Improving Antibiotic Prescribing for UTIs at UHS

The University of Texas at Austin
University Health Services
Division of Student Affairs

healthyhorns

Reducing inappropriate prescribing through targeted provider education, EMR reminders, and ongoing performance monitoring

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1 Purpose

In December 2020, the Travis County Carbapenem Resistant Enterococcus (CRE) Taskforce released "Managing Uncomplicated Urinary Tract Infections in the Austin Area" to guide community providers in UTI treatment and promote antibiotic stewardship. The document urges use of local susceptibility data for therapy choices and discourages fluoroquinolones due to increased risks of C. difficile and resistant organisms. UpToDate recommends nitrofurantoin, Fosfomycin, or TMP-SMX (if E. coli resistance ≤ 20%) as first-line, beta-lactams second-line, and fluoroquinolones third-line. In 2021, UHS treated 604 UTIs with antibiotics. This Quality Assessment analyzes University Health Services' (UHS) prescribing patterns versus best practices per UpToDate and the UHS antibiogram.

2 Goal

The primary goal of this quality improvement (QI) study was to increase the percentage of empiric antibiotic prescriptions for uncomplicated urinary tract infections (UTIs) at UHS that align with evidence-based guidelines and local resistance data. Specifically, the study set a performance goal that >90% of empiric antibiotic prescriptions would be for one of the three best-choice antibiotics, which were determined to be the most safe, effective, and locally appropriate first-line antibiotics:

- **Nitrofurantoin**
- **Fosfomycin**
- **Beta-lactam antibiotics** (second-line used when nitrofurantoin or Fosfomycin aren't appropriate)

These were selected based on recommendations from UpToDate and the UHS urine antibiogram, which showed:

- TMP-SMX resistance in E. coli exceeded 20% for 10 consecutive years
- Fluoroquinolones posed risks for C. difficile infection and multidrug resistance
- **TMP-SMX and fluoroquinolones were therefore considered inappropriate** for empiric treatment.

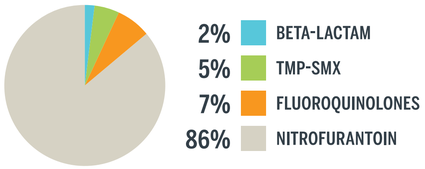
3 Identify the Gap

Method

- Electronic medical records (Point and Click) were used to identify UTI-related office visits in which a urinalysis was ordered.
- Prescription data were extracted and reviewed.
- Non-UTI-related medications (e.g., antifungals, topical agents) were manually excluded.

Most UHS urinary tract infection prescriptions (86%) are for nitrofurantoin, the recommended first-line treatment. However, fluoroquinolones are the second most common (7%), though guidelines suggest using Fosfomycin or a beta-lactam. Overall, only 88% of prescriptions align with the top three recommended antibiotics—below the > 90% performance goal.

Baseline (2021):
Prescriptions, n=594



4 Corrective Actions

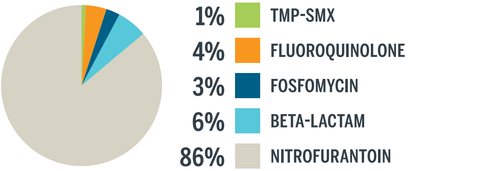
Actions

1. Medical Staff education was completed in March and December 2022.
2. PnC templates were modified to include disappearing text that reminds the provider of the three best choice antibiotics for the empiric treatment of urinary tract infections.
3. The UHS CME Committee designed a Performance Improvement Activity based on this data.

5 Remeasure

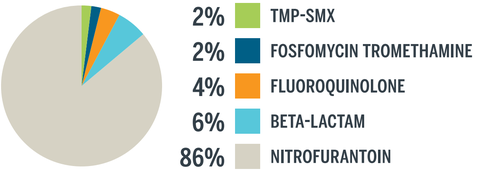
Remeasurement 1 (12/2022-2/2023):
Prescriptions, n=161

- Nitrofurantoin remained the most prescribed (85%), followed by beta-lactams (6%), fluoroquinolones (5%), fosfomycin (3%), and TMP-SMX (1%).
- 94% of prescriptions met guideline-recommended best choices, exceeding the 90% goal. No further interventions were needed beyond sharing results.



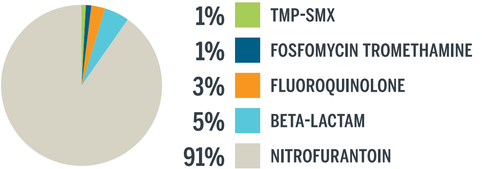
Remeasurement 2 (3/2023-12/2023):
Prescriptions, n=629

- Nitrofurantoin remained most prescribed (86%), followed by beta-lactams (6%), fluoroquinolones (4%), TMP-SMX (2%), and fosfomycin (2%).
- 94% of prescriptions met guideline-recommended best choices, exceeding the 90% goal. No further interventions were needed beyond sharing results.



Remeasurement 3 (1/2024-8/2024):
Prescriptions, n=493

- Nitrofurantoin remained most prescribed (91%), followed by beta-lactams (5%), fluoroquinolones (3%), TMP-SMX (1%), and fosfomycin (1%).
- 97% of prescriptions met best-choice guidelines, exceeding the 90% goal. Sustained improvement; No further interventions were needed beyond sharing results.



6 Communicate

This QI study successfully improved empiric antibiotic prescribing practices for uncomplicated UTIs at UHS by aligning practices with evidence-based guidelines and local resistance data. The use of recommended first-line agents (Nitrofurantoin, Fosfomycin, and Beta-Lactam) increased substantially, while use of high-resistance antibiotics declined. Results demonstrate that targeted education, EMR-based interventions, and performance monitoring can drive meaningful, sustained improvement in clinical prescribing behavior. These results were communicated to all UHS medical staff, Healthyhorns Quality Management Committee and Healthyhorns Leadership Team.