INTRODUCTION

- Vancomycin is routinely used for empiric Methicillin-resistant Staphylococcus aureus (MRSA) and Enterococcus faecium (E. faecium) coverage in urologic inpatients suspected of infection
- MRSA and E. faecium are rare causes of infection in the urologic inpatient population, but exact rates are unknown
- Vancomycin use has significant potential morbidity including nephrotoxicity and increasing antibiotic resistance

PURPOSE

This study examines whether the rates of MRSA and E. faecium infection justify the routine empiric use of vancomycin in Urology inpatients.

METHODS

- Retrospectively identified 2618 inpatient admissions (all-cause) to the Urology service from 7/1/2014 – 7/1/2018
- Prior cultures identified using Current Procedural Terminology codes
- Collected antibiotic order data using inpatient pharmacy records and microbiology data was obtained from the Epicenter Microbiology Data Management System
- Chart review conducted on all MRSA or E. faecium culture positive patients to assess for potential risk factors including: prior cultures, chronic colonization, recent procedural history and other clinical factors
- Nosocomial infections were defined as infections occurring >48hrs after admission per WHO criteria

RESULTS

- Of 2618 Urology inpatient admissions, there were 11 (0.4%) MRSA and 6 (0.2%) E. faecium positive cultures (Figure 1)
- 512 patients (20%) had any culture (blood, urine, etc) sent and of these 2.1% grew MRSA and 1.2% grew E. faecium
- 59% of patients with suspected infection (cultures sent) received 1+ doses of non-perioperative Vancomycin
- Of patients with MRSA+ soft tissue infections, 64% were surgical site infections but only 50% of patients with non-soft tissue MRSA infections had a history of prior surgery within 30d
- The majority of UTIs were in patients with external catheters or urinary diversion but there were no other clear defining clinical characteristics of MRSA or E. faecium infection (Figure 2)

CONCLUSIONS

- The empiric use of Vancomycin in this population does not appear to be justified
- The majority (59%) of Urology inpatients suspected of infection received Vancomycin despite very low rates of MRSA (2.1%) and E. faecium (1.2%)
- Limitations include: (1) patients without cultures (or with outside cultures) were not evaluated, (2) use of CPT codes may under-capture the number of cultures sent

NEXT STEPS/CURRENT WORK

Nov 2018: “De-Implementation” of empiric Vancomycin use in clinically stable urology inpatients

Table 1: Culture Results if Given Non-Perioperative Vancomycin

<table>
<thead>
<tr>
<th></th>
<th>MRSA+ Soft-Tissue</th>
<th>MRSA+ Non-Soft Tissue</th>
<th>E. faecium+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>1.0</td>
<td>0.73</td>
<td>0.83</td>
</tr>
<tr>
<td>Pos. Predictive Val</td>
<td>0.04</td>
<td>0.03</td>
<td>0.02</td>
</tr>
</tbody>
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Figure 1: Vancomycin Usage and Culture Results in Urology Inpatients

Figure 2: Clinical Factors of MRSA vs. E. faecium Infections in Urology Inpatients

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