Antibiotic susceptibility varies by hospital location (inpatient versus emergency department (ED)) and by geographic location. Despite these differences, hospitals often have one antibiogram to determine empiric guidelines. The purpose of this study was to evaluate a large health system's bacterial sensitivity for key organisms in the inpatient versus the ED setting to determine if ED specific antibiograms are necessary based on region.

**Method**

- A health-system, consisting of primarily large general community hospitals across 20 U.S. states, evaluated 156 of their affiliated hospitals and hospital-based emergency departments (ED).
- These hospitals and hospital-based EDs were divided into regions based on geographic area and hospital volume for assessment (approximately 10-20 hospitals per region).
- One year of non-duplicative isolate susceptibility data was evaluated for antibiotic sensitivity for the following organisms:
  - *E. coli* urinary pathogens
  - *P. aeruginosa*
  - *S. pneumoniae*

  *Inpatient and ED susceptibilities were then compared and classified based on susceptibility differences:
  - Minimal 0-4
  - Moderate 5-10
  - Considerable >10

  *Negative Number:* Indicates that the inpatient isolates have LESS resistance than what is found in ED isolates

  *Positive Number:* Indicates that the inpatient isolates have MORE resistance than what is found in the ED isolates

**Results**

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Inpatient Isolates</th>
<th>ED Isolates</th>
<th>Total Isolates Evaluated</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>E. coli</em> urine isolates</td>
<td>41,812</td>
<td>97,950</td>
<td>139,562</td>
</tr>
<tr>
<td><em>S. pneumoniae</em></td>
<td>1,565</td>
<td>1,474</td>
<td>3,039</td>
</tr>
<tr>
<td><em>P. aeruginosa</em></td>
<td>19,983</td>
<td>8,702</td>
<td>28,685</td>
</tr>
</tbody>
</table>

**Classification of Susceptibility Differences**

<table>
<thead>
<tr>
<th></th>
<th>Minimal</th>
<th>Moderate</th>
<th>Considerable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-4</td>
<td>5-10</td>
<td>&gt;10</td>
</tr>
</tbody>
</table>

**Comparison of Antibiotic Susceptibility in Hospitals versus Hospital-Based Emergency Departments**

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**Conclusion**

Differences in inpatient versus ED bacterial sensitivities warrant justification for specific regions to monitor and develop inpatient and ED-specific antibiograms.

**References**