

# PHARMACOKINETIC EVALUATION OF CEFAZOLIN ANTIMICROBIAL PROPHYLAXIS IN SPINAL SURGERY

Justin Stivrins<sup>1</sup>, Sigita Kazune<sup>2</sup>

<sup>1</sup>University of Latvia  
[justins99@inbox.lv](mailto:justins99@inbox.lv)

**Background** Surgical site infections (SSI) following spine surgery significantly impact patient morbidity and mortality. Antibacterial prophylaxis (AP) using cefazolin is a key strategy for preventing SSI.

**Aim.** This observational study aimed to examine the pharmacokinetics of guideline-recommended cefazolin AP in spine surgery.

**Methods.** Nine patients (aged  $50 \pm 14$  years, renal function  $99 \pm 30$  mL/min/72kg) undergoing spine surgery received AP with 2 g cefazolin. Blood samples were collected at 5, 10, 30, 60 and 90 minutes intraoperatively for measuring total cefazolin concentrations by high performance liquid chromatography. Patients were monitored for SSI during and post-hospitalization. Total cefazolin concentrations at wound closure were compared to the target concentrations of  $\geq 40$  mg/L.

**Results.** The interval between cefazolin administration and wound closure ranged between 40 and 190 minutes. Total plasma cefazolin concentrations peaked at  $214 \pm 35$  mg/L<sup>-1</sup> within 15 minutes following cefazolin dose. Total plasma cefazolin concentrations at wound closure were  $68 \pm 30$  mg/L<sup>-1</sup>. 12.5 percent of cefazolin concentrations at wound closure were less than 40 mg/L. Longer surgery duration was associated with below-target concentrations. None of the patients in the study developed SSI.

**Conclusion.** The study demonstrates that current intraoperative AP with cefazolin achieves target plasma concentrations in the majority of patients. Duration of surgery is a critical factor in considering alternative dosing regimens.

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