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Amikacin Concentrations and Target Ranges for Mycobacterial Infection

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Introduction

- Amikacin is increasingly being used in the management of multi-drug resistant mycobacterial infection.
- Current dosing guidelines recommend 15 mg/kg once daily (OD) or 25 mg/kg thrice weekly (TW).
- Target concentrations for amikacin are end of infusion peaks of 35-45 mg/L (OD) or 65-80 mg/L (TW) and troughs <5 mg/L.
- It is not clear whether the recommended amikacin dosage guidelines achieve these target concentrations.

Aim

- To determine whether amikacin dosage guidelines for multi-drug resistant mycobacterial infections achieve peaks of 35-45 mg/L (OD) or 65-80 mg/L (TW) and troughs <5 mg/L.

Results

- Data were collected from 83 patients (Table 1), of which 33% (OD) and 35% (TW) had predicted peaks within the relevant target amikacin range (Table 2).
- Concentrations were more likely to be above than below the upper concentration target range (Table 2, Figure 1 and Figure 2).
- 34% of patients achieved peaks >50 mg/L with the OD regimen and 11% of patients achieved peaks of >100 mg/L on the TW regimen.
- Patients with estimated creatinine clearance <30 mL/min had troughs >5 mg/L at the end of the dosage interval.

Summary and Conclusions

- Amikacin guidelines for mycobacterial infections achieve peak concentrations that are typically within or above the stated target range.
- Trough concentrations are excessive for patients with renal impairment (CrCl <30 mL/min).
- Guidelines should be modified to allow greater flexibility in peak concentrations and to provide guidance for patients with renal impairment.

References