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**ABSTRACT SUBMISSION**

**Six-hourly dosing of intravenous vancomycin is not required for adolescents aged 12 years and above**

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**Background**

Vancomycin is currently dosed at 15 mg/kg/dose every 6 hours in patients aged  $\leq 18$  years old in our institution. A longer dosing interval of 8 hour is recommended in adolescents  $\geq 12$  years old<sup>1</sup> and may be preferred to prevent drug accumulation. The main aim of this study was to determine the probability of target attainment of AUC (0-24h) 400-600 mg.hr/L at three simulated dosing regimens.

**Methods**

A retrospective chart review of adolescents aged 12 – 18 years old who received vancomycin and with therapeutic drug monitoring (TDM) performed at first dose from April 2019 to December 2023 were included. The primary outcome was to compare the probability of target attainment of AUC (0-24h) 400-600 mg.hr/L and  $>600$  mg.hr/L at the current 15 mg/kg/dose every 6 hours, as compared to three simulated dosing regimens.

**Results**

29 vancomycin courses in 26 patients (median age: 14 years (IQR 13 – 15); median weight: 50 kg (IQR 34.6 – 59.8)) were included. Predicted AUC (0-24h) was 411 mg.h/L (IQR: 336 – 538) at the dose of 15 mg/kg/dose dosed every 6 hours, with probability of target attainment of AUC (0-24h) 400-600 mg.hr/L at 51.72% (15/29) and  $>600$  mg.hr/L at 6.9% (2/29). It is noteworthy that patients with subtherapeutic AUC (0-24h)  $<400$  mg.hr/L tend to have a higher creatinine clearance ( $CL_{Cr}$ , bedside Schwartz equation) of 174.19 ml/min (IQR: 147.21 – 209.78) versus those with AUC (0-24h) 400-600mg.hr/L at 149.51ml/min (IQR: 100.03 – 182.99) ( $p = 0.12$ ). Simulated dosing of 20 mg/kg/dose dosed every 8 hours was most similar with the highest probability of target attainment of AUC (0-24h) 400-600 mg.hr/L at 48.28% (14/29) and lowest  $>600$  mg.hr/L (3/29, 10.34 %), as compared to the other simulated 8-hourly dosing regimens.

**Conclusion**

Vancomycin at 20 mg/kg/dose dosed every 8 hours may be considered for patients aged 12 – 18 years old, as it may potentially reduce drug accumulation, nursing administration and cost. However, our data is limited to TDM performed at the 1<sup>st</sup> dose and the efficacy and safety of the proposed dosing regimen needs to be prospectively confirmed. More data is still required for vancomycin dosing recommendations in patients with varying creatinine clearance.

**Key Words:** vancomycin, paediatric, adolescent

**Word count:** 347 words

**Reference:**

1. Rybak MJ, Le J, et al. Therapeutic monitoring of vancomycin for serious methicillin-resistant *Staphylococcus aureus* infections: A revised consensus guideline and review by the American Society of Health-System Pharmacists, the Infectious Diseases Society of America, the Pediatric Infectious Diseases Society, and the Society of Infectious Diseases Pharmacists. *Am J Health Syst Pharm.* 2020 May 19;77(11):835-864