Clinical Outcomes of Vancomycin Area-Under-the-Curve Monitoring: A Quasi-Experimental Study

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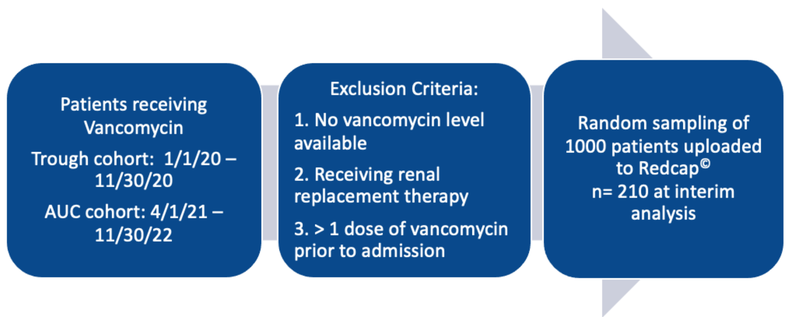
Introduction

- The 2020 Infectious Diseases Society of America (IDSA) vancomycin guidelines recommend area-under-the-curve (AUC) monitoring instead of trough concentration monitoring for patients receiving vancomycin
- Two main methodologies exist for calculating AUC exposure in clinical practice:
  - Pharmacokinetic AUC calculations can be performed with two serum vancomycin levels.[6]
  - Bayesian statistical software to calculate AUC exposure
- Our health system incorporated Bayesian statistical software with the use of a single level to calculate AUC in the Spring of 2021

Highlights

- Total daily dose of vancomycin was numerically lower in the AUC dosing cohort at interim analysis, although not statistically significant (p=0.08)
- An additional 573 patients are required to meet power for this study. A total of 703 patients will be included within the final analysis to meet power for this retrospective cohort study.

Methods



- Education of AUC dosing protocol was performed from December 1, 2020, to March 31, 2021
- Interim Analysis Statistics:
  - Chi square for categorical variables and T test for continuous variables

Results

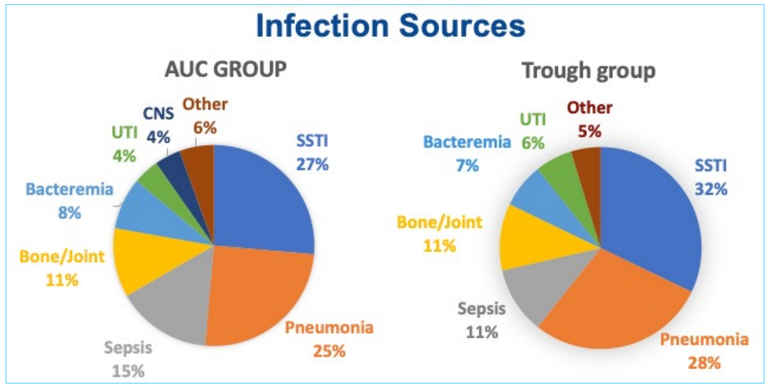
Baseline Characteristics

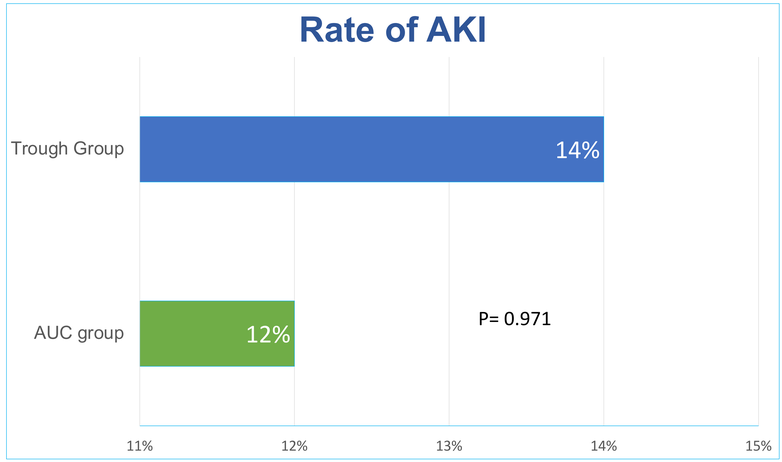
Variable	AUC Group (n=57)	Trough Group (n=73)
Age (years)	69.6	68.7
Male (%)	63	51
Weight (kg)	95	99.5
BMI (kg/m^2)	32.3	34.1
Serum creatinine (mg/dL)	1.14	1.26
APACHE II	10.9	10.6
Days of therapy	4.6	5.3

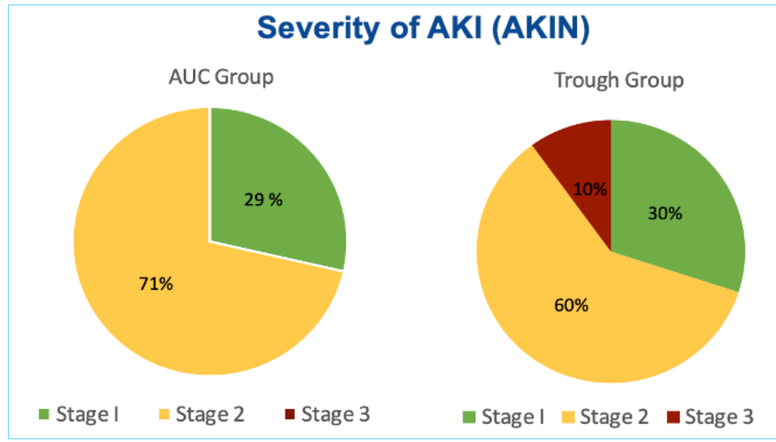
*Data presented as mean values

Additional Nephrotoxic Agents

Variable, n (%)	AUC Group (n=57)	Trough Group (n=73)
Any nephrotoxin	47 (82)	59 (81)
Loop diuretic	29 (51)	38 (52)
IV contrast	28 (49)	26 (36)
Piperacillin/tazobactam	15 (26)	21 (29)
ACE/ARB	12 (21)	24 (34)
Vasopressors	7 (12)	10 (14)
Aminoglycoside, amphotericin b, or calcineurin inhibitors	0 (0)	0 (0)
Mean number of nephrotoxins	1.6	1.6







Secondary Outcomes

Endpoint, mean (SD)	AUC Group (n=57)	Trough Group (n=73)	P-value
Daily dose (mg)	1642 (557)	1838 (689)	0.08
Measure trough concentrations (mcg/mL)	n/a	16.1 (5.6)	n/a
Calculated AUC	457 (67)	n/a	n/a
Number of levels drawn	1.4 (0.94)	1.7 (0.99)	n/a

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