Assessing The Value Of Linking Abstracted Medical Record Data With Administrative Claims Data To Study Patients With High-Risk Non-Muscle Invasive Bladder Cancer In The United States

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Background

- Bladder cancer is the sixth most common cancer in the United States, and 75-80% of cases are non-muscle invasive (NMIBC).
- The evolving treatment landscape, particularly for high-risk (HR) NMIBC, requires understanding of current real-world treatment patterns and their clinical implications.
- Understanding HR NMIBC treatment patterns are of particular interest given the high number of current and future clinical trials taking place in this space.
- However, due to lack of real-world data sources available, very limited information has been published on the treatment patterns and outcomes in patients with HR NMIBC in routine clinical practice.
- Studying HR NMIBC is challenging because:
  - The data necessary to identify HR NMIBC diagnosis date are unavailable in claims data.
  - Unstructured medical records are unsuitable for capturing healthcare utilization, treatment patterns, and long-term outcomes.
- Linking administrative claims and medical records may help surmount these challenges.

Objectives

1. To describe the process of linking administrative claims and abstracted medical record data.
2. To quantify the information added to the study of HR NMIBC by linking these data sources.

Methods: Registry data abstraction

- Medical records data source: N=56 hospitals and N=520 ambulatory clinics (i.e., health care organizations) within the Ciox Health network.
- Registry study population: N=748 patients ≥18 years old at the time of initial HR NMIBC pathology (i.e., meeting ≥1 American Urologic Association/Society for Urologic Oncology criterion for HR NMIBC; **Table 1**) according to medical records from 2011-2020.

Table 1. Risk classification guideline from the AUA/SUO (2020).

Low Risk	Intermediate Risk	High Risk
LGa solitary Ta ≤ 3cm	Recurrence within 1 year, LG Ta	HG T1
PUNLMP[b]	Solitary LG Ta > 3cm	Any recurrent, HG Ta
	LG Ta, multifocal	HG Ta, >3cm (or multifocal)
	HG[c] Ta, ≤ 3cm	Any CIS[d]
	LG T1	Any BCG failure in HG patient
		Any variant histology
		Any LVI[e]
		Any HG prostatic urethral involvement

[a]LG = low grade; [b]PUNLMP = papillary urothelial neoplasm of low malignant potential; [c]HG = high grade; [d]CIS = carcinoma *in situ*; [e]LVI = lymphovascular invasion

Methods: Claims data linkage

- Claims data source: Komodo Healthcare Map™
- Closed claims reflect almost all utilizations by a patient each year or enrollment period and are received directly from insurance payers.
- Open claims add information from medical records, physician's office visits, laboratories, and other healthcare organizations when closed claims are unavailable.
- Data linkage: Komodo data partners submit all data using a 44-character de-identification token that allows for linkages across other partner data sources while maintaining patient data privacy. Using these privacy-preserving tokens, patients' medical records and Komodo claims data were linked (**Figure 1**).

Results

- N=740 (99%) patients could be linked with their claims data.
- Median age was 76.4 years old (IQR: 71-85).
- Patients with closed claims (47%; N = 350) had a median enrollment of 6.1 years and 2.9 years following their first bladder cancer claim.

Figure 1. Depiction of process of medical records data collection, curation, and linkage with Komodo Healthcare Map™ claims data.

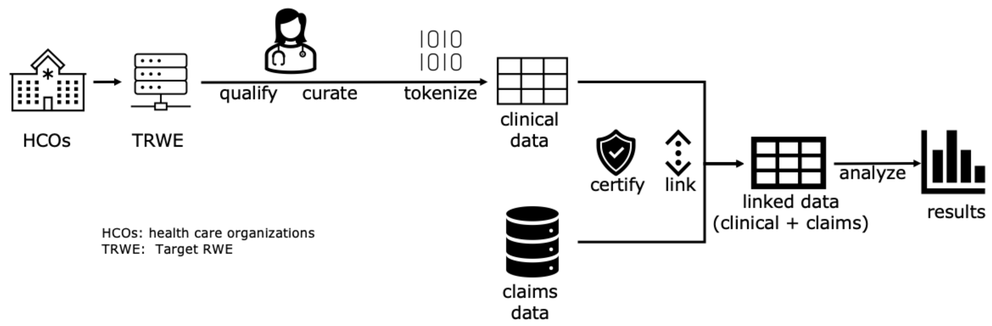
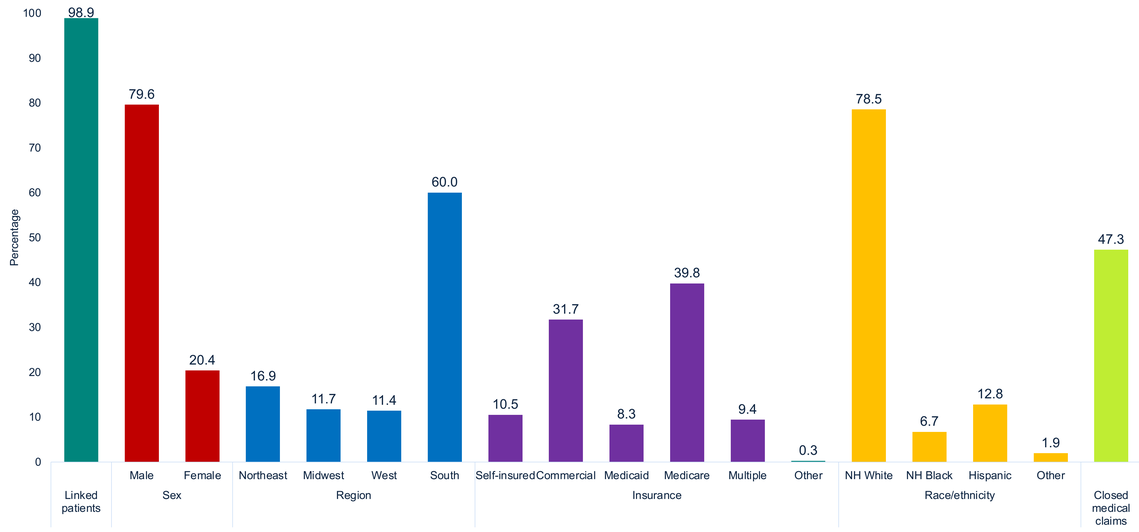


Table 2. Available administrative claims data among 740 HR NMIBC patients.

	Among all bladder claims		Following first bladder cancer claim	
Variable	Total #	# per person	Total #	# per person
Medical encounters	155,548	210	113,376	153
Pharmacy encounters	213,645	289	140,619	190
Bladder cancer-related medical encounters	27,854	38	27,854	38
Urology oncologist encounters	16,325	22	14,953	20
Hospitalizations	3,850	5	14,415	19
ER Visits	1,829	2	1,616	2

Figure 2. Claims-based descriptive characteristics of HR NMIBC patients within the Komodo Healthcare Map™.



Conclusions

- HR NMIBC patients engage extensively with healthcare services, averaging multiple years of follow-up and hundreds of medical and pharmacy encounters per-person following the first bladder cancer diagnosis.
- Linking registry data with administrative claims provided in-depth insights into HR NMIBC patients' real-world healthcare utilization over time.
- Claims data may also provide insights to long-term treatment journeys and outcomes that may not be studied easily with abstracted medical records alone.

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