Application of Standard Antibiotic Use Criteria to Evaluate Inpatient Antibiotic Use

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INTRODUCTION

• It is estimated that 30-50% of antimicrobial agents prescribed inpatient are not optimal.1

• Antimicrobial stewardship initiatives have been shown to reduce inappropriate antibiotic use when conducted by infectious diseases (ID) trained clinicians.2

• The demand for ID trained physicians and pharmacists to lead stewardship efforts has outpaced the number of individuals with training in this area. Development and validation of standard criteria for antibiotic use evaluation can benefit centers without access to ID trained individuals.3

• Spivak and colleagues proposed standard terminology and definitions to assess antimicrobial prescribing practices. At UMass Memorial Medical Center (UMMC), Spivak’s criteria were utilized to measure antimicrobial use during two point prevalence studies (PPS).4 These two PPS were completed by different evaluators with varying levels of training in infectious disease.

OBJECTIVE

Evaluate the ability of standard antibiotic use criteria to produce consistent results between health care providers with different levels of ID training.

METHODS

• A PPS was conducted in September 2017 (SEP) by ID attendings and ID pharmacists. A subsequent PPS was conducted in November 2017 (NOV) by a general pharmacy practice resident (PGY-1) and first-year ID fellow.

• PPS inclusion criteria: age > 18 years, admitted to inpatient unit, antibiotics prescribed at time of review

• PPS exclusion criteria: only receiving antiretroviral therapy or antifungal prophylaxis

RESULTS

Table 1. Antibiotic Use Criteria

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Reason for inappropriate</th>
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<tbody>
<tr>
<td>Appropriate</td>
<td>Use is indicated based upon clinical diagnosis and/or microbiological data</td>
<td></td>
</tr>
<tr>
<td>Unnecessary</td>
<td>Use of antimicrobials for noninfectious syndromes, use of antibiotics for nonbacterial infections, days of therapy beyond the indicated duration of therapy absent any clinical reason for a lengthened course, use of redundant antimicrobial therapy and/or continuation of empiric broad-spectrum therapy when cultures have revealed the infecting pathogen</td>
<td>No indication asymptomatic bacteriuria excess LOT</td>
</tr>
<tr>
<td>Inappropriate</td>
<td>Use of antimicrobials in the setting of established infection to which the pathogen is resistant or use of antimicrobials not recommended in the treatment guidelines</td>
<td>Double coverage drug bug mismatch no de-escalation</td>
</tr>
<tr>
<td>Suboptimal</td>
<td>Use of antimicrobials in the setting of established infection that can be improved in one of the following categories: (1) drug choice (2) drug route (3) drug dose</td>
<td>Overly broad no renal adjustment other</td>
</tr>
</tbody>
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Figure 1. Percentage of Antibiotics Considered Appropriate

Figure 2. Reason for Inappropriateness

CONCLUSIONS

Application of standard antibiotic evaluation criteria can assist healthcare professionals with different levels of ID training to assess antibiotic use in non-ICU patients. Further evaluation should be considered for critically ill patients.

REFERENCES