

To evaluate the ability of body-weight-driven renal function assessment (RFA) formulae to predict on-target elimination rate ranges for gentamicin in patients with varying degrees of renal function” Ariano et al (2017).

Abstract:

Objectives: To evaluate the ability of body-weight-driven renal function assessment (RFA) formulae to predict on-target elimination rate ranges for gentamicin in patients with varying degrees of renal function.

Methods: A 6 year retrospective pharmacokinetic study was conducted at a university teaching hospital.

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Results: A total of 85 patients met the inclusion criteria and 127 pharmacokinetic files were analysed from patients on medical-surgical wards (53%) and medical-surgical ICUs (13%) receiving intravenous gentamicin for treatment, as well as those for patients receiving it for surgical prophylaxis (34%). Each RFA formula was examined against standard dosing tables for gentamicin. A table of acceptable elimination rates was generated using a traditional peak of 8 mg/L and trough between 0.5 and 2 mg/L associated with each of the dosing interval extensions. The ability of each RFA formula to select on-target elimination rates was evaluated. The RFA formula assuming a normalized body weight of 72 kg and a modified creatinine reagent adjustment factor of 90% provided the most accurate on-target elimination rate selection. This method was superior to dosing interval selection based on the Modification in Diet Renal Disease (MDRD) formula, Sanford’s guide method, as well as the Cockcroft-Gault formulae using total body weight, ideal body weight or lean body weight ($P < 0.0001$).

Conclusions: Based on the use of gentamicin as a surrogate guide for renally adjusted

drugs, these results support dosing interval selection based on a normalized body weight method and a formula reagent adjustment factor of 90% within the Cockcroft-Gault formula.

Reference:

Ariano, R.E., Zelenitsky, S.A., Poncsak, K.R., Davis, J.C. and Vercaigne, L.M. (2017) No role for patient body weight on renal function assessment for drug dosing. *Journal of Antimicrobial Chemotherapy*. 72(6), p.1802-1811.

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