

Abstract:

Purpose: A critical shortage of small-volume parenteral solutions in late 2017 led hospitals to develop strategies to ensure availability for critical patients, including administration of antibiotics as intravenous push (IVP). Minimal literature has been published to date that assesses the safety of administration of beta-lactams via this route. Therefore, the purpose of this study was to evaluate the safety of IVP administration of select beta-lactam antibiotics.

Methods: We performed a retrospective review of IVP administrations of aztreonam, ceftriaxone, cefepime, and meropenem at two campuses of the New York University Langone Health system after October 2017. Patients receiving surgical prophylaxis or more than one IVP antibiotic simultaneously were excluded. The primary endpoint was adverse events (ADE) following IVP administration of antibiotics.

Results: We evaluated 1000 patients who received IVP aztreonam (n = 43), ceftriaxone (n = 544), cefepime (n = 368) or meropenem (n = 45). There were 10 (1%) ADE observed, 5 of which were allergic reactions. Four ADE were neurotoxicity related to IVP cefepime. Based on the Naranjo score, 1 adverse event was “probably” and 3 were “possibly” related to cefepime IVP administration. Lastly, only 1 report of phlebitis was observed with the use of IVP ceftriaxone.

Conclusions: The use of IVP as an alternative to intravenous piggyback (IVPB) during times of drug shortage for select beta-lactam antibiotics appears to be safe, and ADE are similar to those previously described for IVPB administration. Future studies evaluating clinical outcomes between IVP and IVPB administration may be of benefit.

Reference:

Marsh, K., Ahmed, N., Decano, A., Dubrovskaya, Y., Jen, S-P., Siegfried, J., Chen, X.J. and Merchan, C. (2020) Safety of intravenous push administration of beta-lactams within a healthcare system. *American Journal of Health-System Pharmacy*. 77(9), p.701-708. doi.org/10.1093/ajhp/zxaa044.