Cefazolin for All: Safe Implementation of Updated Antibiotic Guidelines in 12,849 Arthroplasty Patients

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INTRODUCTION:

Cefazolin is the recommended first-line antibiotic for surgical-site infection (SSI) prevention in arthroplasty due to its efficacy, safety, and low cost. However, its use is often withheld from patients with reported penicillin allergies—despite growing evidence that true IgE-mediated cross-reactivity is rare and frequently misdiagnosed. In August 2023, following updated national recommendations, our institution implemented a system-wide protocol mandating cefazolin as the default prophylactic antibiotic for all patients, including those with reported penicillin allergies. This study evaluated the safety and outcomes of this transition, focusing on hypersensitivity reactions, cefazolin utilization, readmissions, and mortality.

METHODS:

We conducted a retrospective cohort study of 12,849 primary total joint arthroplasties (THA: n=5,633; TKA: n=7,216) from 2016–2024. Patients were stratified into pre- and post-intervention cohorts based on the August 2023 protocol change (THA: 4,102 pre, 1,531 post; TKA: 5,269 pre, 1,947 post). Patients were further grouped by antibiotic risk: Group 1 (no MRSA risk, no penicillin allergy), Group 2 (MRSA risk), and Group 3 (reported penicillin allergy). Primary outcomes included cefazolin use, hypersensitivity reactions, 90-day readmissions, and 1-year mortality.

RESULTS:

Following protocol revision, cefazolin use significantly increased in both THA (from 71.8% to 92.2%) and TKA (from 74.0% to 95.0%) (p<0.001). Among patients with reported penicillin allergy, cefazolin use rose from 41.3% to 84.8% (THA) and from 46.2% to 86.5% (TKA). Hypersensitivity reactions declined sharply in both THA (16.9% to 1.24%) and TKA (17.8% to 0.41%) (p<0.001). No significant difference in 90-day readmission rates was observed (THA: 4.66% vs. 5.68%, p=0.131; TKA: 4.80% vs. 5.19%, p=0.539). One-year mortality significantly decreased post-intervention in both THA (1.22% to 0.33%, p=0.004) and TKA (1.06% to 0.36%, p=0.007).

DISCUSSION AND CONCLUSION:

An institution-wide shift to cefazolin-only prophylaxis, including for patients with reported penicillin allergies, is safe and effective. Aligning practice with updated allergy guidelines significantly increased cefazolin use, reduced hypersensitivity events, and improved patient survival without raising complication or readmission rates.