You Can’t Always Get Fluoroquinolones

But if you call ID
You just might find
You get what you need

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Background

• Burden of *Clostridium difficile* infection (CDI)

• B27/NAP1 strain and fluoroquinolone

• Approaches to reducing CDI
  – Meta-analysis: restrictive policies decrease CDI
Our Study
Policy: FQL require ID approval on Med/Surg ICU and Transplant

- Quantitative
- 6 mo pre/post
  - Length of Stay
  - Readmission
  - CDI rate
  - FQL use

- Qualitative
  - Goal: Develop model for how antimicrobial decisions are made
    - Effect of current policy
    - Targets for future policies
  - Methods:
    - Interview providers on Target units
    - Organize interview responses within SEIPS framework
Systems Engineering Initiative for Patient Safety (SEIPS)

Figure 1  SEIPS model of work system and patient safety.
Results: Qualitative

12 providers interviewed, approximately 3 months after restriction went into effect

**TECHNOLOGY AND TOOLS**
- Standardized rounding checklist
- Accessible antibiogram

**ORGANIZATION**
- Large academic medical center with high-risk populations
- Rate of antimicrobial resistance
- Organizational culture

**PERSON**
- Provider comfort with antimicrobial prescribing
- Patient factors: Susceptibility profile, comorbidities

**ENVIRONMENT**
- Availability of pharmacists
- Transfer on FQ from a unit without restrictive policy

**TASKS**
- Recognizing alternative regimens
- Using FQ as component of broad-spectrum empiric regimen
Antimicrobial Utilization on Pilot Units

- Fluoroquinolone
- Carbapenem
- Cephalosporin - 3rd generation
- Cephalosporin - 4th generation
- Aminoglycoside
- Piperacillin-tazobactam

Intervention
## Pre/Post Analysis of Mean Estimates

<table>
<thead>
<tr>
<th>Metric</th>
<th>Transplant Pre</th>
<th>Transplant Post</th>
<th>p-value</th>
<th>Medical-Surgical ICU Pre</th>
<th>Medical-Surgical ICU Post</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readmission rate (%)</td>
<td>23.13</td>
<td>23.30</td>
<td>0.95</td>
<td>1.51</td>
<td>4.20</td>
<td>0.23</td>
</tr>
<tr>
<td>Length of stay, total encounter (patient-days)</td>
<td>6.70</td>
<td>6.40</td>
<td>0.47</td>
<td>12.55</td>
<td>11.91</td>
<td>0.28</td>
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<tr>
<td>Length of stay, on unit (patient-days)</td>
<td>5.56</td>
<td>5.52</td>
<td>0.90</td>
<td>3.85</td>
<td>3.58</td>
<td>0.18</td>
</tr>
<tr>
<td>HO-CDI per 10,000 patient days</td>
<td>22.94</td>
<td>7.10</td>
<td>0.001</td>
<td>19.59</td>
<td>13.50</td>
<td>0.33</td>
</tr>
<tr>
<td>Fluoroquinolone DOT per 1,000 patient days</td>
<td>72.8</td>
<td>20.0</td>
<td>0.003</td>
<td>115.2</td>
<td>24.7</td>
<td>0.001</td>
</tr>
<tr>
<td>Total antibiotics DOT per 1,000 patient days</td>
<td>309.2</td>
<td>273.7</td>
<td>0.11</td>
<td>510.2</td>
<td>455.0</td>
<td>0.08</td>
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<tr>
<td>Carbapenem DOT per 1,000 patient days</td>
<td>28.8</td>
<td>25.4</td>
<td>0.60</td>
<td>55.3</td>
<td>63.4</td>
<td>0.56</td>
</tr>
<tr>
<td>Third generation cephalosporins DOT per 1,000 patient days</td>
<td>32.7</td>
<td>61.4</td>
<td>0.006</td>
<td>108.7</td>
<td>122.7</td>
<td>0.29</td>
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<tr>
<td>Fourth generation cephalosporins DOT per 1,000 patient days</td>
<td>43.8</td>
<td>17.4</td>
<td>0.03</td>
<td>115.8</td>
<td>29.1</td>
<td>0.03</td>
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<tr>
<td>Aminoglycoside DOT per 1,000 patient days</td>
<td>13.7</td>
<td>9.1</td>
<td>0.06</td>
<td>11.7</td>
<td>17.6</td>
<td>0.33</td>
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<tr>
<td>Piperacillin DOT per 1,000 patient days</td>
<td>117.3</td>
<td>140.3</td>
<td>0.29</td>
<td>219.3</td>
<td>226.6</td>
<td>0.74</td>
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</tbody>
</table>
Time Series analysis showed increase in HO-CDI in post-intervention period.

**Hospital Acquired Cases of Clostridium difficile Infection**

- Pre: 15 total
- Post: 11 total

**Legend:**
- Transplant unit
- Intensive care unit
Conclusions

Qualitative

Quantitative

Future directions
Acknowledgments

• Nasia Safdar MD, PhD
• Jessica Tischendorf MD
• Mary Jo Knobloch PhD
• Lucas Schulz RPh
• Anna Barker, BS
References


