

Improving antibiotic stewardship in neck of femur fracture patients undergoing hip hemiarthroplasty

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BACKGROUND

Surgical site infections (SSIs) are a significant cause of morbidity and mortality in patients undergoing hip hemiarthroplasty for neck of femur fractures (1). Peri-operative antibiotic prophylaxis reduces the incidence of SSIs, with cephalosporins being the antibiotic class of choice given their spectrum of action, safety-profile and low cost (2). Of the cephalosporins, **cefuroxime at induction and two doses post-operative** is first-line as it is associated with the lowest risk of clostridium difficile – an important consideration amongst the elderly population, in whom neck of femur fractures are most common (3, 4). Cephalosporins and penicillin share potential cross-sensitivity, therefore a **single dose of teicoplanin at induction** is first-line in patients labelled penicillin-allergic.

AIM

To improve antibiotic stewardship in neck of femur fracture patients undergoing hip hemiarthroplasty, through appropriate choice of antibiotic at induction, post-operatively and documentation of antibiotic plan in opnotes, in the context of penicillin allergy status as per clinical guidelines.

MEASURES

- Patients with neck of femur fracture undergoing hip hemiarthroplasty
- Admission to VHK between August - November 2022 (1st cycle) and January - April 2023 (2nd cycle)
- Notes, kardex and opnote available via online Clinical Portal
- Allergy status documented
- Patients with no penicillin allergy should receive cefuroxime at induction and two further doses post-operatively
- Patients with penicillin allergy should receive a single dose of teicoplanin at induction
- All opnotes should include post-operative antibiotic plans

TESTS FOR CHANGE

- 1) First audit cycle (August – November 2022):
 - Retrospective evaluation of 50 patients
 - Adherence to guidelines in 83% of patients with no penicillin allergy
 - Adherence to guidelines in 25% of patients with penicillin allergy
 - Documentation of antibiotic plans in 75% of opnotes
 - 8% of patients had surgical site infections
- 2) Results of 1st audit cycle presented at Orthopaedic Department Meeting and education delivered on existing antibiotic guidelines and importance for accurate antibiotic plan in opnotes
- 3) Re-audited (January – April 2023) after results presented and team education

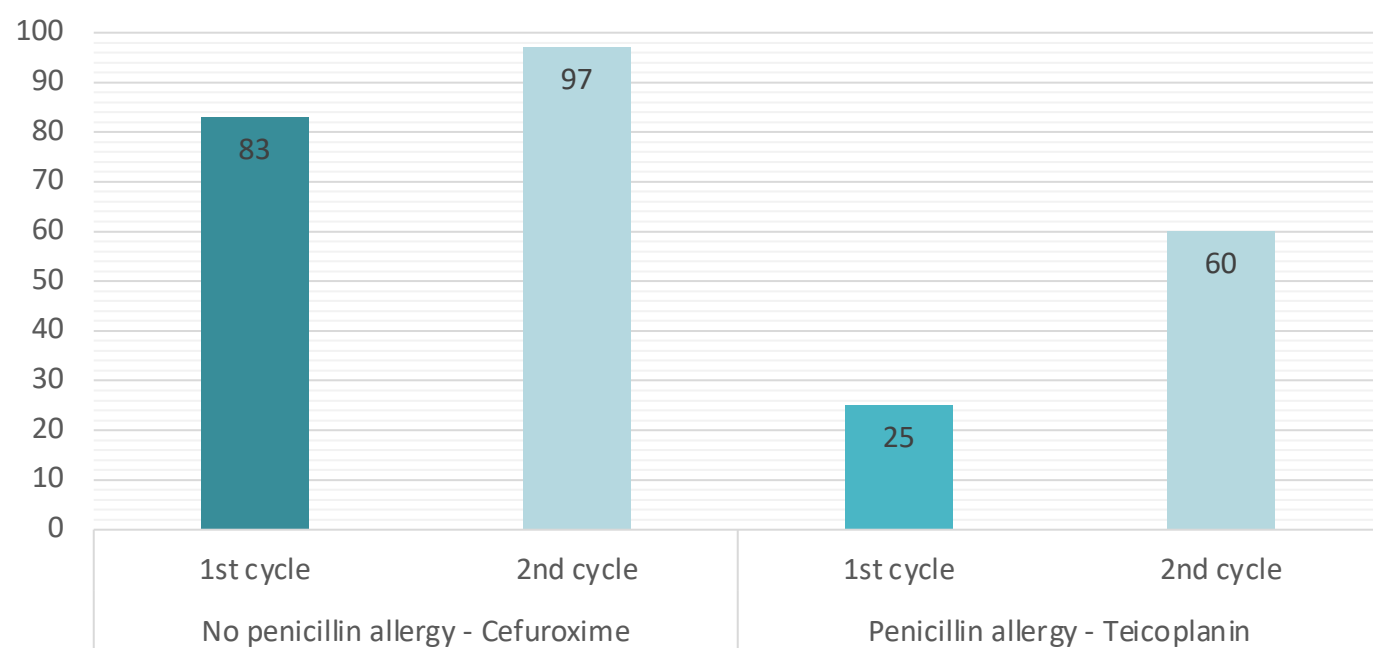
RESULTS

1st cycle (Aug-Nov 22, 50 patients): 83% of patients with no penicillin allergy received cefuroxime at induction and 91% of those received two doses post-operatively as per clinical guidelines. 25% of patients with penicillin allergy received teicoplanin at induction as per clinical guidelines. 75% of opnotes had antibiotic plans.

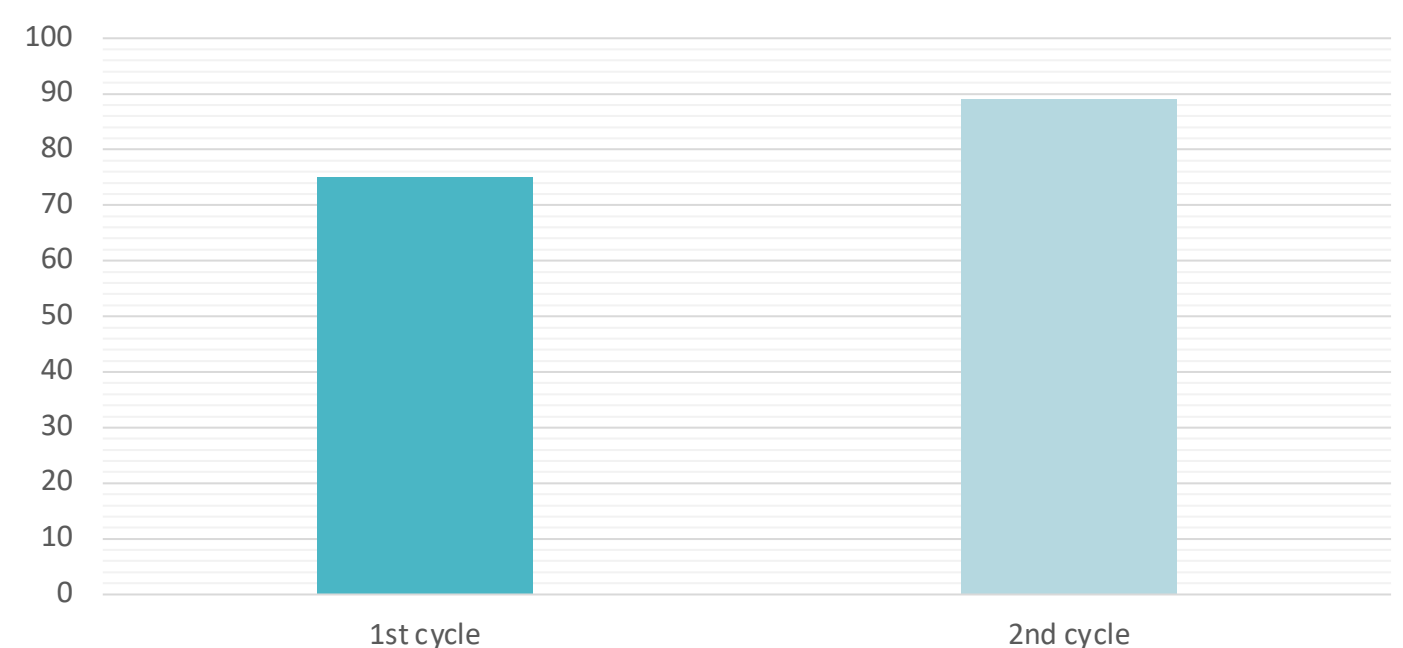
PRESENTATION +
EDUCATION

2nd cycle (Jan-Apr 23, 35 patients): 97% of patients with no penicillin allergy received cefuroxime at induction and 100% of those received two doses post-operatively as per clinical guidelines. 60% of patients with penicillin allergy received teicoplanin at induction as per clinical guidelines. 89% of opnotes had antibiotic plans.

Adherence to guideline (%)



Antibiotic plan in opnote (%)



TAKE HOME MESSAGE

Antibiotic prescribing at induction, post-operatively, and opnote documentation improved by raising awareness of existing practices and team education. Further improvement can be made specifically in adherence for patients labelled penicillin-allergic requiring teicoplanin – this may have been limited by uncertainty regarding nature of penicillin allergy and whether it was a true allergy. Efforts could be made to verify allergy i.e., anaphylaxis, or a side effect i.e., diarrhoea to enable de-labelling the allergy status and need for alternative antibiotic.

Finally, prescribing post-operative doses of antibiotics in theatre could minimise the risk of missed doses especially when opnotes are missing antibiotic plans for action of ward staff.

Ultimately, the whole multidisciplinary team made efforts to improve antibiotic stewardship through collective awareness of the guidelines and importance of escalating concerns about missed doses when opnotes were not clear.

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