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

PRIMARY

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

SECONDARY

- 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

STUDY DESIGN

- 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

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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.
Basline Characteristics of Home Infusion Patients Receiving Vancomycin#

Patient Characteristics (n = 31)	
Age, years	61.29 ± 14.13
Male sex assigned at birth, n (%)	21 (67.74)
Race (non-hispanic/white), n (%)	31 (100)
Height, inches	68.6 ± 4.81
Ideal body weight, kg^	68.32 ± 12.64
Adjusted body weight, kg^	79.98 ± 11.05
Total body weight, kg^	97.47 ± 22.65
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

FIGURE 1. Infection Characteristics of Vancomycin Patients

- 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%).

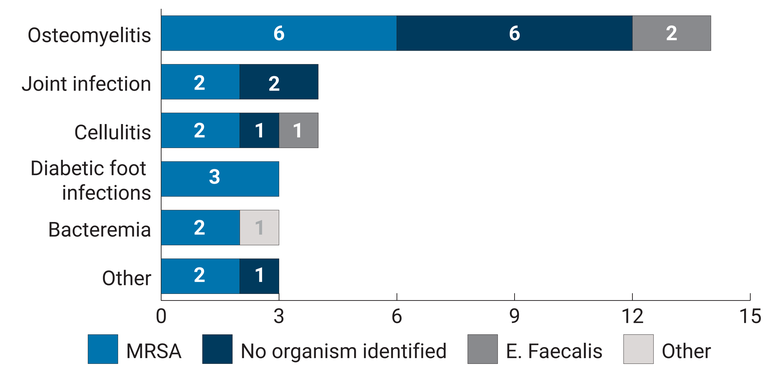


TABLE 2. Primary Outcomes: Efficacy

Patients with resolution of infection*, n (%)	18 (58.06)
Average trough with pharmacist-directed dosing, mg/L (mean ± SD)	16.71 ± 4.84
Actual duration of therapy, days (median [IQR])	38 [25-42]

*Defined as completion of vancomycin therapy for expected duration (without extension) and without therapeutic change to another antibiotic.

RESULTS - *Continued*

FIGURE 2. Characteristics of Detectable Outpatient Troughs

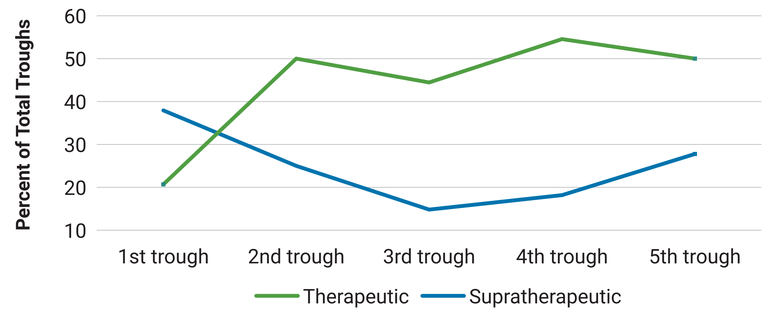
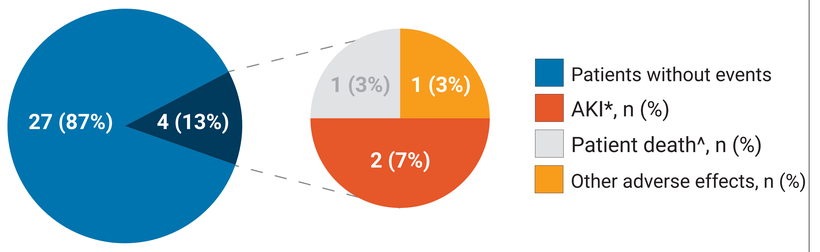


TABLE 3. Secondary Outcomes: Safety

Total number of supratherapeutic troughs, n (%)	32 (21.77)
Total Daily Dose associated with supratherapeutic trough (>20 mg/L), gram (median [IQR])	2.5 [1.5-2.88]
Total daily weight-based dose for supratherapeutic troughs, mg/kg (mean)	31.29

**Total troughs drawn = 147

FIGURE 3. Secondary Outcomes: Safety



*Defined by KDIGO guidelines as an increase in serum creatinine ≥ 1.5 times baseline within 7 days
^Death determined as not vancomycin-related

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.

Disclosures: Authors of this poster have no conflicts of interest to disclose.