dosing schemes. There is a paucity of data examining vancomycin pharmacokinetics may theoretically lead to more frequent sub-therapeutic troughs in otherwise standard drug of choice for empiric and targeted coverage in both severe and non-severe MRSA infections like bacteremia and endocarditis. Vancomycin is recommended as the develops methicillin-resistant Staphylococcus aureus (MRSA) infections including se

Session: Ivana Bogdanich, PharmD, BCP, BCIDP; Gadison Weihs, PharmD, BCP, BCIDP; Paul Paul

1096. Evaluation of Vancomycin Pharmacokinetics in Intravenous Drug Users Sayo Weih, PharmD, MBA, BCPS, BCIDP; Cadillac Quick, PharmD; Ivana Bogdanich, PharmD, BCP, BCIDP; "University Health Truman Medical Centers, Kansas City, Missouri; "Truman Medical Centers, Kansas City, Missouri Session: P-62. PK/PD Studies Background. People who inject illicit drugs (PWID) are 16 times more likely to develop methicillin-resistant Staphylococcus aureus (MRSA) infections including severe infections like bacteremia and endocarditis. Vancomycin is recommended as the drug of choice for empiric and targeted coverage in both severe and non-severe MRSA infections. Pharmacokinetic literature has suggested up to 31% higher renal clearance in intravenous drug users (IVDU) compared to non-IVDUs. This increased clearance may theoretically lead to more frequent sub-therapeutic troughs in otherwise standard dosing schemes. There is a paucity of data examining vancomycin pharmacokinetics following typical dosing schemes in IVDU population.

Methods. This was a single-center, retrospective chart review that examined therapeutic drug monitoring in patients treated with vancomycin between January 1st, 2015 through July 31st, 2020. Patients were identified as either IVDU or non-IVDU groups based on ICD-9/10 codes. The primary outcome was the difference between mean first vancomycin steady state troughs. Secondary outcomes were differences in time to first therapeutic trough, mean number of days on vancomycin based on infection, rate of acute kidney injury (AKI) after vancomycin, and rate of vancomycin failure.

Results. A total of 158 patients were included in the analysis (77 IVDU vs. 81 non-IVDU). Mean first vancomycin steady state trough were significantly less in IVDU group compared to non-IVDU group (11.8 ± 3.98 mcg/mL P = 0.007). Mean time

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to first therapeutic trough and mean number of days treated were significantly higher in IVDU versus non-IVDR samples (65.9 vs. 50.2 hours \( P = 0.044 \) and 5.4 vs. 12.3 days \( P = 0.017 \), respectively). There was no detectable difference in rates of AKI and vancomycin failure.

**Primary outcome graph for patients with IV drug use**

**Primary outcome graph for patients without IV drug use**

**Conclusion.** Vancomycin use in patients with IVDU resulted in significantly lower steady state troughs compared to patients who were non-IVDU. These patients also had a longer time to first therapeutic trough. Patient populations who are IVDU may require additional consideration as a special population for future development of vancomycin pharmacokinetic models.

**Disclosures.** All Authors: No reported disclosures

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1097. A Comparison of Area-Under Curve (AUC)-Guided vs Trough-Guided Monitoring of Vancomycin and Its Impact on Nephrotoxicity: A Systematic Review and Meta-analysis

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**Session:** P-62. PK/PD Studies

**Background.** Trough levels have been used for Vancomycin (VAN) therapeutic drug monitoring (TDM) historically due to its practicality. A paradigm shift towards the use of area under curve (AUC)-guided dosing TDM has been made due to availability of advanced pharmacokinetics software, variability between trough levels and AUC values and the potential for reducing toxicity. This review aims to evaluate the impact of AUC-guided vs trough-guided vancomycin TDM on nephrotoxicity-related outcomes.

**Methods.** A systematic review was conducted using PubMed®, Embase®, Web of Science®, CINAHL®, Google scholar and Cochrane library® up till 1st January 2021 and was reported according to the PRISMA checklist. Studies which evaluated AUC-guided or trough-guided VAN TDM and vancomycin-associated nephrotoxicity were included. Random effects models were used to compare differences in nephrotoxicity between trough level or AUC based vancomycin TDM due to expected heterogeneity in study designs.

**Results.** Of 1191 records retrieved, 57 studies were included. Majority of studies included adult and elderly patients (n=47, 82.5%). The pooled prevalence of nephrotoxicity was lower using the AUC-guided TDM (6.2%, 95% confidence interval (CI): 2.9 – 9.5%) compared to trough-guided TDM (17.0%; 95% CI: 14.7 – 19.2%). The risk of nephrotoxicity was lower with the AUC-guided approach as compared with the trough-guided approach (OR: 0.53, 95% CI: 0.32–0.89). AUC thresholds correlated with risk of nephrotoxicity only for the first 96 hours of therapy. A frequency analysis of significant multivariable factors showed that concomitant use of nephrotoxins, VAN trough levels and duration of VAN therapy were most commonly associated with nephrotoxicity.

**Forest plot comparing the risk of nephrotoxicity of AUC-guided vs trough-guided monitoring**

**Disclosures.** All Authors: No reported disclosures