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# A cost-effective alternative to the current standard of therapy for treating staphylococcal bloodstream infections

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Research comparing clinical outcomes between patients receiving nafcillin and cefazolin for treatment of methicillin-susceptible Staphylococcus aureus (MSSA) bacteremia shows that overall treatment failure rate among patients receiving cefazolin was no worse than nafcillin, and significantly fewer adverse effects were documented for those receiving cefazolin. These findings are presented at ASM's 55th Interscience Conference of Antimicrobial Agents and Chemotherapy (ICAAC/ICC).

"These findings, coupled with the cost savings involved with using cefazolin over nafcillin, make it an appealing first line agent for most MSSA bloodstream infections," said Maggie Monogue, Clinical Pharmacy Fellow at Hartford Hospital Center for Anti-Infective Research and Development. Experiments conducted in the laboratory suggest that high-density MSSA infections, such as infections of the bone and heart, treated with cefazolin may result in higher rates of antibiotic failure due to the presence of specific enzymes. These enzymes, when present, breakdown the antibiotic's structure; therefore, are capable of making cefazolin ineffective against MSSA infections. In contrast to previous research, results of the present study indicate that cefazolin may be an equally effective alternative for patients.

This study looked at 142 patients with MSSA blood stream infections, with 71 patients in both nafcillin and cefazolin arms. Nafcillin-treated

patients had a treatment failure rate of 14% (10 of 71 patients), which was greater than the 8.4% failure rate observed among those treated with cefazolin (6 of 71).

"The number of high burden infections was similar between the two arms," said Monogue, "which suggests that the effect of the antibiotic destroying enzymes may not be as significant in clinical practice." Additionally, there were significantly more adverse events observed in the nafcillin arm (19.7% versus 7%). The adverse events were driven largely by the high proportion of patients receiving nafcillin who developed some degree of kidney injury during treatment (16.9% versus 2.8%).

This was a retrospective, non-inferiority, cohort study of patients admitted to Parkland Health and Hospital System (Dallas, TX, USA) from August 1, 2011 to August 1, 2014. It was performed by the authors at Parkland Health and Hospital System without funding. Additional authors include: Jessica K. Ortwine, Wenjing Wei, Kavita P. Bhavan.

"These results are important to the healthcare system because nafcillin can be up to ten times the cost of cefazolin," Monogue said, "and with continually rising healthcare costs and tight budgets, cheaper alternatives are necessary." Furthermore, cefazolin is often a more tolerable option and dosed less frequently, making cefazolin a beneficial option for both patients and hospitals.

Provided by American Society for Microbiology

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