Effects of Implementing Area Under The Curve (AUC) Vancomycin Dosing On Acute Kidney Injury

Purpose:

Acute kidney injury is a concern with vancomycin use. In 2020 new guidelines on the therapeutic monitoring of vancomycin for serious methicillin-resistant *Staphylococcus aureus* infections were published. The guidelines recommend area under the curve (AUC)-guided dosing to target a vancomycin AUC/minimum inhibitory concentration of 400 to 600. Previously recommended trough-guided dosing may have a higher occurrence of vancomycin-associated acute kidney injury. Salina Regional Health Center's (SRHC) pharmacy-initiated vancomycin dosing protocol is being updated to AUC-guided dosing. This study was conducted to evaluate the effect of implementing AUC-guided vancomycin dosing on the incidence of vancomycin associated acute kidney injury

Methods:

A retrospective data collection was conducted to identify all patients that received intravenous vancomycin. Trough-guided dosing data was collected from January 1, 2020, to March 31, 2020. AUC-guided dosing data will be collected at a 3 month period to be determined. Patients who received ≥48 hours of vancomycin and had at least one vancomycin level available were included. Patients were excluded if they were less than 18 years of age, had unstable kidney function, had a known or suspected central nervous system infection, or received vancomycin as an outpatient. The primary outcome was the rate of vancomycin-associated acute kidney injury. Acute kidney injury was defined as an increase in the serum creatinine level of ≥0.5 mg/dL, or a ≥50% increase from baseline in consecutive daily readings.

Results:

Ninety-nine patients were included in the trough-guided dosing group. The median length of therapy was four days and the mean age was sixty-four years old. Of the ninety-nine patients included in the trough-guided dosing group, nine patients (9%) developed vancomycin-associated acute kidney injury. All of the patients that developed acute kidney injury received concurrent nephrotoxic medication. Of the ninety patients that did not develop acute kidney injury, sixty-one (68%) received concurrent nephrotoxic medications. Results from AUC-guided dosing have not been collected.

Conclusion:

Nine percent of patients receiving trough-guided vancomycin dosing developed vancomycin-associated acute kidney injury. There is evidence that AUC-guided vancomycin dosing is associated with lower rates of nephrotoxicity. The occurrence of vancomycin-associated acute kidney injury with AUC-guided dosing at SRHC will be evaluated in future research.