Reducing Fluoroquinolone Use Through Implementation of a Urinary Tract Infection (UTI) Treatment Pathway and Healthcare Provider Education: A Pre- and Post-Intervention Study

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Background1-3
- Fluoroquinolones (FQN) are associated with significant adverse events leading to several FDA enhanced warnings from 2008 to 2018
- Trend of increasing resistance of Escherichia coli and other gram-negatives
- FQNs considered inappropriate as first line for simple infections, including urinary tract infections (UTI).

Adverse Effects of Fluoroquinolones
- Tendinitis/tendon rupture
- Hypoglycemia/severe blood sugar disturbances
- Classified as high-risk for causing C. difficile infection
- Mental health disturbances
- Peripheral neuropathy

Methods
Study Objective
- Decrease inappropriate use of FQN for treatment of UTI in admitted patients and outpatients through implementation of a UTI treatment pathway and targeted provider education

Study Design
- Pre- and post-intervention study in a community hospital and associated clinics
- Statistical analysis via SAS software; alpha set to 0.05

Results
Baseline Characteristics
- A total of 212 patients were included, 159 in the pre-intervention group and 53 in the post-intervention group
  o 83% female
  o Mean age, years (±SD): 68.4 (17.7)
  o Patients in the pre- and post-intervention group were well-matched for baseline characteristics with no significant differences (P > 0.05)

Appropriateness of FQN Use to Treat UTI

<table>
<thead>
<tr>
<th>Primary Outcome</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriateness of Use: Inpatient + Outpatient (Overall)</td>
<td>19.0%</td>
<td>47.2%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Appropriateness of Use: Inpatient Only</td>
<td>24.1%</td>
<td>57.1%</td>
<td>0.007</td>
</tr>
<tr>
<td>Appropriateness of Use: Outpatient Only</td>
<td>16.0%</td>
<td>40.6%</td>
<td>0.005</td>
</tr>
</tbody>
</table>

Appropriateness of Duration/Percentage of Patients who Received FQN for UTI

<table>
<thead>
<tr>
<th>Secondary Outcomes</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate Duration of Therapy: Inpatient + Outpatient (Overall)</td>
<td>49.0%</td>
<td>53.3%</td>
<td>0.305</td>
</tr>
<tr>
<td>Treatment of UTI with a Fluoroquinolone</td>
<td>31.6%</td>
<td>22.4%</td>
<td>0.037</td>
</tr>
</tbody>
</table>

Conclusions
- Provider education, along with the implementation of a clinical pathway for UTI treatment, significantly reduced the inappropriate use of fluoroquinolones in the treatment of UTI in both the inpatient and outpatient settings.
- The intervention lead to a significantly decreased percentage of fluoroquinolones used for the treatment of UTI and increased percentage of other pathway-recommended antibiotics.
- Use of antibiotic regimens with inappropriate durations of therapy for treatment of UTI was not significantly altered by the intervention.
- Organizational purchasing data showed that overall inpatient ordering cost for fluoroquinolones was decreased during the post-intervention phase compared with ordering costs for the previous year during the same time period.

References

Disclosures
Authors have no actual or potential conflicts of interest to disclose in regards to this poster presentation. The views expressed in this poster are those of the authors.