Ceftaroline fosfamid utilization evaluation at an academic medical center

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BACKGROUND

- Ceftaroline fosfamid (Teflaro®) is a fifth-generation cephalosporin approved for the treatment of acute bacterial skin and skin structure infections (ABSSSI) and community-acquired bacterial pneumonia (CABP).
- Use of ceftaroline at The University of Kansas Health System (TUKHS) is restricted to infectious disease physicians, pulmonary physicians, and antimicrobial stewardship pharmacists for patients meeting specific criteria.
- Usage criteria at TUKHS:
  - Treatment of serious Methicillin-resistant Staphylococcus aureus (MRSA) infections in patients unable to tolerate or failing vancomycin
  - Treatment of respiratory infections in cystic fibrosis patients
- Ceftaroline use is protected in order to mitigate the development of drug-resistant bacteria and maintain effectiveness of itself and other antibacterial drugs.

OBJECTIVES

- Describe current prescribing practices of ceftaroline at TUKHS to inform antimicrobial stewardship initiatives.
- Identify potential modifications to criteria and restrictions based on current utilization and guideline-based recommendations.
- May lead to modifications within the electronic ordering system and educational programs to help guide proper prescribing within the health system.

PURPOSE

Primary Endpoint:
- Determine if current utilization of ceftaroline is concordant with internal guidelines
Secondary Endpoints:
- Evaluation of appropriate dosing
- Evaluation of appropriate authorizing providers

METHODS

Study Design: Single-center, retrospective chart review drug use evaluation (DUE)
Time Frame: July 1, 2019 to June 30, 2020
Inclusion Criteria:
- Age ≥ 18 years old
- All patients who received at least one dose of ceftaroline while inpatient

Data Collected:
- Patient demographics
- Infectious disease diagnosis
- Ordering provider
- Authorizing provider (ID/pulmonary consult)
- Dose, route, duration
- Empiric vs. definitive treatment
- Monotherapy vs. combination treatment
- Pertinent cultures
  - MRSA isolated (Y/N)
  - Source (blood, bone, urinary, skin, pulmonary, other)
- Indication listed for use
  - Treatment of serious Methicillin-resistant Staphylococcus aureus (MRSA) infections in patients unable to tolerate or failing vancomycin
  - Treatment of respiratory infections in cystic fibrosis patients

RESULTS

Table 1: Baseline Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total (N = 60)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years (SD)</td>
<td>54 (19.5)</td>
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<tr>
<td>MRSA Isolation, n (%)</td>
<td>32 (33.3)%</td>
</tr>
<tr>
<td>Monotherapy, n (%)</td>
<td>27 (45%)</td>
</tr>
<tr>
<td>Empiric Therapy, n (%)</td>
<td>17 (28.3%)</td>
</tr>
<tr>
<td>Length of Therapy, days</td>
<td>7.45</td>
</tr>
</tbody>
</table>

Figure 1: Clinical Diagnosis

- 56% (n=30)
- 22% (n=13)
- 18% (n=11)
- 18% (n=11)

Figure 2: Consults Ordered per Authorizing Provider

- ID (N=48)
- Pulmonary (N=48)
- Both (N=48)
- None (N=48)

Figure 3: Listed Indication per TUKHS Guideline

- 2% (N=1)

Figure 4: Listed Indication Matches True Indication

- 98% (N=59)
- 63% (N=28)
- 17% (N=22)

Figure 5: Dose Optimized

- 95% (N=57) Yes
- 5% (N=3) No

CONCLUSIONS

- Ceftaroline is most commonly prescribed for MRSA bacteremia and cellulitis.
- Approximately half of all patients had cultures confirmed prior to ceftaroline use.
- The indication selected at order entry was not concordant with the clinical diagnosis in majority of patients. Common reasons included treatment for non-MRSA infections, no prior vancomycin usage, and combination treatment with vancomycin.
- Appropriate authorizing provider was consulted in order to utilize ceftaroline in majority of patients.
- Dosing of ceftaroline was appropriate in majority of patients.

FUTURE DIRECTIONS

- Modification of restriction and optimal use criteria.
- Develop collaborative approach to improving use in order to preserve effectiveness of ceftaroline for TUKHS patients.
- Modify the electronic ordering system to guide proper prescribing and/or expand criteria selection to reflect true intent of use.
- Provide education to providers and pharmacists regarding proper prescribing.
- These results encourage continuous implementation of antimicrobial stewardship initiatives and collaboration among providers to help maintain effectiveness of our antibiotic drug therapies.

STUDY LIMITATIONS

- Retrospective chart review
- Recall bias due to missing data or incomplete documentation
- Time period limited to 1 year
- Definition of patient intolerance and treatment failure are not universally defined

DISCLOSURES

The authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter.

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