

Single dose Teicoplanin for prophylaxis in major joint arthroplasty decreases drug errors

Patient safety improvement project

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Introduction:

Drug errors are a key performance indicator of quality in patient care. Our existing antibiotic (ABX) prophylaxis guidelines which consisted of Flucloxacillin 1 gram IV QDS or Teicoplanin 400mg IV BD (depending on renal function and penicillin allergy) plus Gentamicin 160mg IV OD on induction showed low rate of drug errors. A single dose of Teicoplanin (800mg) and Gentamicin (160 mg) administered on induction had proffered advantages.¹

Methods:

Teicoplanin 800mg IV (or 600mg or 400mg for patients weighing 40-50Kg or less than 40Kg, respectively) plus Gentamicin 160mg was approved for microbiological efficacy in primary lower limb joint arthroplasty. A prospective audit of patients' outcome was conducted for two months and a comparison was made with a matched cohort which underwent treatment in accordance with the existing ABX prophylaxis policy (Flucloxacillin 1 gram IV QDS plus Gentamicin 160 mg IV OD). The primary outcome was the number ABX-related errors.

Results:

No ABX-related errors were reported in the single dose ABX group. Four patients had reports of drug errors in the multi dose limb. The difference was significantly less in the single dose cohort compared to the multi-dose cohort ($p=0.046$). Secondary outcomes were not significantly different in both groups (Table 1).

Table 1: Patients' demographics and operative outcomes.

	Multi-dose ABX (n = 36)	Single dose ABX (n = 47)	p
Age (years)	68.1±10.7	68.6±10.1	0.82
Weight (Kg)	83±17.5	81.7±17.3	0.75
Body Mass Index	29.6±4.9	29.7±5.3	0.97
Sex (M/F)	14/22	19/28	1
ASA (I/II/III)	2/27/7	1/38/8	0.84
Number of ABX related errors	4	0	0.046*
Surgical Site Infection	0	0	1
Number of patients that required additional ABX postoperatively	2	3	0.87
Number of patients that developed Acute Kidney Injury (AKI)	3	1	0.31

Values are mean±SD.

Conclusion:

A single dose of Teicoplanin (800 mg) and Gentamicin (160 mg) administered on induction decreases risk of perioperative drug errors. It is non-inferior to multi-dose ABX prophylaxis in terms of microbiological coverage with an additional direct cost saving of £4.96 per patient (BNF). Further ongoing audit is underway with the intention of examining rate of AKI.

References:

1- Kanellakopoulou K, Papadopoulos A, Varvaroussis A, et al. Efficacy of Teicoplanin for the prevention of surgical site infections after total hip or knee arthroplasty. *Int J Antimicrob Agents* 2009;33:437-40.