**ABSTRACT**

**Background:** Prospective audit and feedback (PAF) is one of the core strategies of an antimicrobial stewardship program (ASP). Here, we hypothesized that the addition of AIR to our extant ASP would enhance appropriate use of parenteral (IV) antibiotics (ABs) on a large inpatient medical service.

**Methods:** Adult patients on inpatient wards beginning in 10/2017 and not followed by the Infectious Diseases (ID) service were included for stewardship intervention if they were on IV ABs 24 hours. Recommendations were classified into: 1) Duration of therapy; 2) dose adjustment; 3) IV to oral conversion; 4) adverse event prevention; 5) AB avoidance; 6) anti-psudomonal or 7) vancomycin de-escalation; 8) AB discontinuation; 9) ID consult; 10) D alternative AB; 11) allergy assessment; or 12) diagnostics. Early impact of the interventions was assessed after 3 months via the Standardized Antimicrobial Administration Ratio (SAAR) and compared to the 3-month, pre-AIR period. The SAAR is used to benchmark facilities’ AB use against those of similar complexity; SAAR = 1 indicates that observed = predicted use.

**Results:** For 158 interventions made, the most common syndromes were pneumonia (47%), skin & soft tissue (29.4%) and urinary tract infection (17.7%). Intervention categories other than 4, 9, and 11 had acceptance rates >85% (Figure 1). The SAAR decreased from the pre- to post-AIR period in terms of agents for: broad-spectrum use in HAI (SAAR relative ratio [RR]: 0.80, 95% CI [0.73-0.88]), MRSA (SAAR RR: 0.81, 95% CI [0.73-0.91]), and all ABs (SAAR RR: 0.86, 95% CI [0.82-0.90]). During the same periods, surgical wards without AIR showed no Δ in AB use.

**Conclusion:** The majority of AB use recommendations delivered by a pharmacist-physician stewardship team were highly accepted by medical providers and led to a 15-20% decrease in overall AB use, without adverse effect during the immediate post-intervention period. Potential clinical benefits, such as decreased rates of *Clostridium difficile* disease, will need to be measured as the AIR program advances. It is worth noting that interventions for AB allergy assessment were least accepted by providers, possibly due to time to require compliance. Design of prospective audit and feedback programs may need to address this potential deficiency.

**INTRODUCTION**

- Prospective audit and feedback increases stewardship program visibility & provider interactions, while respecting provider autonomy
- Prospective audit and feedback may encompass a variety of interventions, and can affect stewardship outcome metrics
- We assessed reception of our new Antibiotic Intervention Rounds (AIR) service and used the Standardized Antimicrobial Administration Ratio (SAAR) to illustrate the impact of AIR interventions

**HYPOTHESIS**

We expected a moderate (50%) acceptance rate by providers for recommendations made by the new AIR service

**METHODS**

**Primary Objective:**
- To evaluate the proportion of AIR recommendations accepted by primary inpatient providers across 12 stewardship categories

**Study Design:** Retrospective review from 07/2017 thru 12/2017

**Inclusion Criteria:**
- Adult veterans admitted to medical-surgical wards on IV antibiotics for >48 hours
- Not followed by ID Consult service at time of AIR recommendation

**Primary Endpoint:**
- At least 50% acceptance rate across 12 ASP intervention categories (Adopted from VA Pharmacists Achieve Results with Medications Demonstration (PhARMED) Tool: Antimicrobial Stewardship Surveillance)

**Secondary Endpoints:**
- Changes in antibiotic use after AIR service implementation (as measured by SAAR)
- Distribution of infectious syndromes monitored by AIR service

**RESULTS**

**Majority of AIR Recommendations Highly Accepted Overall (n = 158)**

<table>
<thead>
<tr>
<th>Acceptance Rate (%)</th>
<th>Recommendation</th>
<th>Accepted</th>
<th>Recommendation Denied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjust Duration of Therapy</td>
<td>89%</td>
<td>76%</td>
<td>13%</td>
</tr>
<tr>
<td>IV to Oral Conversion</td>
<td>96%</td>
<td>89%</td>
<td>7%</td>
</tr>
<tr>
<td>Antibiotic Avoidance</td>
<td>84%</td>
<td>73%</td>
<td>11%</td>
</tr>
<tr>
<td>Antibiotic De-escalation</td>
<td>100%</td>
<td>91%</td>
<td>9%</td>
</tr>
<tr>
<td>ID Consult</td>
<td>80%</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>Allergy Assessment</td>
<td>50%</td>
<td>40%</td>
<td>60%</td>
</tr>
</tbody>
</table>

**Conclusion:** Notably:
- Acceptance rates for vancomycin and anti-psudomonal de-escalation after cultures resulted were 100%.
- Fluoroquinolone adverse event prevention and appropriate allergy assessment were challenging areas.
- Unnecessary agents for MRSA & MDRO infection significantly decreased.

**Authors have no actual/potential conflicts of interest in relation to this presentation.**

**CONCLUSIONS**

- Majority of AIR recommendations had a ≥85% acceptance rate, including broad-spectrum agent de-escalation, IV to oral conversion, antibiotic discontinuation and guideline-based duration of therapy.
- A 15 to 20% decrease in antibiotic use was observed.
- Allergy assessment remains a key area for improvement for AIR.

**FUTURE DIRECTIONS**

- Monitoring impact of AIR on clinical outcomes, i.e., *C. difficile* incidence.
- Developing methods to facilitate efficient, comprehensive and safe allergy history assessments during inpatient hospital stay.

**Medical Ward SAARs Were Reduced after AIR Implemented**

<table>
<thead>
<tr>
<th>High-Yield Indicator</th>
<th>Pre-AIR 2017Q3</th>
<th>Post-AIR 2017Q4</th>
<th>Relative Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Antibiotic Agents</td>
<td>0.994</td>
<td>0.852</td>
<td>0.857 (0.815 to 0.901)</td>
</tr>
</tbody>
</table>

**High-Level Targets**

- Broad-spectrum agents for healthcare-associated infection
- Broad-spectrum agents for community-acquired infection
- Anti-MRSA agents

**Surgical Ward SAARs Were Unchanged without AIR Service**

<table>
<thead>
<tr>
<th>High-Yield Indicator</th>
<th>No AIR 2017Q3</th>
<th>No AIR 2017Q4</th>
<th>Relative Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Antibiotic Agents</td>
<td>0.888</td>
<td>0.95</td>
<td>1.07 (0.984 to 1.164)</td>
</tr>
</tbody>
</table>

**Pneumonia Was the Most Monitored Syndrome on the AIR Service**

<table>
<thead>
<tr>
<th>LRTI</th>
<th>SSTI</th>
<th>UTI</th>
<th>GI</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>15</td>
<td>13</td>
<td>3</td>
</tr>
</tbody>
</table>

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