Nephrotoxicity associated with intravenous vancomycin and extended-infusion piperacillin/tazobactam (NAÏVE)

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INTRODUCTION

- Combination of intermittent piperacillin-tazobactam (PTZ) and intravenous vancomycin is associated with acute kidney injury (AKI).
- EI PTZ is a dosing strategy that optimizes the pharmacokinetics and pharmacodynamics of the beta-lactam agent.
  - Nephrotoxicity associated with EI is not well documented and current literature has been predominately retrospective reviews.
- The purpose of this study was to evaluate the incidence of AKI in patients treated with concomitant intravenous vancomycin and EI PTZ.

METHODS

STUDY DESIGN

- Prospective chart review conducted from February and March 2019
- Approved by the institutional review board
- A vancomycin and PTZ queue was built in the electronic health record (EHR) to identify patients on study therapy

PRIMARY OUTCOME

- To evaluate the incidence of AKI in patients treated with concomitant intravenous vancomycin and EI PTZ
- AKI was defined by the Kidney Disease Improving Global Outcomes

SECONDARY OUTCOMES

- Number of patients needing dose adjustment due to decline in renal function
- Number of recommendations made by pharmacy for dose adjustment and percentage of recommendation acceptance
- Onset of AKI following administration and incidence of resolution after discontinuation of study therapy

SELECTION CRITERIA

Inclusion	Exclusion
Non-pregnant patients ≥ 18 years old who received at least three doses of concomitant intravenous vancomycin and EI PTZ	Patients with end-stage renal disease (ESRD) Patients receiving renal replacement therapy (RRT) at time of initiation of study therapy

EQUATIONS UTILIZED

- Cockcroft-Gault utilized to assess creatinine clearance (CrCl)

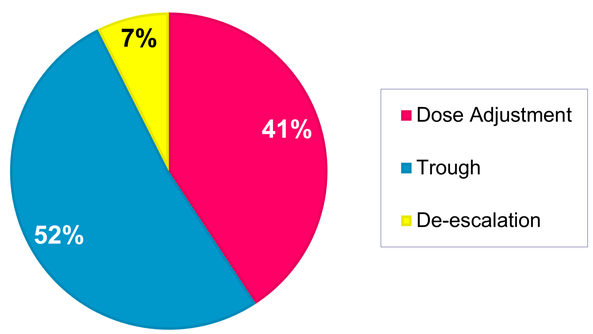
RESULTS

BASELINE DEMOGRAPHICS

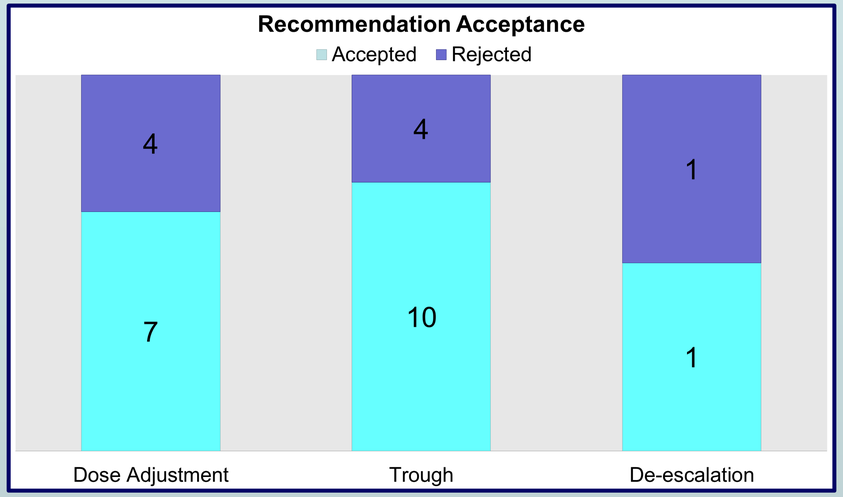
Characteristics	Results (n = 17)	
Age (years)	67.1 ± 16.2	Average ± SD
Weight (kg)	77.5 ± 26.2	
Height (in.)	64.8±6.30	
SCr (mg/dL)	0.75±0.42	
Days of therapy	4.47±2.28	
Male	9 (52.9%)	
Comorbidities:		
Cancer	6 (35%)	
Chronic kidney disease	2 (12%)	
Diabetes	5 (29%)	
Heart Failure	3 (18%)	

PRIMARY OUTCOME	RESULTS
Incidence of AKI	1/17 (6.0%)
SECONDARY OUTCOMES	**RESULTS**
Number of patients requiring renal dose adjustment	3/17 (17.6%)
Number of recommendations and percent acceptance	7/11 (63.6%)
Number of days on treatment until onset of AKI	1 day
AKI resolution following discontinuation of therapy	1/1 (100%)

TYPE OF RECOMMENDATION (n = 27)



RESULTS (cont.)



DISCUSSION

- Incidence of AKI only occurred in one patient treated with the concomitant study therapy.
- Nephrotoxicity was relatively low as only three patients needed dose adjustments due to gradual decline in their renal function.
- Over 60% of pharmacy recommendations for dose adjustment were accepted by providers.
- Prospective evaluation provided real time data and allowed the pharmacist to be actively involved in the patient care.
- Recommendation for therapy required active monitoring causing some patients to be missed on initiation of study therapy. This review will be continued in order to identify broader and larger patient population.

CONCLUSION

- The results of this study demonstrated low incidence of AKI in patients treated with concomitant intravenous vancomycin and EI PTZ

DISCLOSURE

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: Andy Chang, Ashmi A. Philips, Rani P. Madduri, Michael S. Casias, Mini Varghese: Nothing to disclose.