Gram-Negative Bacteremia: Frequency of an IOTA (Intravenous to Oral Transition of Antimicrobial Therapy)

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Background
- Each year, nearly 250,000 patients in the United States develop a particular type of bloodstream infection called a “gram-negative bacteremia.”
  - This infection develops when bacteria colonize an initial site of infection, overcome host barriers including the immune response, and spread to the bloodstream. Gram-negative bacteremia has a high mortality rate, particularly in vulnerable populations.
  - Several studies suggest that conversion to oral antibiotics for gram-negative bacteremia has similar outcomes to strictly IV regimens, particularly from a urinary source of infection.
  - In these studies, the prominent pathogens causing the urinary infection and subsequent bacteremia were *Escherichia coli* and *Klebsiella pneumoniae*.
- Due to lack of definitive guidance, clinicians may be hesitant to advocate for an early transition from IV to oral antibiotic therapy in patients with gram-negative bacteremia.
  - Benefits of transitioning patients from IV to oral therapy are well-recognized; taking oral antibiotics may reduce length of hospital stay and improve patients' quality of life.

Purpose
Determine the frequency at which these patients are transitioned to oral antibiotic therapy for this type of infection.

Methods
Inclusion criteria for chart evaluation:
- Age ≥ 18 years old
- Monomicrobial infections
- Urinary sources
- Susceptibility to oral medications
- IV therapy for 24 hours
- Negative repeat blood cultures, if collected
- Clinical improvement defined by downtrending white blood cell count, afebrile for 48 hours, blood pressure/heart rate/respiratory rate within normal limits

Results
Patients Eligible for IV-Oral Stepdown Therapy

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Eligible and Switched</th>
<th>Eligible and Not Switched</th>
<th>Not Eligible</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>E. coli</em></td>
<td>20</td>
<td>8</td>
<td>56</td>
</tr>
<tr>
<td><em>K. Pneumoniae</em></td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
</tbody>
</table>

Reasons for not switching

<table>
<thead>
<tr>
<th>Resistance to FQ</th>
<th>Contraindication to FQ</th>
<th>Concomitant infection</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Conclusion
- 71% of patients who met the inclusion criteria were switched from IV to oral antibiotics in the presence of monomicrobial *E. coli* from a urinary source with clinical improvement.
- Zero patients with *Klebsiella pneumoniae* were eligible to switch.
- According to our results, there appears to be an opportunity to transition more patients from IV to oral with a gram-negative bacteremia.
- Future research opportunities: more patients, evaluation of which antibiotic to transition, and implementation for an alert to switch in Theradoc.

References

Disclosures
Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

Further questions:

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