

DEVELOPMENT AND VALIDATION OF A VANCOMYCIN PROTOCOL THAT UTILIZES CALCULATED AREA UNDER THE CURVE-BASED DOSING

John Talili, Ryan Mattes, Daniel Nelson, Adnan Omanovic, Southeast Hospital, 1701 Lacey Street, Cape Girardeau, MO 63701. jtalili@sehealth.org

The Infectious Diseases Society of America has released draft guidelines regarding the therapeutic monitoring of vancomycin which no longer recommends trough-based dosing. The guidelines now recommend Bayesian software or two-level pharmacokinetic equation dosing. The guidelines recommend a target area under the curve (AUC) of 400 to 600 mg*hr/L, assuming a minimum inhibitory concentration (MIC) of 1 mg/L. Previously, the monitoring of vancomycin dosing per guidelines was done by drawing trough levels to assess if goal concentrations were met. Multiple studies have revealed that trough based dosing places patients at a higher risk of nephrotoxicity compared to AUC dosing. A study conducted by Finch et al., found that AUC-guided dosing was associated with lower nephrotoxicity compared to trough-guided dosing (hazard ratio, 0.53; 95% CI, 0.35 to 0.78; $P = 0.002$).

The purpose of this study is to develop and validate an AUC-based vancomycin dosing protocol with pharmacokinetic equations using two levels via institutional excel-based calculator. This objective will be assessed by determining the percentage of patients that achieved an AUC of ≥ 400 mg*hr/L within 48 hours, the percentage of patients that experienced an acute kidney injury (AKI) while on the protocol, the average AUC levels in patients that experienced an AKI, and the percentage of patients that experienced an AKI while on defined nephrotoxic medications and vancomycin.

The results of the study will be used to improve the dosing methodology of vancomycin within our institution and assess nephrotoxicity using AUC-based dosing.

Learning Objective:

- Discuss the safety and process of implementing a two-level, AUC-based, vancomycin dosing protocol in a community hospital setting.