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Quality care measures among patients with high-risk non-muscle invasive bladder cancer with papillary carcinoma or carcinoma in situ receiving front-line Bacillus Calmette-Guérin or other intravesical therapies

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Key Takeaway

For Medicare-insured HR-NMIBC patients with papillary carcinoma or CIS initiating bladder-sparing treatment, significant gaps in QoC remain

Conclusions

Important gaps in care remain for patients with HR-NMIBC with CIS or papillary carcinoma treated with front-line BCG or other IVTs across monitoring, treatment, and healthcare services

Routine assessment of HR-NMIBC-related QoC measures may help close these gaps and improve outcomes for patients receiving 1L bladder-sparing therapy

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Disclosures

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Background

- High-risk non-muscle invasive bladder cancer (HR-NMIBC) is associated with a high disease burden and substantial likelihood of recurrence and progression, requiring close surveillance and management through multiple interventions[1,2]
- These interventions may include transurethral resection of bladder tumor (TURBT), surveillance cystoscopy, and Bacillus Calmette-Guérin (BCG), and affect quality of life[3,4]
- Due to the high disease burden, the National Comprehensive Cancer Network (NCCN®) and the American Urologic Association (AUA) Quality (AQUA) Registry have developed several quality of care (QoC) measures aimed at improving patient outcomes[5,6]
- However, real-world data evaluating QoC measures in the front-line (1L) therapy setting among patients with HR-NMIBC with carcinoma in situ (CIS) or papillary carcinoma remain limited

Objective

- To characterize QoC measures among Medicare-insured patients in the US with CIS or papillary carcinoma HR-NMIBC initiating bladder-sparing treatment with BCG or other intravesical therapies (IVTs) as 1L therapy in the US

Methods

Data source

- SEER-Medicare Data (01/01/2007–12/31/2022) were used, which linked the US National Cancer Institute's (NCI) Surveillance, Epidemiology, and End Results (SEER) cancer registry (containing cases diagnosed since 1973) with the Centers for Medicare & Medicaid Services (CMS) Medicare claims database
- Data were de-identified and complied with the Health Insurance Portability and Accountability Act (HIPAA) regulations

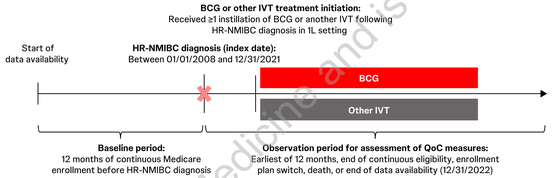
Study design and study population

- A retrospective longitudinal study was conducted (**Figure 1**)
- Patients aged ≥65 years with HR-NMIBC with CIS or with papillary carcinoma who initiated treatment with BCG or other IVTs (i.e., mitomycin, gemcitabine, valrubicin, docetaxel, epirubicin), with no prior treatments for HR-NMIBC were included (**Figure 2**)
- The index date was defined as the date of HR-NMIBC diagnosis
- The baseline period was defined as the 12-month period of continuous enrollment prior to the index date, while the observation period spanned from the index date until the earliest of 12 months, end of continuous enrollment, plan switch, death, or end of data availability (12/31/2022)

Study measures and statistical analysis

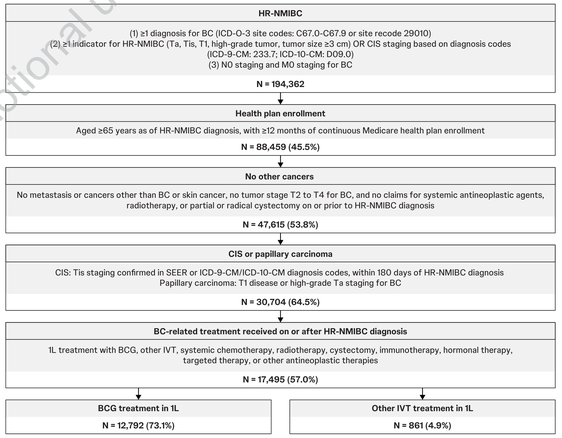
- Monitoring-related, treatment-related, and health services-related QoC measures were assessed during the observation period
- Results were reported descriptively using means, standard deviations, and medians for continuous variables, and frequencies and proportions for categorical variables

Figure 1. Study design scheme



1L: front-line; BCG: Bacillus Calmette-Guérin; HR-NMIBC: high-risk non-muscle invasive bladder cancer; IVT: intravesical therapy; QoC: quality of care.

Figure 2. Sample selection



1L: front-line; BC: bladder cancer; BCG: Bacillus Calmette-Guérin; CIS: carcinoma in situ; HR-NMIBC: high-risk non-muscle invasive bladder cancer; ICD-9-CM/ICD-10-CM: International Classification of Disease, Ninth/Tenth Revision, Clinical Modification; ICD-O-3: International Classification of Diseases for Oncology, Third Edition; IVT: intravesical therapy.

Results

Patient characteristics

- Among 17,495 patients initiating 1L treatment for HR-NMIBC, 12,792 (73%) received BCG (mean age: 76 years; 79% male; 91% White) and 861 (5%) received other IVTs (mean age: 77 years; 76% male; 93% White) (**Table 1**)
- Among other IVT-treated patients, most were treated with mitomycin (64%), gemcitabine (25%), or gemcitabine + docetaxel (5%)

Table 1. Baseline patient characteristics

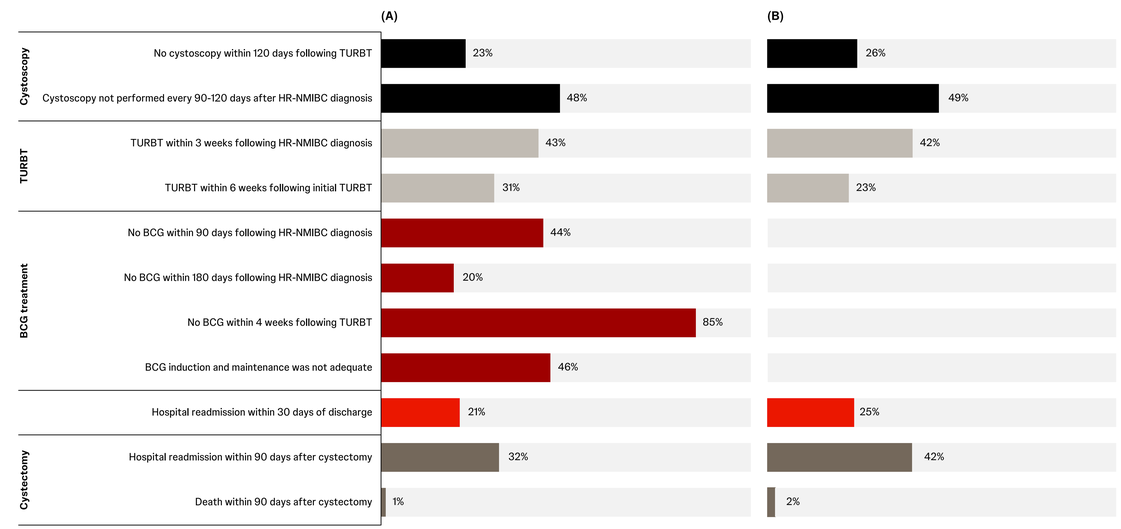
	BCG treatment in 1L N = 12,792	Other IVTs in 1L N = 861
Age at index date, mean ± SD [median]	76.3 ± 6.6 [75.6]	76.9 ± 7.0 [75.9]
Male sex, n (%)	10,061 (78.7)	652 (75.7)
White race, n (%)	11,619 (90.8)	797 (92.6)
Index year, n (%)		
2008-2011	2,055 (16.1)	58 (6.7)
2012-2015	3,282 (25.7)	240 (27.9)
2016-2019	5,058 (39.5)	319 (37.0)
2020-2021	2,397 (18.7)	244 (28.3)
US region, n (%)		
West	5,594 (43.7)	305 (35.4)
Northeast	3,032 (23.7)	197 (22.9)
South	2,735 (21.4)	157 (18.2)
Midwest	1,431 (11.2)	202 (23.5)
Residential setting, n (%)		
Urban	11,260 (88.0)	734 (85.2)
Rural	1,532 (12.0)	127 (14.8)
Medicare plan enrollment, n (%)		
Fee-for-Service	8,607 (67.3)	653 (75.8)
Medicare Advantage	4,185 (32.7)	208 (24.2)
Quan-CCI, mean ± SD [median]	1.7 ± 1.8 [1.0]	2.0 ± 1.9 [2.0]
Urinary tract infection, n (%)	4,193 (32.8)	295 (34.3)
Smoking, n (%)	3,442 (26.9)	295 (34.3)
Kidney stone, n (%)	1,527 (11.9)	111 (12.9)

1L: front-line; BCG: Bacillus Calmette-Guérin; CCI: Charlson Comorbidity Index; IVT: intravesical therapy; SD: standard deviation; US: United States

QoC measures

- Among patients treated with BCG (**Figure 3A**):
  - 44% of patients did not initiate BCG within 90 days of diagnosis, and 46% did not receive adequate BCG induction or maintenance
  - Cystoscopy was not performed every 90-120 days post-diagnosis for 48% of patients
  - Among patients with an initial TURBT, subsequent TURBT within 6 weeks was observed among 31% of patients
  - Among patients with an initial hospitalization, 21% had a readmission within 30 days of an initial discharge
  - Among those with cystectomy, hospital readmission within 90 days was observed for 32% of patients
- Among patients treated with other IVTs (**Figure 3B**):
  - Cystoscopy was not performed every 90-120 days post-diagnosis for 49% of patients
  - Among patients with an initial TURBT, subsequent TURBT within 6 weeks was observed among 23% of patients
  - Among patients with an initial hospitalization, 25% had a readmission within 30 days of an initial discharge
  - Among patients with cystectomy, hospital readmission within 90 days was observed for 42% of patients

Figure 3. QoC measures among patients with HR-NMIBC who initiated (A) BCG or (B) other IVTs in 1L



1L: front-line; BCG: Bacillus Calmette-Guérin; HR-NMIBC: high-risk non-muscle invasive bladder cancer; IVT: intravesical therapy; QoC: quality of care; TURBT: transurethral resection of bladder tumor.

Limitations

- This study is subject to limitations common to retrospective claims analyses, including potential coding inaccuracies, missing data, and incomplete documentation, which may result in misidentification of study variables
- The HR-NMIBC diagnosis date was defined as the earliest available indicator (i.e., staging or diagnosis codes) in the data, which may not reflect the true disease onset, particularly for cases diagnosed before data availability (i.e., prior to 2008)
- Findings may not be generalizable to patients without Medicare insurance coverage

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