



Vancomycin is a common treatment for complicated skin and skin structure infections (cSSSIs) caused by MRSA. This analysis aimed to understand the variability of vancomycin tissue exposure at the site of infection” Hamada et al (2015).

Abstract:

Objectives: Vancomycin is a common treatment for complicated skin and skin structure infections (cSSSIs) caused by MRSA. This analysis aimed to understand the variability of vancomycin tissue exposure at the site of infection.

ReTweet if useful... Vancomycin tissue exposure at the site of infection [@ivteam](http://ctt.ec/7XLd1+) #ivteam

Click To Tweet

Methods: Vancomycin serum and interstitial tissue fluid concentration data for nine patients with cSSSI and normal renal function were derived from an in vivo microdialysis study. Using Pmetrics, the non-parametric population modelling package for R, we co-modelled serum and tissue concentration data. A 5000-patient Monte Carlo simulation was conducted for 1 g of vancomycin every 12 h and every 8 h to calculate the penetration distribution ($AUC_{tissue}/fAUC_{serum}$) and probability of target attainment (PTA) at an $fAUC/MIC$ target of ≥ 200 in tissue fluid.

Results: A three-compartment model fitted the data best. The mean (SD) and median penetration ratios into tissue of the simulated population were 1.91 (4.56) and 0.85,

respectively, which were consistent with observed values in the original patients. PTAs for 1 g of vancomycin every 12 h and every 8 h in tissue fluid were 39.6% and 56.6% at an MIC of 1 mg/L. Serum trough concentrations ($R^2 = 0.06$) and serum AUC exposure ($R^2 = 0.002$) were poor predictors of vancomycin AUC tissue exposure.

Conclusions: Standard dosages of vancomycin provide a low likelihood of obtaining target pharmacodynamic exposure in the tissue of a lower limb infection. This low likelihood is due to wide variability in vancomycin penetration in the interstitial tissue fluid, which could not be predicted by serum concentrations.

Reference:

Hamada, Y., Kuti, J.L. and Nicolau, D.P. (2015) Vancomycin serum concentrations do not adequately predict tissue exposure in diabetic patients with mild to moderate limb infections. *Journal of Antimicrobial Chemotherapy*. 70(7), p.2064-2067.

Thank you to our partners for supporting IVTEAM

