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Title

A Novel Definition of Urinary Tract Infection across a National Primary Care Network

Priority 1 (Research Category)

Geriatrics

Presenters

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Abstract

Context: Misdiagnosis and over-diagnosis of urinary tract infection (UTI) are a leading cause of inappropriate antimicrobial use. It is challenging to study UTI in the outpatient setting, as no case definition exists.

Objective: To develop and validate a novel electronic medical records (EMR)-based UTI case definition that can be applied to elucidate and understand UTI treatment and practice patterns in primary care.

Study Design and Analysis: Retrospective cross-sectional study.

Setting or Dataset: De-identified data from 268 primary care providers participating in the Manitoba Primary Care Research Network (MaPCReN), the Manitoba network within CPCSSN.

Population Studied: Providers participating in MaPCReN represented 306,394 patients with ≥1 visit between January 1, 2016 and December 31, 2021. A reference set included n=854 randomly selected adults aged ≥60 years, including 148 (17.3%) patients with ≥1 UTI encounter and 703 (82.6%) patients with no UTI encounters. In total there were 266 encounters for a UTI categorized as Criteria A (urinary

symptoms documented), Criteria B (non-specific urinary symptoms) or Criteria C (unclear or no symptoms documented).

Intervention/Instrument: We assessed agreement of episode-specific case definitions compared to the reference set using sensitivity (Sen), specificity (Spec), positive predictive value (PPV), negative predictive value (NPV). We applied the validated case definition to the CPCSSN dataset to estimate prevalence and 95% confidence intervals using exact binomial test.

Results: The validation sample (n=854) consisted of 56.7% females and a mean age 76 years. The sen, spec, PPV, and NPV were: 88.4% (83.9-91.9), 89.2% (86.8-91.4), 74.4% (69.2-79.1), and 95.6 (93.8-97.0) respectively. Criteria A episodes had stronger agreement; 88.89% (83.66-92.90), 82.93% (80.17-85.44), 55.70% (50.03-61.26), and 96.87% (95.29-98.03) when compared to criteria A and B; 88.78% (83.64-92.75), 57.19% (51.50-62.74), 57.59% (51.94-63.11), and 88.61% (83.41-92.64), or criteria C; 82.98% (69.19-92.35), 71.47% (68.52-74.30), 12.34% (8.93-16.48), and 98.86% (97.77-99.51).

Conclusions: We developed and validated a novel EMR-based UTI case definition using a pan-Canadian primary care dataset. This case definition will facilitate research on UTI treatment in community-dwelling older adults and inform Quality Improvement initiatives that align clinical practice with evidence based guidelines.