Enhancing Tools to Aid in Antimicrobial Stewardship Services in a Multi-State Health System

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Background
• Antibiotic resistance is one of the most serious and growing threats to public health
• Infectious disease (ID) pharmacists monitor usage and resistance patterns to facilitate appropriate antibiotic use
• Current state:
  - A third-party clinical surveillance program identifies patients for antimicrobial surveillance (AMS)
  - Requires constant shifting between platforms to do a comprehensive review

Objective
• Optimize tools to perform antimicrobial- and culture-based surveillance and to report antimicrobial consumption within an EHR to improve the efficiency of AMS services

Methods
• Conducted a one-week time study using current workflows
  - Established a baseline of the number of patients reviewed using the third-party clinical surveillance program
• Consulted stakeholders:
  - Discussed current AMS workflows across the system
  - Aligned plans with system-wide initiatives
• Developed deliverables:
  - Patient list-based workflow within the EHR
  - Custom columns to help identify and prioritize the most acute or complex patients
  - Patient overview report to highlight the most pertinent information

Results

![Reports Run for Antimicrobial Stewardship](image)

Figure 1. Reports run for antimicrobial stewardship. After implementation, both the average number of reports run per day and the average number of reports run per pharmacist per day decreased.

<table>
<thead>
<tr>
<th>Admin Unit</th>
<th>Room/Bed</th>
<th>Patient Name/Age/Gender</th>
<th>Restrict Abx</th>
<th>ID Consult</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLMMOR</td>
<td>OR/101</td>
<td>Test, R (52 year old M)</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>SLMMT1</td>
<td>T1012/A</td>
<td>Art, H (25 year old F)</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>SLMM2</td>
<td>0/335</td>
<td>Clinic, C (72 year old M)</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>SLMM1T1</td>
<td>T1015/A</td>
<td>Asaj, C (31 year old M)</td>
<td>1</td>
<td>—</td>
</tr>
</tbody>
</table>

Figure 2. Restricted anti-infective patient list and report. (a) "Restricted Abx" column displays a numerical icon for new anti-infective regimens, a clock when follow-up is needed, or a green check when review is completed. (b) Form to document agents appropriate to continue, followed by a patient overview form to facilitate comprehensive patient review.

Results (cont’d)

- Use patient list to identify patients on restricted agents
- Determine review priority using:
  - Restricted Abx column
  - ID consult column
  - Patient overview report
- Complete patient review
- Document agents appropriate to continue
- Mark date for next review, as appropriate

Figure 3. Standardized restricted anti-infective review workflow. Prioritization is primarily driven by Restricted Anti-Infective column. For patients within the same priority group, ID pharmacist can consider using the ID consult column and additional information in the patient overview report to facilitate prioritization.

Discussion
• Workgroup discussions provided an opportunity to identify differences in workflows among sites

Limitations:
• Implementation of AMS-focused EHR module delayed due to COVID-19

Future Directions:
• Development of a blood culture-based patient list workflow
• Develop reporting tools to participate in NHSN reporting
• Standardization of all AMS-focused services with quantitative metrics

Conclusions
• Patient list-based workflow introduced standardization that was well-received by stakeholders