

Real-World Disease Management Costs for US Patients with Muscle-Invasive Bladder Cancer Following Radical Cystectomy in Contemporary Practice

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Introduction

- Bladder cancer is the ninth most common cancer in the United States, with over 84,000 new cases in 2025¹
- Despite treatment with radical cystectomy (RC), nearly half of patients with muscle-invasive bladder cancer (MIBC) experience cancer recurrence within 3 years^{2,3}
- Disease management costs (ie, non-drug costs) constitute a significant portion of overall cost burden for MIBC patients. However, disease management costs by health state, which are crucial to the representation of the true burden of MIBC on the health care system, are not well studied

Objective

- To assess disease management costs by health state post-RC: disease free (DF), locoregional recurrence (LR), distant metastasis (DM), any recurrence (LR and/or DM), and terminal care

Methods

Study design and population

- Patients aged ≥65 years with T2-T4aN0M0 or T1-T4aN1M0 MIBC who underwent RC were identified in the Surveillance, Epidemiology, and End Results (SEER)-Medicare database (2007-2020)
 - Patients were excluded if they received partial cystectomy or radiation therapy before RC and after MIBC diagnosis, had a secondary malignancy any time prior to RC or within 60 days after RC, or had other cancers within 3 years prior to initial diagnosis of MIBC
 - Patients had continuous enrolment in Medicare Parts A, B, and D for at least 12 months prior to and for at least 1 month after RC
 - The index date was the date of RC
- The algorithm developed to identify LR and DM was based on diagnosis and treatments received. The definitions were as follows:
 - LR: a diagnosis of secondary malignancy in the urinary bladder or pelvic lymph node at least 60 days after the index date or initiation of radiation therapy at least 180 days after the end of primary treatment episode, whichever occurred first
 - DM: a diagnosis of metastatic disease at least 60 days after the index date or initiation of systemic treatment for metastatic disease, whichever occurred first
- Patient costs were classified into the following health states:
 - DF: time from the day after RC until any recurrence, 30 days before death, or end of data availability, whichever occurred earliest. Disease management costs were summarized during the following time periods to reflect the pattern of observed costs over time: months 1-3, month 4-year 2, and years 3+ after RC
 - LR: time from the initial LR until DM, 30 days before death, or the end of data availability, whichever occurred earliest
 - DM: costs were separately estimated for DM pre-progression and DM post-progression:
 - Pre-progression: time from the initial DM until disease progression (ie, initiation of new treatment for metastatic MIBC), 30 days before death, or the end of data availability, whichever occurred earliest. Costs were summarized during the following time periods: month 1 and months 2+
 - Post-progression: time from disease progression after the initial DM until 30 days before death or end of data availability, whichever occurred earliest
 - Any recurrence: time from initial LR or DM until 30 days before death, or the end of data availability, whichever occurred earliest
 - Death (terminal care): 30 days before death

References

- American Cancer Society. 2025.
- Lee Y, et al. *J Cancer Res Clin Oncol*. 2021.
- Pfister C, et al. *J Clin Oncol*. 2022.

Disclosures and disclaimers

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Outcomes

- Disease management costs per-patient-per-month (PPPM) in 2023 US dollars were defined as follows:
 - All-cause health care costs: Costs associated with all Medicare claims excluding bladder cancer (BC)-specific drug and administration costs and all Medicare Part D costs
 - BC-related health care costs: A subset of the costs identified above, based on Medicare claims additionally associated with a primary or secondary diagnosis for BC
 - PPPM costs were calculated as the total health state cost incurred by a patient divided by their length of follow-up in that health state
- Procedure costs for radiotherapy among those with salvage radiotherapy in LR or DM and for metastasectomy among those with a metastasectomy in DM were calculated as a one-time per-patient cost
 - BC-related procedure costs were additionally identified based on claims associated with a primary or secondary diagnosis for BC
 - The procedure costs were not included in the estimation of all-cause or BC-related PPPM costs for the health states

Statistical analysis

A descriptive analysis was conducted; no statistical comparisons of outcomes were undertaken

Results

- Costs were summarized among 1,122 patients in DF and 443 patients with any recurrence (44 having LR, 413 having DM)
- Within the DF health state, all-cause disease management costs PPPM decreased over time, with \$7,916, \$2,636, and \$1,752 in months 1-3, month 4-year 2, and years 3+ respectively (**Figure 1**). A similar decreasing trend was observed in BC-related disease management costs
- All-cause costs among patients who experienced any recurrence (LR and/or DM) were over 5 times higher compared to remaining DF (\$9,326 vs \$1,752 for DF years 3+, PPPM) (**Table 1**)
- All-cause costs for patients with LR were \$2,261, DM pre-progression \$12,483 in month 1 and \$5,630 in months 2+, DM post-progression \$8,101, and terminal care \$20,578 (**Table 1**)
- On average, one-time all-cause procedure costs for radiotherapy were \$4,554 and \$5,707 in the LR and DM states, respectively, and \$21,482 for metastasectomy in the DM state (**Table 2**)
- BC-related disease management costs are reported in **Tables 1 and 2**

Limitations

- The patient population in the linked SEER-Medicare database consists of Medicare patients aged 65 years and older, which means the results may not be generalizable to a younger patient population
- The small sample size for some cost outcomes (eg, metastasectomy) may result in estimates of costs that lack precision
- Drug costs were not included in this analysis. Based on the types of therapy received, the pharmacy costs may result in different patterns of costs among the different disease states
- The administrative claims data did not include specific codes to directly identify MIBC recurrence, which could lead to misclassification or misidentification due to potential coding inaccuracies. To mitigate this, we implemented an algorithm using procedure, diagnosis, and drug codes, which was validated for accuracy through clinical consultation

Figure 1. All-cause and BC-related disease management costs by health state (in 2023 US dollars)

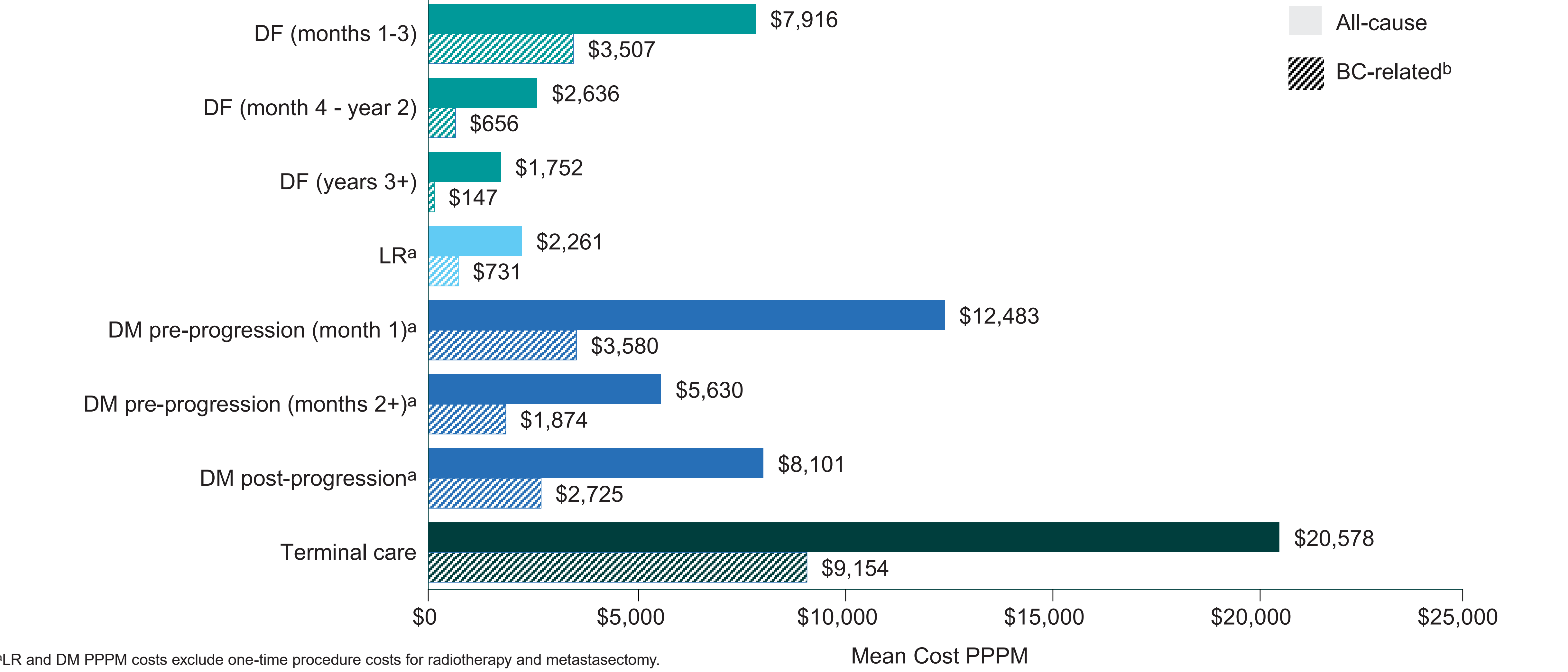


Table 1. Disease management cost statistics (in 2023 US dollars)

Health state	Patient number	Mean cost PPPM	Standard deviation	Standard error
All-cause				
DF (months 1-3)	1,122	\$7,916	\$9,746	\$291
DF (month 4 - year 2)	1,019	\$2,636	\$6,512	\$204
DF (years 3+)	501	\$1,752	\$4,241	\$189
Any recurrence (LR, DM, or both)	443	\$9,326	\$34,432	\$1,636
LR ^a	44	\$2,261	\$3,640	\$549
DM pre-progression (month 1) ^a	413	\$12,483	\$35,891	\$1,766
DM pre-progression (months 2+) ^a	370	\$5,630	\$17,215	\$895
DM post-progression ^a	135	\$8,101	\$12,110	\$1,042
Terminal care	539	\$20,578	\$29,158	\$1,256
BC-related ^b				
DF (months 1-3)	1,122	\$3,507	\$5,020	\$150
DF (month 4 - year 2)	1,019	\$656	\$1,731	\$54
DF (years 3+)	501	\$147	\$281	\$13
Any recurrence (LR, DM, or both)	443	\$2,638	\$5,291	\$251
LR ^a	44	\$731	\$1,810	\$273
DM pre-progression (month 1) ^a	413	\$3,580	\$9,357	\$460
DM pre-progression (months 2+) ^a	370	\$1,874	\$4,958	\$258
DM post-progression ^a	135	\$2,725	\$4,244	\$365
Terminal care	539	\$9,154	\$22,507	\$969

^aLR and DM PPPM costs exclude one-time procedure costs for radiotherapy and metastasectomy.
^bBC-related were identified based on claims associated with a primary or secondary diagnosis for BC.

Abbreviations: BC – bladder cancer; DF – disease-free health state; DM – distant metastasis; LR – locoregional recurrence; PPPM – per-patient per-month; USD – United States Dollar.

Table 2. Procedure cost statistics (in 2023 US dollars)

Procedure	Patient number	Mean costs per patient	Standard deviation	Standard error
All-cause				
LR radiotherapy	17	\$4,554	\$6,005	\$1,456
DM radiotherapy	115	\$5,707	\$5,970	\$557
Metastasectomy	15	\$21,482	\$14,186	\$3,663
BC-related ^a				
LR radiotherapy	<11	\$4,318	\$7,839	\$3,506
DM radiotherapy	50	\$4,996	\$5,915	\$837
Metastasectomy	<11	\$12,811	\$11,072	\$6,392

^aBC-related costs were identified based on claims associated with a primary or secondary diagnosis for BC.

Conclusions

- For patients with MIBC undergoing RC, disease management costs decreased as patients spent more time in the DF state, suggesting that those with longer DF survival may incur lower health care costs
- Recurrence, particularly DM, is associated with increased disease management costs
- These results highlight the potential economic benefit of therapies that can prevent recurrence in patients with MIBC following RC

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