

# Vancomycin in Elderly Patients Undergoing Continuous Renal Replacement Therapy in Intensive Care Unit: Population Pharmacokinetics Based Dose Adjustment

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In infected intensive care unit patients, appropriate antibiotic therapy is one of the most important interventions. For this reason, antibiotic treatment in intensive care unit patients remains a significant challenge to intensivists all over the world. The importance of effective therapy continues to grow with increasing numbers of patients and increasing levels of sickness severity. In contrast, there is a progressive increase of vancomycin resistance and therapeutic failure due to the lack of vancomycin serum concentration in some patients especially intensive care unit patients receiving Continuous Renal Replacement Therapy (CRRT). To provide an optimal therapy for the patients, we need formulate a proper dosage adjustment for intensive care unit patients receiving CRRT elderly (above 60 years old). In order to make a right adjustment, a pharmacokinetic calculation using Karina *et al*, 2016 PK-Model was performed. It was found that the most probable dose adjustment of elderly intensive care unit patients with serum creatinine 100-200  $\mu\text{mol/L}$  (Loading Dose 550-650 $\text{mg/m}^2$  (Calculated using actual body weight), Maintenance Dose 650-800  $\text{mg/m}^2$  (Calculated using actual body weight). Meanwhile, the dosage adjustment of elderly intensive care unit patients with serum creatinine >200-500  $\mu\text{mol/L}$  (Loading Dose 500-650 $\text{mg/m}^2$  (Calculated using actual body weight). The Loading dose was recommended to be given during the first hour using infusion pump, while the maintenance Dose 500-750  $\text{mg/m}^2$  (Calculated using actual body weight). The maintenance dose was recommended to be given continuously with infusion pump for 3 hours and it must be repeated every 12 hours to maintain the therapeutic serum level of vancomycin.

**Keywords: Population Pharmacokinetics, Vancomycin, Elderly, CRRT, Dose Adjustment**