

Background

Vancomycin is one of the most commonly prescribed medications in outpatient parenteral antimicrobial therapy (OPAT). It is a first-line antibiotic for difficult to treat, gram-positive infections, including methicillin-resistant Staphylococcus aureus (MRSA), which is known for having limited treatment options.¹ Use of this medication in the outpatient setting is complex due to the nephrotoxicity risk, necessary laboratory monitoring, reliance on patient education and compliance, and the need for consistent communication across professions. Continuous vancomycin may be a better alternative in the home infusion setting due to the ability to directly measure AUC from a single blood draw.²

Most literature addresses continuous vancomycin used in hospitalized patients. There have been few studies that have looked at continuous vancomycin used in OPAT. One study looking at OPAT, found that continuous vancomycin compared to intermittent dosing resulted in the slower onset of nephrotoxicity.³ This may be due to avoidance of higher peak concentrations. A more recent OPAT-related study showed no appreciable benefit of continuous vancomycin on outpatient safety outcomes.² Overall, there is a lack of guidance on appropriate use of continuous vancomycin in the home.

Purpose

The main objective of this study was to assess continuous vancomycin usage in the home setting. The secondary objective was to assess patient outcomes such as infection resolution and tolerability of continuous vancomycin.

Methods

This study was a retrospective, multi-center, chart review of adult patients that received continuous vancomycin at a national home infusion pharmacy over a 21 month period. Patients were included if they were 18 years of age or older and received continuous vancomycin for at least five days. Data collection included patient demographics, dose, length of treatment, diagnosis, method of administration, pertinent lab results, concomitant therapies, and tolerability. Data was collected via electronic medical records (EMR).

Results

Sixty-five patients were included. The patient population was primarily male and within the age range of 61 to 70 (Table 1). Regional prescribing patterns are shown in Figure 1 with one area having a large proportion of the referral sources for continuous vancomycin. The most common method of administration was an elastomeric device, which included 60 patients, and the remaining 5 patients utilized a pump. The most common duration of therapy was between 28 to 34 days with most patients requiring no dose changes (Table 1). Orthopedic and joint infections were the most common diagnoses with 17 patients, 14 of which were due to an implanted orthopedic device (*Table 2*).

Forty-eight patients completed their course of therapy to completion with resolution of infection (Table 3). Twenty patients were on additional IV antibiotics with the most common concomitant antibiotic being ceftriaxone (Table 1). Upon hospital discharge, the average dose of vancomycin was 29 mg/kg/day, with a range of 9-55 mg/kg/day (Table 4). Less than 5% of patients were switched to a different antibiotic due to an adverse drug reaction (Table 3). Two of these patients had hypersensitivity reactions, while one patient experienced an intolerance to vancomycin.

Use of Continuous Vancomycin in the Home Infusion Setting

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able 1:		
Characteristics	Number of Patients	
Gender		
Male	46	
Female	19	
Age (Years)		
18-30	4	
31-40	12	
41-50	11	
51-60	13	
61-70	20	
>70	5	
Duration of Therapy (Days)		
0-6	7	
7-13	12	
14-20	8	
21-27	10	
28-34	16	
35-41	10	
42-48	3	
49-56	2	
>56	1	
Concomitant IV Antibiotic		
Yes	20	
Ceftriaxone	9	
Cefepime	8	
Ertapenem	2	
Piperacillin/Tazobactam + Micafungin	1	
No	45	
Number of Dose Changes		
0	31	
1	24	
2	11	
3	3	







Table 3: Treatment Outcomes



Table 4: Initial Dose of CI Vancomycin at Home



Discussion

This study provides valuable information by demonstrating the ability for continuous vancomycin to be used safely in the home setting. As opposed to previous studies, we found no correlation between continuous vancomycin and nephrotoxicity. There were also no reports of acute kidney injury in this study.

Limitations of this study include manual documentation and limitations of the EMR in capturing demographic data such as race. Additionally, it was not always evident why continuous infusion was chosen over intermittent infusion, and it may have been due to the regional prescribing patterns described earlier.

Continuous vancomycin has the potential for reduced laboratory errors due to the ability to draw a random level as opposed to a trough level. There was only one incident of a falsely elevated vancomycin level due to lab draw technique. Currently, continuous vancomycin is not as common as intermittent infusion, and proper lab draws are important for accurate results.

Per IDSA guidelines, a target steady-state concentration of 20-25 mg/L would equate to an AUC, /MIC of 480 to 600 for continuous vancomycin.⁴ While the target range of vancomycin levels can vary based on patient factors and provider preference, it is important to document the goal range for each patient on continuous vancomycin to avoid erroneous dose adjustment based on the more common target levels used for trough-based dosing.

Conclusion

In this retrospective, multi-center, chart review of adult patients receiving continuous vancomycin, most patients were able to complete therapy to infection resolution with minimal risk of adverse events. The study data gives insight into the use of continuous vancomycin in the home setting.

References

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Disclosures

Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation: Hannah Colburn; Maria Giannakos: Nothing to disclose.

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