

Urinary Tract Infection in People with Multiple Sclerosis: A Real-World Administrative Claims Study

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BACKGROUND

People with Multiple Sclerosis (PwMS) have an elevated risk of urinary tract infections (UTIs) due to risk factors such as bladder dysfunction, catheter use, and treatments impacting the immune system. UTIs are typically managed in the outpatient setting when detected early, but untreated UTIs can progress to more severe conditions such as pyelonephritis and urosepsis [1]. UTIs can also present with new or worsening neurological symptoms in PwMS, mimicking a clinical relapse. Some studies have found a large number of PwMS presenting to the Emergency Room (ER) with new or worsening neurological symptoms to have UTIs without evidence of radiographic activity [2]. Other studies have shown PwMS to be at higher risk of UTI-related hospitalization and death [3,4].

OBJECTIVE

Analyze claims data for a commercially insured population of PwMS in the US to characterize the clinical care settings for UTI-related infections compared to a similar population without a history of Multiple Sclerosis (MS) to consider how strategies for early detection and management of UTIs can reduce ER and hospitalization rates.

METHODS

Methods: Longitudinal data of PwMS and an age/gender matched control cohort from a large payer commercial claims database with continuous medical and prescription coverage 2016-2020 were analyzed. Inclusion criteria required birth year before 1997 and any combination of 3 non-overlapping claims with an MS diagnosis code (G35) or disease modifying therapy within a year following the first G35. A matched control cohort was selected by random sampling stratified by age and gender. A member who met MS cohort criteria in the study period was included for the entire 5 years. UTI-related diagnosis codes included UTI (N39.0), Cystitis (N30.*), and Pyelonephritis (N10) in any position, and place of service was used to define emergency room (ER) and inpatient (IP) care. All odds ratios were reported as odds ratio [95% confidence interval (CI)].

RESULTS

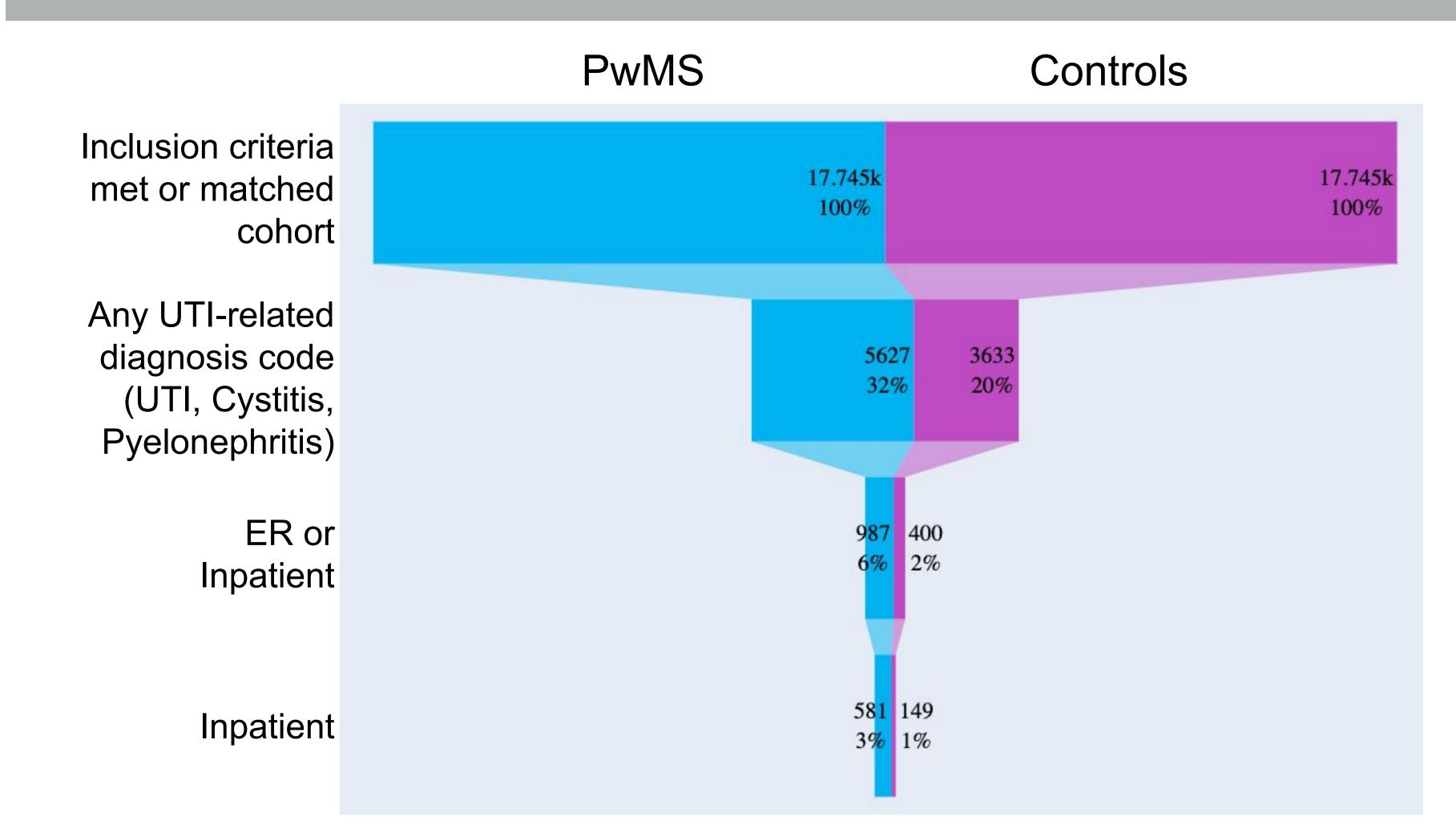


Figure 1. Funnel of Care Intensity

- 17,745 members met inclusion criteria for the MS cohort
- 32%, 5.6%, and 3.3% of the MS cohort had at least one UTI-related medical claim in any setting, ER or IP, and IP settings, respectively, in the 5-year study period. Note: prescriptions alone as evidence of UTI are not included

Odds Ratio MS vs. Controls Utilizing UTI Care

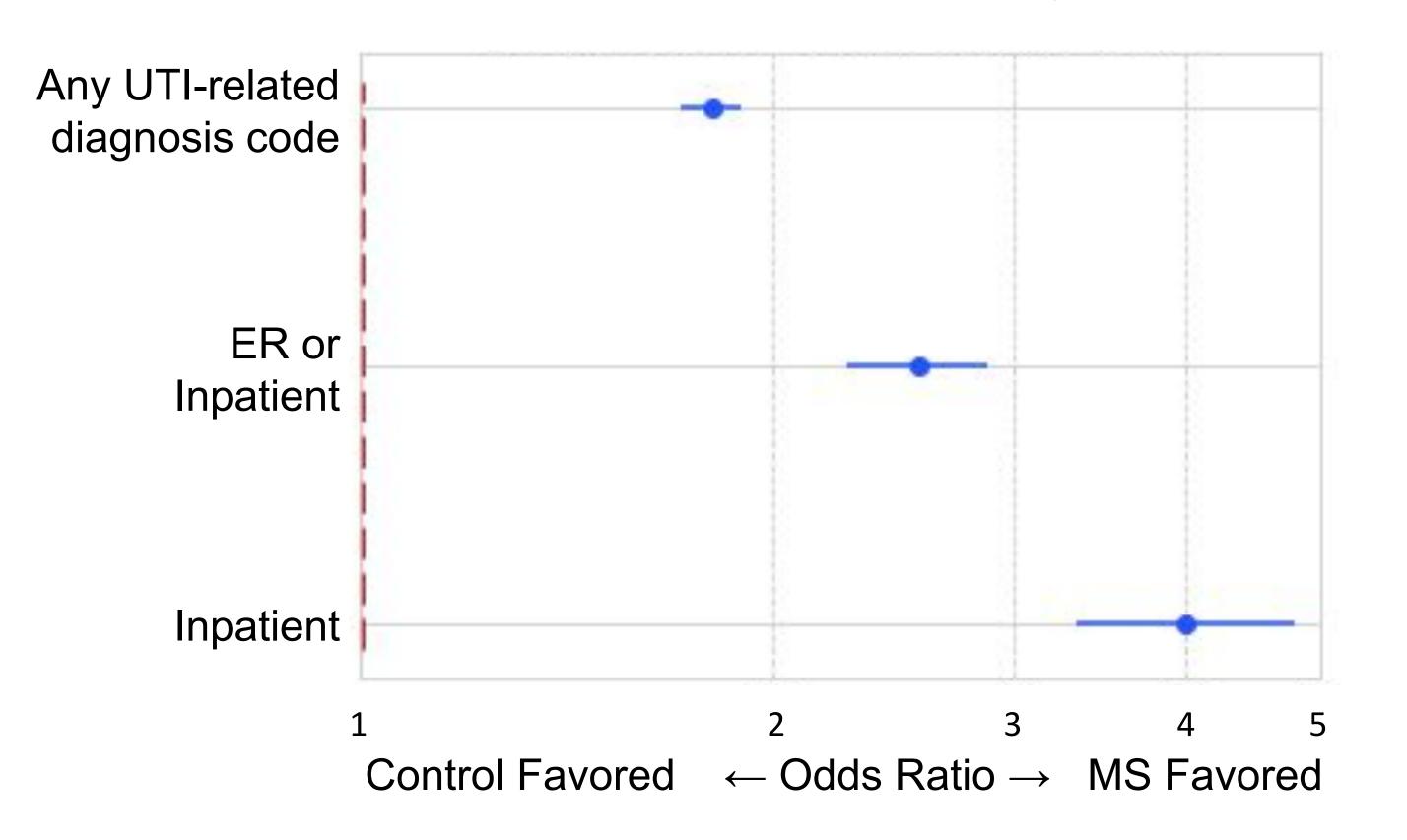


Figure 2. The odds of having at least one medical claim with a UTI-related diagnosis code in the 5 year study period were 1.8 times [CI 1.7, 1.9] higher in the MS cohort than controls for any claim, 2.6 times [CI 2.3, 2.9] higher for an ER or IP claim, and 4.0 times [3.3, 4.8] higher for an IP claim.

RESULTS (continued)

The most frequent primary diagnoses on emergency room (ER) facility claims with UTI-related codes included UTI, Cystitis, and Pyelonephritis. The most frequent primary diagnoses on inpatient (IP) included MS, Sepsis, and UTI.

Sankey Diagram of PwMS with UTI 2016-2020 **UTI-related** diagnosis code that year Low intensity (not ER/IP) High intensity =

Figure 3. Do most PwMS tend to utilize the same level of care year-after-year for UTI-related encounters or does it vary?

- Sankey diagram includes the 32% of PwMS with a UTI-related diagnosis at some point in the 5-year study period.
- Some PwMS have consecutive years of UTI-related care in higher intensity settings, but most vary from year-to-year
- Greater than half of PwMS that receive UTI-related care in ER/IP settings did not have UTI-related encounters the prior year.

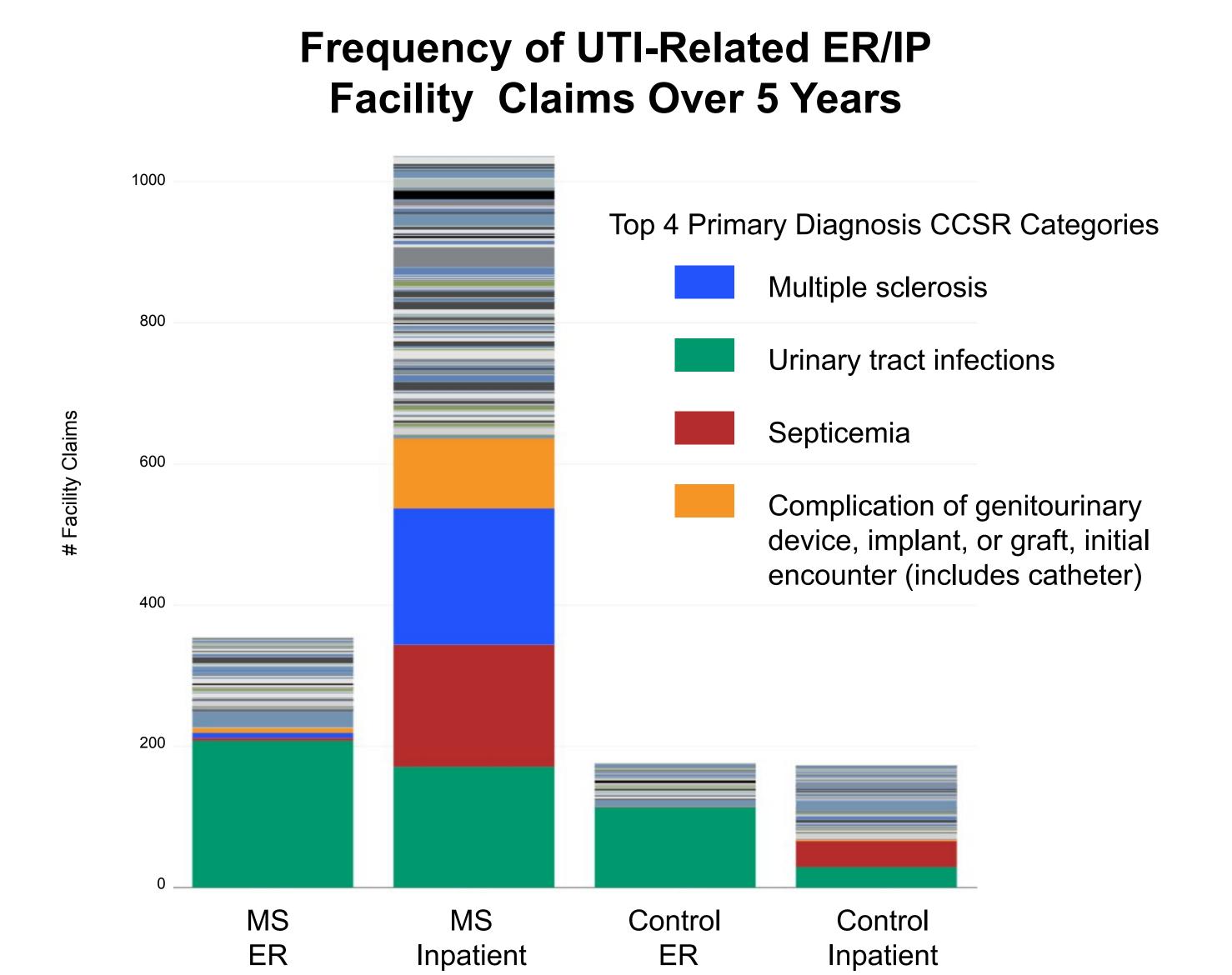


Figure 4. What are most frequent categories of primary diagnosis codes on UTI-related facility claims? Categorized by CCSR (Clinical Classification Software Refined: https://www.hcup-us.ahrq.gov/)

CONCLUSIONS

- In this cohort of commercially insured members, PwMS are more likely to have medical claims associated with UTI-related infections compared to controls, more so at higher intensity care settings.
- It is possible that neurological symptoms are complicating identification & UTI management in PwMS.
- Early intervention strategies addressing UTI risk factors prior to the patient seeking emergency care have the potential to improve patient outcomes and lower the cost profile of PwMS.
- While some subgroups at risk of UTI-related ER/IP care are identifiable via simple heuristics of past utilization, models that leverage the complex multifactorial risk of PwMS are expected to be more performant
- Further study is needed to better understand the drivers of UTI-related care rates in PwMS and design effective interventions.

REFERENCES

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