

A Retrospective Audit of Vancomycin Use in Adult Patients- How Can We Do Better?

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Background

Intravenous vancomycin is a high-risk medicine, requiring individualised dosing based on weight, renal function and therapeutic drug monitoring, in order to prevent serious adverse effects including infusion-related reactions, ototoxicity and nephrotoxicity.

Aims

To assess vancomycin prescribing compliance with health service procedures and identify opportunities for improvement.

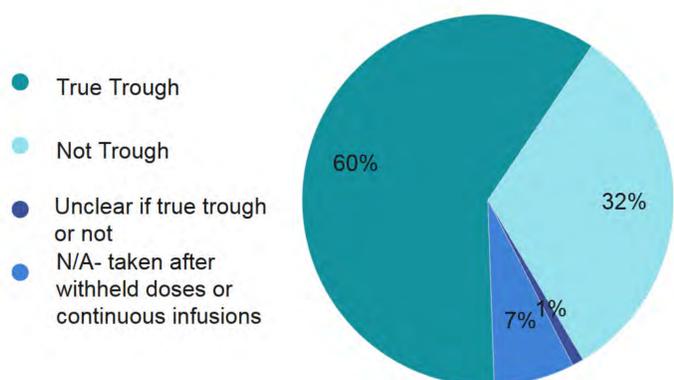
Methods

A retrospective chart audit was performed for patients treated with vancomycin, admitted to a tertiary referral hospital between February and September 2020. Patients were identified from the statewide pathology clinical information system. Patients were excluded if they received treatment for less than 48 hours or were under 18 years of age. Auditing for each patient finished once one of the following criteria were met: treatment course was complete, on discharge from hospital, after two therapeutic levels were achieved, or after five levels were obtained.

Results

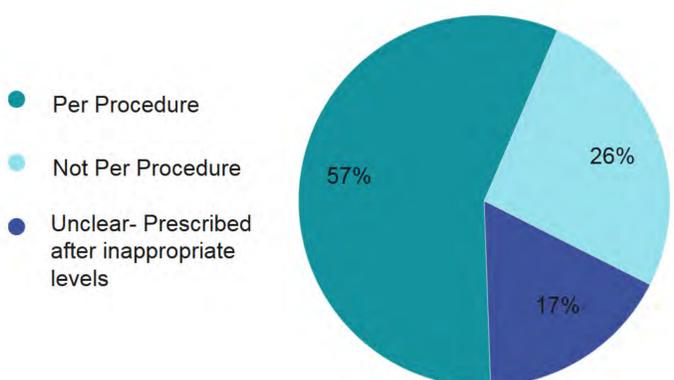
196 patients were identified from the statewide pathology system. 15 did not meet inclusion criteria, 130 patient records were unavailable, leaving 51 patient records available for audit.

Figure 1: Appropriateness of vancomycin levels (n=164)



60% of levels were classified as true trough levels, however only 51% were appropriate according to the procedure. Of the inappropriate levels, 48% were ordered for doses prescribed outside of standard hours (8am and 8pm). 79% of vancomycin pathology forms submitted throughout 2020 did not specify a time for performing the test. This represents an annual wastage of approximately \$17,000 in cost of pathology tests only.

Figure 2: Dose adherence to guidelines (n=224)



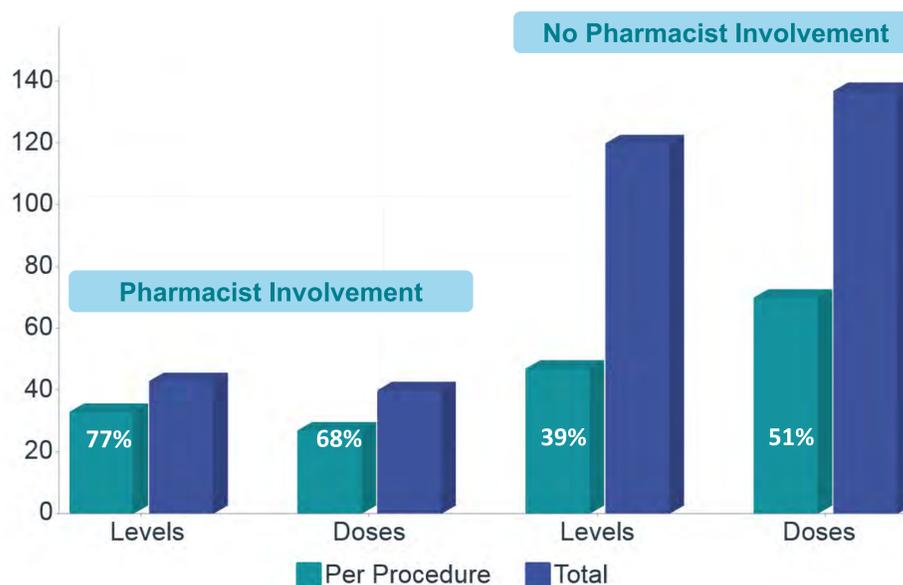
57% of all doses were prescribed correctly, based on appropriate levels. 47% of loading doses were classified as underdoses. 87% of incorrect loading and initial doses were for overweight and obese patients. This implies a trend towards suboptimal prescribing in this population.

Figure 3: Appropriateness of loading and initial doses stratified by shift time (n=96)



There was a trend towards inappropriate prescribing of loading and initial doses outside of standard business hours (8am – 5pm Monday to Friday).

Figure 4: Pharmacists' advice on prescribing and monitoring



Pharmacists documented their recommendations for 28% of doses (excluding loading doses) and 27% of levels. There was a trend of more appropriate prescribing when pharmacists were involved with monitoring and dosing.

Conclusion

This audit revealed areas for improvement in vancomycin prescribing. The following interventions could enhance compliance with evidence-based guidelines:

- Prescriber and nursing education via interactive case studies and/or on-line education modules
- Immediate pharmacist referral for vancomycin prescribing via clinical information systems
- Enhanced clinical pharmacist presence after hours

Further research is required to determine whether suboptimal prescribing translates into poor health outcomes, particularly for the overweight and obese population.

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