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The Black Box of Using Health Claims-Based Analyses to Estimate UTI Prevalence in Community-Dwelling Women

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The Black Box of Using Health Claims-Based Analyses to Estimate UTI Prevalence in Community-Dwelling Women

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Background: Urinary tract infections (UTIs) are common in women but most epidemiology studies occurred in specialized settings (university health clinics) or used outdated methods (random digit dialing). Currently, women receive UTI care in systems with electronic health records (EHR), thus documenting care of a wider female demographic in real-world settings. We estimated the prevalence of acute, uncomplicated UTIs in community-dwelling women in a health claims database using various operational definitions of UTI. **Methods:** We conducted a retrospective analysis of claims data from the OptumLabs® Data Warehouse (OLDW), which contains de-identified retrospective administrative claims data, including medical and pharmacy claims and eligibility information as well as electronic health record (EHR) data. Non-pregnant female patients ≥ 15 years of age with two years of continuous enrollment between 2007-2015 and a visit encounter in an outpatient office, urgent care, or emergency department were included. Women with lower urinary tract disease/abnormalities, neurological disease, urological treatment, procedures or urinary catheter use, cancer or HIV treatment were excluded. Decision rules for identifying UTIs were derived using one or more combinations of: relevant ICD-9 codes, UTI symptom diagnosis codes, positive urine test results, and/or antibiotic prescription recorded in the EHR and claims. Prevalence rates were calculated for each decision rule. **Results:** Of the 7,337,700 females in the claims database, 947,041 (12.97%) had an index UTI diagnosis or symptoms and met eligibility criteria. The table below [see poster text] illustrates prevalence rates according to each decision rule. As shown, applying decision rules based on common UTI definitions resulted in large differences in prevalence rates.

Conclusions: Using common definitions for UTI to analyze claims data, we obtained significantly different prevalence rates. This study highlights major limitations in using EHR and claims data for UTI quality initiatives such as tracking of practices associated with antimicrobial stewardship and lends credibility to proposals to track these infections as a reportable disease.

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INTRODUCTION

◆ Urinary tract infections (UTIs) are common in women

◆ However, most epidemiology studies of UTI have been conducted in specialized settings, such as university health clinics or used outdated methods, such as random digit dialing

◆ Currently, women receive UTI care in systems with electronic health records (HER), thus documenting care of a wider female demographic in real-world settings

◆ To better understand UTI care in such real-world, EHR-based settings, we conducted a retrospective analysis of claims data from the OptumLabs® Data Warehouse (OLDW)

METHODS

◆ **Study design**

  ◆ Retrospective analysis of claims data from the OptumLabs® Data Warehouse (OLDW)

  ◆ OLDW contains de-identified retrospective administrative claims data, including

    ◆ Medical and pharmacy claims and eligibility information

    ◆ EHR data

◆ **Inclusion criteria**

  ◆ Non-pregnant female patients ≥ 15 years of age

  ◆ Two years of continuous enrollment between 2007-2015

  ◆ A visit encounter in an outpatient office, urgent care, or emergency department

◆ **Exclusion criteria**

  ◆ Lower urinary tract disease/abnormalities

  ◆ Neurological disease

  ◆ Urological treatment or procedures

  ◆ Urinary catheter use

  ◆ Cancer treatment

  ◆ HIV treatment

◆ **Decision rules for identifying UTI** derived using one or more combinations of:

  ◆ Relevant ICD-9 codes

  ◆ UTI symptom diagnosis codes

  ◆ Positive urine test results and/or antibiotic prescription recorded in the EHR and claims

◆ **Prevalence rates**

  ◆ Calculated for each decision rule

RESULTS

◆ **Females in the claims database**: 7,337,700

◆ **Females with an index UTI diagnosis or symptoms meeting eligibility criteria:** 947,041 (12.97%)

◆ Applying decision rules based on common UTI definitions resulted in large differences in prevalence rates

Prevalence rates according to each decision rule

Decision Rule	Rate Estimate Per 100,000
ICD-9 Code for UTI	5,279
EHR symptoms for UTI	9,775
ICD-9 Code for UTI or EHR symptoms	12,907
… and antibiotic prescription	4,928
… and positive urine dipstick/urinalysis	319
… and positive urine culture [> 100,000 CFU/ml]	17
… and EITHER positive urine dipstick/urinalysis or positive urine culture	323
… and antibiotic prescription	146
… and EITHER negative urine dipstick/urinalysis or negative urine culture	737
… and antibiotic prescription	236
… and NO urine dipstick/urinalysis or urine culture result available	11,687
… and antibiotic prescription	4,446

CONCLUSIONS

◆ Using common definitions for UTI to analyze claims data, we obtained significantly different prevalence rates
◆ This study highlights major limitations in using EHR and claims data for UTI quality initiatives such as tracking of practices associated with antimicrobial stewardship and lends credibility to proposals to track these infections as a reportable disease

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