine	1563 (34.16)	1599 (2.16)	2945 (4.12)	29,167 (3.63)
Oncologist	339 (7.41)	115 (0.16)	46,982 (65.67)	98,679 (12.29)
Other	1611 (35.21)	2414 (3.26)	9746 (13.62)	111,423 (13.88)
Radiology	13 (0.28)	179 (0.24)	6134 (8.57)	181,041 (22.55)
Surgeon	41 (0.90)	233 (0.31)	1105 (1.54)	5617 (0.70)
Urologist	1009 (22.05)	69,551 (93.87)	4633 (6.48)	376,894 (46.95)
Metastasis type, N (%)				
Bone and visceral	566 (12.37)	—	1809 (2.53)	—
Bone and lymph	292 (6.38)	—	1936 (2.71)	—
Bone, lymph, and visceral	96 (2.10)	—	299 (0.42)	—
Bone only	2594 (56.69)	—	63,636 (88.95)	—
None	—	74,091 (100)	—	802,821 (100)
Visceral only	214 (4.68)	—	1697 (2.37)	—
Lymph, visceral	37 (0.81)	—	120 (0.17)	—
Lymph only	777 (16.98)	—	2048 (2.86)	—

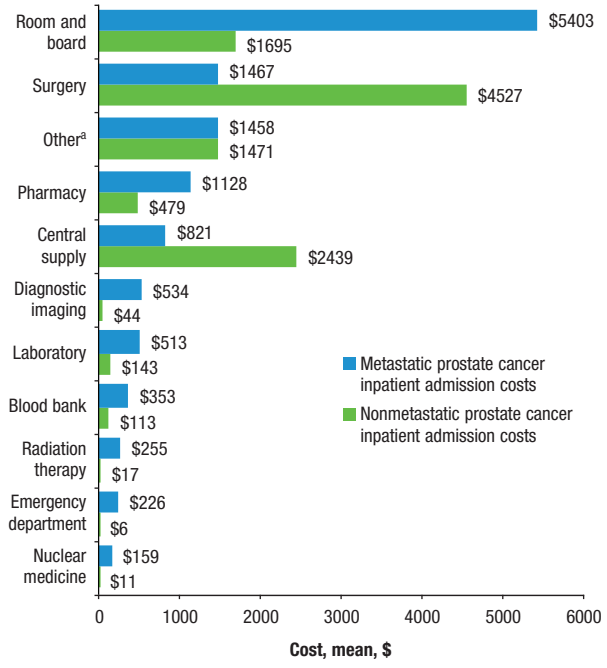
SD indicates standard deviation.

Table 2 Length of Stay and Unadjusted Total Costs per Inpatient or Outpatient Admission

Variable	Inpatient metastatic prostate cancer (N = 4576)	Inpatient nonmetastatic prostate cancer (N = 74,091)	Outpatient metastatic prostate cancer (N = 71,545)	Outpatient nonmetastatic prostate cancer (N = 802,821)
Length of stay, mean, days (SD)	6.01 (6.94)	1.93 (2.42)	—	—
Total cost, mean (SD), $	12,324 (13,506)[a]	10,987 (6912)[a]	1627 (6182)	909 (3458)

[a]Baseline cost, before matching.
SD indicates standard deviation.

Figure 1 Cost (Mean) per Inpatient Admission



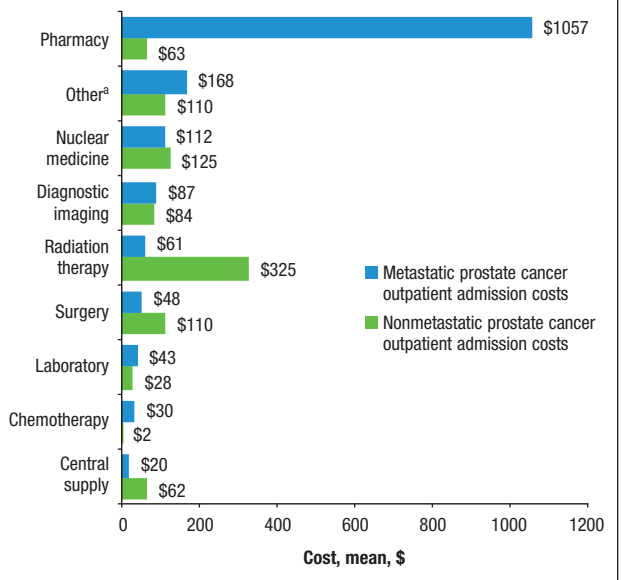
[a]Other costs included anesthesia, recovery room, pathology, administrative fees, respiratory therapy, intravenous therapy, ultrasound, electrocardiogram, observation/treatment room, pulmonary function, cardiology, hospice, endoscopy, dialysis, ambulance, home health, neurodiagnostics, other diagnostic services, and durable medical equipment.

costs, were pharmacy ($1057), nuclear medicine ($112), and diagnostic imaging ($87).

For patients with nonmetastatic disease in the outpatient setting, the highest costs were radiation therapy ($325), nuclear medicine ($125), and surgery ($110; **Figure 2**). Of the outpatient admissions, the pharmacy, laboratory, and diagnostic imaging costs were higher in the metastatic prostate cancer cohort than in the group with nonmetastatic disease (Figure 2).

The generalized linear model analysis, which was adjusted for patient characteristics, showed that the mean total adjusted cost for inpatient admissions was significantly higher for metastatic prostate cancer admissions than for nonmetastatic prostate cancer admissions (mean difference, $1293; 95% confidence interval [CI], $1063-$1522; *P* <.0001; **Figure 3**). Similarly, the mean total adjusted cost for outpatient admissions was significantly higher for metastatic prostate cancer admissions than for nonmetastatic prostate cancer admissions (mean difference, $743; 95% CI, $714-$772; *P* <.0001; Figure 3).

Figure 2 Cost (Mean) per Outpatient Admission



[a]Other costs included anesthesia, recovery room, pathology, administrative fees, respiratory therapy, intravenous therapy, ultrasound, electrocardiogram, observation/treatment room, pulmonary function, cardiology, hospice, endoscopy, dialysis, ambulance, home health, neurodiagnostics, other diagnostic services, and durable medical equipment.

Significant differences remained in patient characteristics after the generalized linear model analysis in the inpatient cohort, thus a sensitivity analysis was conducted over the propensity-matched data to further adjust the baseline differences. After 1:4 matching and analysis, of the 13,755 total inpatient admissions, 2751 were for metastatic prostate cancer. The adjusted mean total cost per inpatient admission after the 1:4 matching and analysis was $12,242 (SD, $11,555) for patients with metastatic prostate cancer and $11,161 (SD, $6889) for patients with nonmetastatic prostate cancer (not shown).

Among the inpatient admissions, the mean length of stay was significantly higher among the metastatic prostate cancer admissions than the nonmetastatic prostate cancer admissions (6.01 days [SD, 6.94] vs 1.93 days [SD, 2.42], respectively; Table 2).

Among the patients admitted for an inpatient service, the mean combined metastatic-related treatment costs

(total costs for antineoplastic drugs, including docetaxel, cabazitaxel, and mitoxantrone, that are specific to the treatment of prostate cancer) for patients with metastatic prostate cancer were $7854 compared with only $265 among patients with nonmetastatic prostate cancer (P = .0029). For patients with metastatic prostate cancer, the mean oncology drug costs were $4477 for cabazitaxel, $2504 for docetaxel, and $443 for mitoxantrone.

Discussion

This study provides a comparison of the hospital costs and healthcare resource utilization associated with admissions in patients with metastatic prostate cancer versus patients without metastases in the inpatient or outpatient hospital settings. Our results show that costs in the inpatient and outpatient settings, as well as healthcare resource utilization and inpatient length of stay, were higher for patients with metastatic prostate cancer than for patients with nonmetastatic prostate cancer.

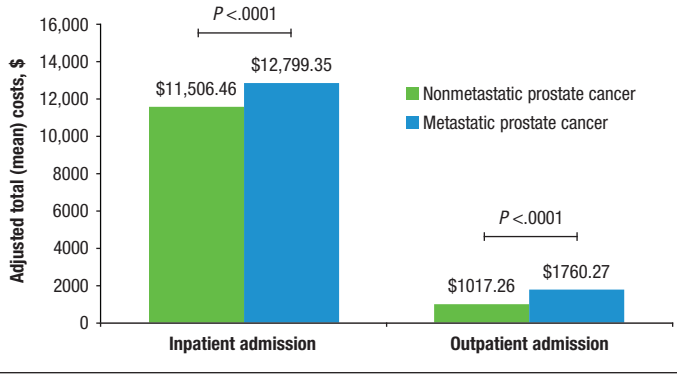
Increased healthcare resource utilization and inpatient length of stay among patients with metastatic prostate cancer likely contribute to the overall higher costs in this patient population. The higher overall costs for chemotherapy agents in our study among patients with prostate cancer in the outpatient versus inpatient setting can be attributed to the typical administration setting of chemotherapy, which is typically outpatient.

This study demonstrates the significant economic burden and healthcare resource utilization associated with metastases in patients with prostate cancer. Our study adds to the body of literature that supports the significant differences in cost and healthcare resource utilization of metastatic and nonmetastatic prostate cancer,[12-16] and it is the first study to analyze the costs of these differences to the hospital system. The results of this study are consistent with the findings of 2 other US-based studies that demonstrated higher mean costs with evidence of metastases in men with prostate cancer compared with those without metastases.[13,15]

A 2017 retrospective cohort study by Valderrama and colleagues demonstrated that patients with metastatic castrate-resistant prostate cancer had significantly higher all-cause healthcare resource utilization and costs compared with patients with nonmetastatic castrate-resistant prostate cancer.[15] A 2014 US hospital database study by Seal and colleagues showed that the mean cost per encounter for patients requiring inpatient hospitalization and the overall treatment costs were higher in patients with prostate cancer and documented bone metastases versus patients without bone metastases.[13]

Our study demonstrated that the costs of patients with metastatic prostate cancer were significantly higher than those of patients with nonmetastatic prostate cancer for inpatient and outpatient admissions and corroborate the findings of Seal and colleagues and Valderrama and colleagues, providing further support to the findings that patients with metastatic prostate cancer incur substantial additional costs and require more resources than patients without metastases.

Figure 3 Adjusted Total (Mean) Costs[a]



[a]This model was adjusted for patient characteristics, age, race, marital status, and payer type.

Similar to our findings, Seal and colleagues also noted that men with bone metastases had significantly longer duration of hospital stay than men without bone metastases (4 days vs 2 days, respectively; P <.0001) across all encounters.[13] Among inpatient hospitalizations, men with bone metastases averaged a 3-day longer length of stay than men without bone metastases (7 days vs 4 days). Almost 40% of the total cost in men with bone metastases resulted from the longer length of stay and the associated inpatient pharmacy costs.[13]

Our study further highlights and confirms the significant differences in the costs and healthcare resource utilization of inpatient and outpatient admissions in patients with prostate cancer who have bone metastases or any metastases. Because metastatic prostate cancer is more costly and resource intensive than nonmetastatic prostate cancer, it is important to delay metastases and prolong the nonmetastatic state.

The treatment landscape for prostate cancer is changing; the guidelines for prostate cancer treatment are constantly being updated with new evidence, and new agents are in development for varying prostate cancer indications, including those that aim to extend metastasis-free survival. As the treatment paradigm continues to shift, and new agents become available for patients with nonmetastatic prostate cancer, there is an opportunity to prevent progression and delay the time to metastatic disease and thus prevent the significant subsequent increase in the patient's clinical burden, healthcare resource utilization, and cost. Further studies are warranted to confirm the beneficial eco-

nomic effect of prolonging the nonmetastatic state in this patient population.

Limitations

This study has several limitations. First, this was a retrospective hospital claims analysis, which limits the amount of clinical information available, which would be valuable to stratify treatments based on relevant risk groups. Additional details on healthcare resource utilization outside of the hospital setting are not available; therefore, the costs and healthcare resource utilization reported in this study may be an underrepresentation of the true economic burden of metastatic and nonmetastatic prostate cancer.

Furthermore, the patients' clinical characteristics were determined using *ICD-9-CM* and *ICD-10-CM* diagnosis codes on hospital claims. There is a potential for misclassification bias as a result of overcoding or undercoding of claims when determining the clinical characteristics of patients using *ICD-9-CM* and *ICD-10-CM* diagnosis codes on hospital claims.

Because we could not link patients to previous admissions or track them over time, healthcare costs related to prostate cancer could be driven by the frequency of admissions for a few patients and the disease state status (ie, admission earlier in the course of disease may be associated with different healthcare resource utilization as a result of various diagnostic procedures).

Finally, the Premier Healthcare Database is a subset of US hospital encounters and may not be fully representative of admissions in the United States as a whole. Despite these limitations, this large database that encompasses commercial, Medicare, and Medicaid populations allowed us to select the best sample size and represents the real-world costs and healthcare resource utilization of the US population with metastatic or nonmetastatic prostate cancer.

Conclusions

The costs and healthcare resource utilization associated with prostate cancer vary based on the presence of metastases. In our study, for inpatient and outpatient admissions, the mean total cost was significantly higher for patients with metastatic prostate cancer than for patients with nonmetastatic disease. For patients who were admitted, the mean length of stay was also longer for patients with metastatic (versus nonmetastatic) prostate cancer. These study results demonstrate the economic burden associated with hospital admissions of patients with metastases.

Delaying metastases has important economic implications to health plans and the healthcare system, because healthcare resource utilization and costs increase with disease progression, particularly in the inpatient settings. As cancer care transitions into value-based care, our findings highlight the need for treatment strategies that delay the progression to metastatic disease.

Acknowledgments

We would like to acknowledge Adriana Valderrama, PhD, MBA, a former Bayer employee, for her support in conducting this study.

Funding Source

This study was funded by Bayer HealthCare.

Author Disclosure Statement

Ms Tangirala, Dr Appukkuttan, and Dr Simmons are employees of Bayer HealthCare.

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