The Positive Blood Culture as a Stewardship Opportunity: Time to Appropriate and "Best Therapy" is a Useful Quality Gauge Across an Acute Care Hospital

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INTRODUCTION

• Antimicrobials account for almost 50% of all drug expenditures and 30-40% of all patients in hospital will require a course of antimicrobials.
• Positive blood culture (BC) management is an important quality and safety indicator with significant associated antimicrobial use
• On a daily basis, approximately 2-6 new positive blood cultures are reported at UAH site.

RESULTS

Table 1: Patient Demographics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Average</th>
<th>Median</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yr)</td>
<td>62</td>
<td>60</td>
<td>27</td>
<td>92</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>84.1</td>
<td>77</td>
<td>43</td>
<td>227</td>
</tr>
<tr>
<td>Temperature (°C)</td>
<td>37.5</td>
<td>38</td>
<td>28</td>
<td>40.8</td>
</tr>
<tr>
<td>WBC (X10⁹/L)</td>
<td>17.6</td>
<td>12.1</td>
<td>0.1</td>
<td>132.2</td>
</tr>
</tbody>
</table>

Microbiology and Source of Infection

- Gram Positive Bacilli
- Yeast-like Organisms
- Gram Negative Bacilli
- Gram Positive Cocci in Chains
- Gram Positive Cocci in Clumps

Table 2: Changes to Therapy as Microbiology Information Evolved

<table>
<thead>
<tr>
<th>Time-Point (# of evaluable cases)</th>
<th># No Change (%)</th>
<th># Expand Coverage (%)</th>
<th># Narrow Coverage (%)</th>
<th># Shift Coverage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>After Gram-stain (86)</td>
<td>23 (41.1%)</td>
<td>19 (34.8%)</td>
<td>2 (3.6%)</td>
<td>4 (5.2%)</td>
</tr>
<tr>
<td>After Identification of Organism (56)</td>
<td>39 (72.2%)</td>
<td>4 (7.1%)</td>
<td>11 (20.3%)</td>
<td>0</td>
</tr>
<tr>
<td>After Culture and Susceptibilities (40)</td>
<td>10 (49.5%)</td>
<td>7 (32.5%)</td>
<td>18 (45.0%)</td>
<td>5 (12.5%)</td>
</tr>
</tbody>
</table>

Figure 1. Initial Gram Stain Results of Positive Blood Cultures (N=58)

Figure 2. Final Culture Results

Figure 3. Suspect Infection Source

Figure 4. Decision making based on Microbiologic data - proportion of patients on 'Best Therapy'

CONCLUSIONS

• The majority of patient with positive BC for this month received safe and appropriate antimicrobial therapy, in a timely fashion
• There were outliers with delays in administration that highlight process issues for review
• Prescribers are responsive to progressive microbiologic data but few changed in response to organism ID, waiting for susceptibilities instead

REFERENCES

• Available upon request