

Risk of surgical site infection and *Clostridioides difficile* infection after perioperative clindamycin in patients labeled penicillin and/or cephalosporin allergic

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INTRODUCTION

- Clindamycin has been the recommend antibiotic for the prevention of surgical site infections for patients labeled as beta-lactam allergic since 1999 by the CDC and subsequently by national guidelines
- Patients labeled as beta-lactam allergic have a higher rate of SSI and the use of clindamycin is suspected to be one of the causes
- Meta-analyses have shown clindamycin to be the antibiotic with the highest associated risk of CDI
- A single dose of clindamycin markedly reduces the diversity of the intestinal microbiota for at least 28 days

OBJECTIVES

1. Compare incidence of 90-day SSI between patients receiving clindamycin-containing perioperative regimens to non-clindamycin regimens
2. Compare incidence of 90-day CDI between clindamycin-containing regimens to non-clindamycin regimens

METHODS

- Retrospective, single-system, cohort study
- Inclusion criteria
 - January 2020 – July 2021
 - Adult
 - Primary hip or knee arthroplasty
 - Labeled allergic to a penicillin or cephalosporin
 - Received perioperative antibiotics for prevention of surgical site infection
- Outcomes at 90 days post-operative
 - Surgical site infection (SSI) – superficial or PJI according to CDC and NHSN definitions
 - *Clostridioides difficile* infection (CDI) – *C. difficile* toxin on enzyme-linked assay, polymerase chain reaction analysis, or stool culture

RESULTS

BASELINE CHARACTERISTICS

Variable, n (%)	Clindamycin regimen, n=282	Non-clindamycin regimen, n=839	P-value
Age, years	66.5 ± 10.0	68.3 ± 9.7	< .01
Sex, female	194 (68.8)	589 (70.2)	.65
Body mass index, kg/m ²	30.9 ± 6.3	30.1 ± 6.5	.09
Penicillins allergy label	238 (84.4)	767 (91.4)	< .01
Cephalosporins allergy label	91 (32.3)	115 (13.7)	< .01
Immediate allergy history	159 (56.4)	317 (37.8)	
Surgery Type			.45
Knee	156 (55.3)	441 (52.6)	
Hip	126 (44.7)	398 (47.4)	
Bilateral	8 (2.8)	52 (6.2)	
Surgery duration, min	81.5 ± 28.6	74.5 ± 25.2	< .01
Multiple antibiotics	84 (29.8)	15 (1.8)	< .01
Cefazolin as perioperative antibiotic	44 (15.6)	760 (90.6)	< .01
Clindamycin, cefazolin <60 min pre-cut	217 (95.2)	739 (98.1)	.20
Vancomycin 60 min before cut time	29 (31.2)	13 (12.5)	< .01
Hospitalization 90 days before surgery	29 (10.3)	71 (8.5)	.40
ASA classification >2	149 (52.8)	434 (51.7)	.78
Comorbid diseases			
GERD	136 (48.2)	417 (49.7)	.68
Depression or Mood Disorders	64 (22.7)	175 (20.9)	.56
Diabetes	63 (22.3)	150 (17.9)	.11
Anxiety	52 (18.4)	146 (17.4)	.72
Cancer (active or resolved)	32 (11.3)	158 (18.8)	< .01
Opiate use disorder	32 (11.3)	78 (9.3)	.35
GI Disease (Crohn's/UC/IBD)	10 (3.5)	33 (3.9)	.86
Immunosuppressive medication use	28 (9.9)	44 (5.2)	< .01
PPI or H2RA use	141 (50.0)	461 (54.9)	.17
Prior <i>C. difficile</i> infection	5 (1.8)	14 (1.7)	1.00

OUTCOMES

Variable, n (%)	Clindamycin regimen, n=282	Non-clindamycin regimen, n=839	P value
SSI	12 (4.3)	6 (0.7)	< .01
Superficial incisional infection	8	5	
Periprosthetic joint infection	4	1	
Time from surgery to SSI, days	22.7 ± 11.6	24.8 ± 11.1	.72
<i>Clostridioides difficile</i> infection	3 (1.1)	1 (0.1)	.05
Time to CDI infection, days	32.6 ± 26.6	4.6	.46

SURGICAL SITE INFECTION – LOGISTIC REGRESSION

Variable	Univariable Odds Ratio (95% CI)	Multivariable Odds Ratio (95% CI)
Clindamycin-containing perioperative antibiotic regimen	6.2 (2.3 – 16.6)	5.5 (2.0 – 15.4)
Opiate use prior to surgery	9.9 (3.8 – 25.6)	8.7 (3.2 – 23.3)
Immunosuppressive medication use prior to surgery	4.3 (1.4 – 13.6)	2.1 (0.6 – 7.4)

CONCLUSIONS

- The relative risk of developing an SSI after receipt of clindamycin is 17% greater than the non-clindamycin group (NNT=29)
- Retrospective study design, causation is not possible (but... we feel pretty good about blaming clindamycin here)
- Avoidance of cefazolin in patients labeled as penicillin allergic is unwarranted
- Most patients allergic to penicillins and/or cephalosporins can safely receive cefazolin based on its unique structure

