Introduction: Once daily dosing (ODD) of aminoglycosides has been shown to be less toxic and at least as efficacious as multiple daily dosing regimens. However, there is a lack of pharmacokinetic (PK), safety, and efficacy data for aminoglycoside ODD in critically ill paediatric patients.

Objectives: To evaluate the proposed exclusion criteria for use of ODD gentamicin by examining gentamicin PK disposition in patients excluded from ODD therapy, and to adapt the criteria as appropriate.

Methods: A retrospective chart review of 176 critically ill paediatric patients excluded from ODD therapy was done. PK parameters were calculated based on available therapeutic drug monitoring (TDM) levels. Extrapolated serum gentamicin levels achieved using a dose of 9 mg/kg were calculated and used to determine whether an excluded patient would have adequately cleared ODD gentamicin. Exploratory analyses were done to assess other characteristics that may predict if a patient will adequately clear ODD gentamicin despite prior exclusion.

Results: The majority of patients (56%) were excluded from ODD therapy based on having a weight of ≤5 kg. Thirty-nine percent of patients excluded due to weight may have been able to adequately clear ODD gentamicin based on extrapolated PK parameters. Of these patients, 53% were estimated to achieve target Cmax, and 97% were estimated to achieve target drug-free interval.