



This article reviews the literature concerning ceftazidime stability and potential for toxicity from pyridine (a degradation product) in the light of decades of apparent safe use of this antibiotic when given by continuous i.v. infusion but recent changes in regulatory body/manufacture advise a need to change infusion devices more frequently” Jones et al (2019).

Abstract:

**PURPOSE:** This article reviews the literature concerning ceftazidime stability and potential for toxicity from pyridine (a degradation product) in the light of decades of apparent safe use of this antibiotic when given by continuous i.v. infusion but recent changes in regulatory body/manufacture advise a need to change infusion devices more frequently.

**SUMMARY:** In the outpatient setting, ceftazidime is ideally administered by continuous i.v. infusion because of its short half-life and lack of post-antibiotic effect. While continuous i.v. infusion provides the optimal pharmacokinetic/pharmacodynamic profile, the frequency with which infusion devices need to be changed is critical to the practicality in the outpatient setting, especially where trained staff are required to visit the patient in their home to change the device. The rate of ceftazidime degradation (and pyridine formation) is temperature, concentration, and solvent dependent. By using the lowest effective dose (guided by pathogen minimum inhibitory concentration [MIC] so as to achieve a blood

concentration  $\geq 4 \times \text{MIC}$  over the whole dosage interval), keeping ceftazidime concentration  $\leq 3\%$ , using 0.9% sodium chloride injection as diluent and maintaining temperature between 15-25°C when connected to the patient, the amount of pyridine formed over a 24-hour period can be minimized and toxicity prevented. When pathogen MIC dictates that  $> 6 \text{ g}$  ceftazidime/day is required, alternative antibiotics should be considered and/or greater attention paid to temperature and concentration of the infusion solution.

**CONCLUSION:** Ceftazidime can be used safely and effectively via continuous i.v. infusion in the outpatient setting with once-daily changes of infusion device provided the concentration and temperature of the infusion solution is controlled. In this way, more frequent changes of infusion device (that increase the risk of blood-borne infection and reduce the practicality of continuous i.v. infusion in the home) can be avoided.

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### Reference:

Jones, T.E., Selby, P.R., Mellor, C.S. and Cheam, D.B. (2019) Ceftazidime stability and pyridine toxicity during continuous i.v. infusion. *American Journal of Health-System Pharmacy*. 76(4), p.200-205.

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