

# 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

- To describe the process of linking administrative claims and abstracted medical record data.
- 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 <sup>b</sup>	Solitary LG Ta > 3cm	Any recurrent, HG Ta
	LG Ta, multifocal	HG Ta, >3cm (or multifocal)
	HG <sup>c</sup> Ta, ≤ 3cm	Any CIS <sup>d</sup>
	LG T1	Any BCG failure in HG patient
		Any variant histology
		Any LVI <sup>e</sup>
		Any HG prostatic urethral involvement

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

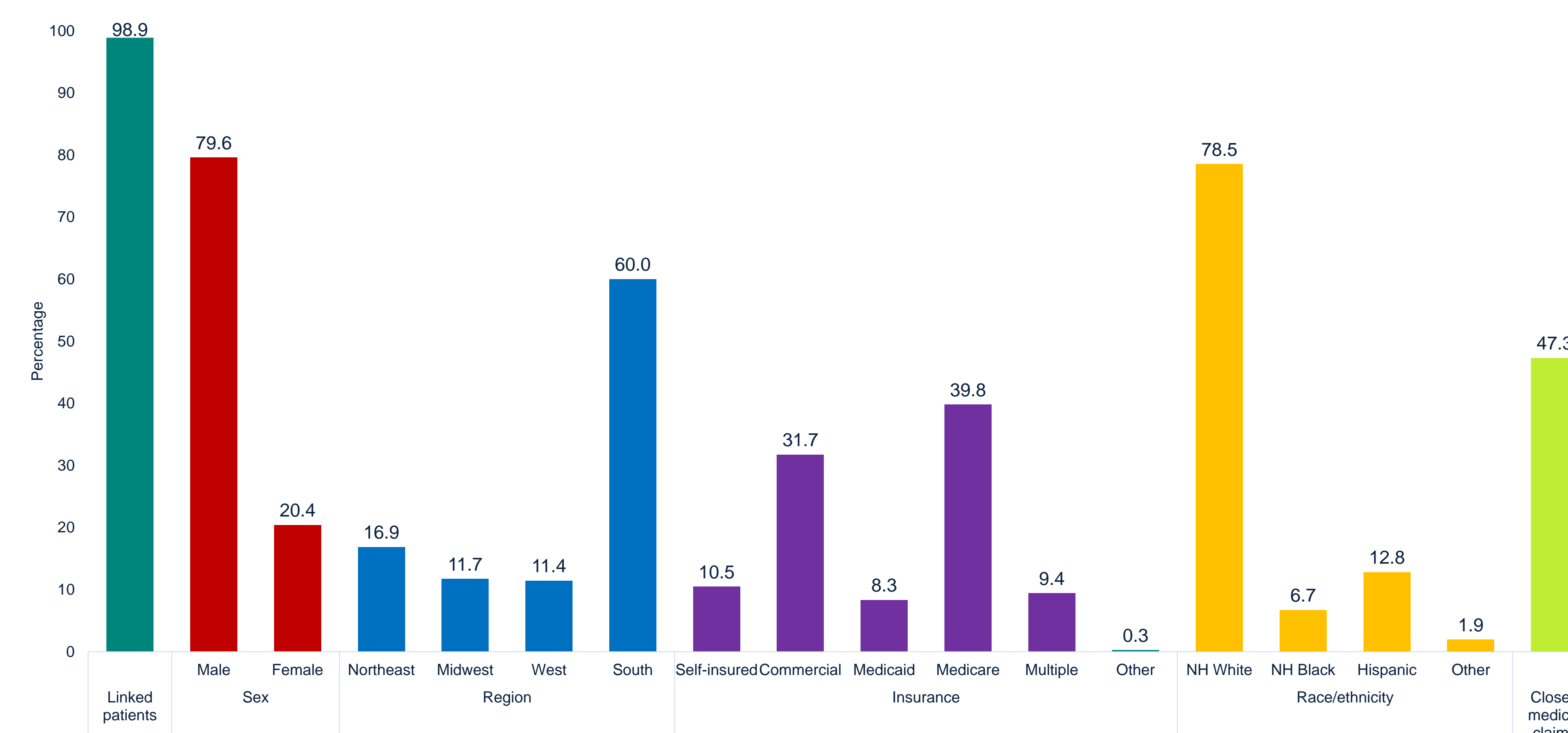
## Methods: Claims data linkage

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

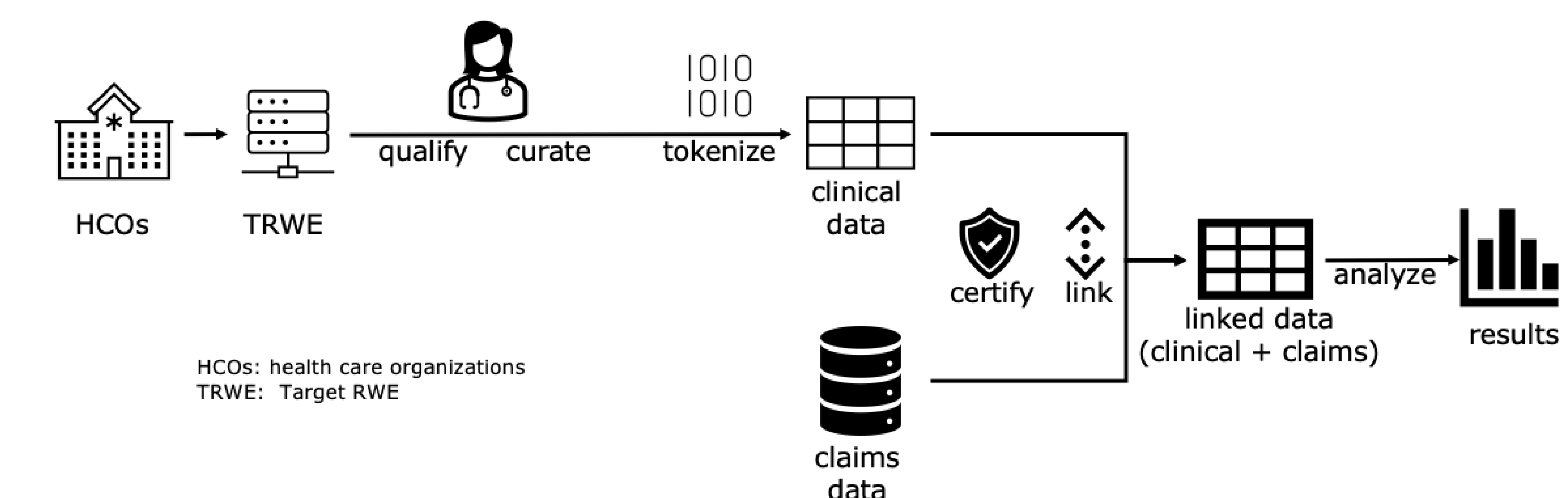


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**Figure 1.** Depiction of process of medical records data collection, curation, and linkage with Komodo Healthcare Map™ claims data.



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

Variable	Among all bladder claims		Following first bladder cancer claim	
	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

## 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.