Safety and Efficacy Outcomes for Pharmacist-Directed Vancomycin Dosing in a Home Infusion Setting

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BACKGROUND

• Pharmacokinetic vancomycin protocols are widely utilized in inpatient healthcare settings.
• Currently, there is not robust data guiding vancomycin protocols in the home infusion setting.
• A review of this institution's pharmacokinetic dosing practices identified inconsistencies in its internal management of patients requiring vancomycin therapy.
• Internal dosing inconsistencies are likely due to lacking an institutional protocol.

PURPOSE

• The purpose of this quality improvement study was to identify opportunities for pharmacists to improve efficacy and safety outcomes for patients receiving vancomycin therapy in a home infusion setting.

OBJECTIVES

• Evaluate efficacy of pharmacist-directed vancomycin therapy in a home infusion setting by analyzing:
  - Resolution of infection
  - Duration of therapy
  - Therapeutic trough levels

• Evaluate safety outcomes in patients receiving pharmacist-directed vancomycin in a home infusion setting by analyzing:
  - Incidence of acute kidney injury (AKI) defined by Kidney Disease: Improving Global Outcomes (KDIGO) guidelines
  - Non-AKI adverse drug reactions (ADRs)
  - Premature discontinuation of therapy

METHODS

• Single-center retrospective observational review
• Approval for this study was granted by the Institutional Quality Review Board.
• Data was collected and analyzed for patients on service from January 1, 2021 to December 31, 2021.
• Data was analyzed using descriptive statistics

INCLUSION CRITERIA

≥ 18 years of age
Received vancomycin dosed to a goal trough of 15-20 mg/L
Received vancomycin therapy based on pharmacist recommendations
Received first dose(s) of vancomycin in the hospital

EXCLUSION CRITERIA

Received vancomycin for surgical prophylaxis

RESULTS

• Out of 1208 patients that received vancomycin within the defined study period, 31 met inclusion criteria. The majority of excluded patients received provider-directed dosing.

TABLE 1. Baseline Characteristics of Home Infusion Patients Receiving Vancomycin*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n (%)</th>
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</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>61.29 ± 14.13</td>
</tr>
<tr>
<td>Male sex assigned at birth</td>
<td>21 (67.74)</td>
</tr>
<tr>
<td>Race (non-hispanic/white)</td>
<td>31 (100)</td>
</tr>
<tr>
<td>Height, inches</td>
<td>68.6 ± 4.81</td>
</tr>
<tr>
<td>Ideal body weight, kg</td>
<td>68.32 ± 12.64</td>
</tr>
<tr>
<td>Adjusted body weight, kg*</td>
<td>79.98 ± 11.05</td>
</tr>
<tr>
<td>Total body weight, kg*</td>
<td>97.47 ± 22.65</td>
</tr>
</tbody>
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Renal Function (n = 31)

- Scr, mg/dL*                               1.05 ± 0.58
- BUN, mg/dL*                               19.58 ± 11.90
- CrCl mL/min*                              93.37 ± 43.39

Concomitant Nephrotoxic Therapy (n = 31)

- Loop diuretics, n (%)                      9 (29.03)

*Plus-minus values are mean ± SD.
*During outpatient onboarding

Osteomyelitis was the most common indication for vancomycin therapy (45.2%), while methicillin-resistant Staphylococcus aureus (MRSA) was the most common organism identified on cultures (51.61%).

DISCUSSION

The following were observed after the initiation of pharmacist-directed dosing:
• Increased rate of therapeutic troughs
• Low occurrences of adverse safety outcomes
• Limitations of this study include the following:
  - Small sample size
  - Restricted access to electronic health records
  - Reduced population of prescribers that utilize pharmacist-directed dosing

CONCLUSION

• Results suggest sustained improvement in therapeutic troughs and minimal ADRs following pharmacist-directed dosing.
• Results support expanding pharmacy-directed vancomycin dosing in a home infusion setting.
• Future steps include creation and implementation of a standardized dosing protocol.

REFERENCES