



INDUCING ANTIMICROBIAL RESISTANCE WITH LONG-TERM ANTIBIOTICS AT STAGE 2 REVISION FOR PERI-PROSTHETIC JOINT INFECTION

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BACKGROUND

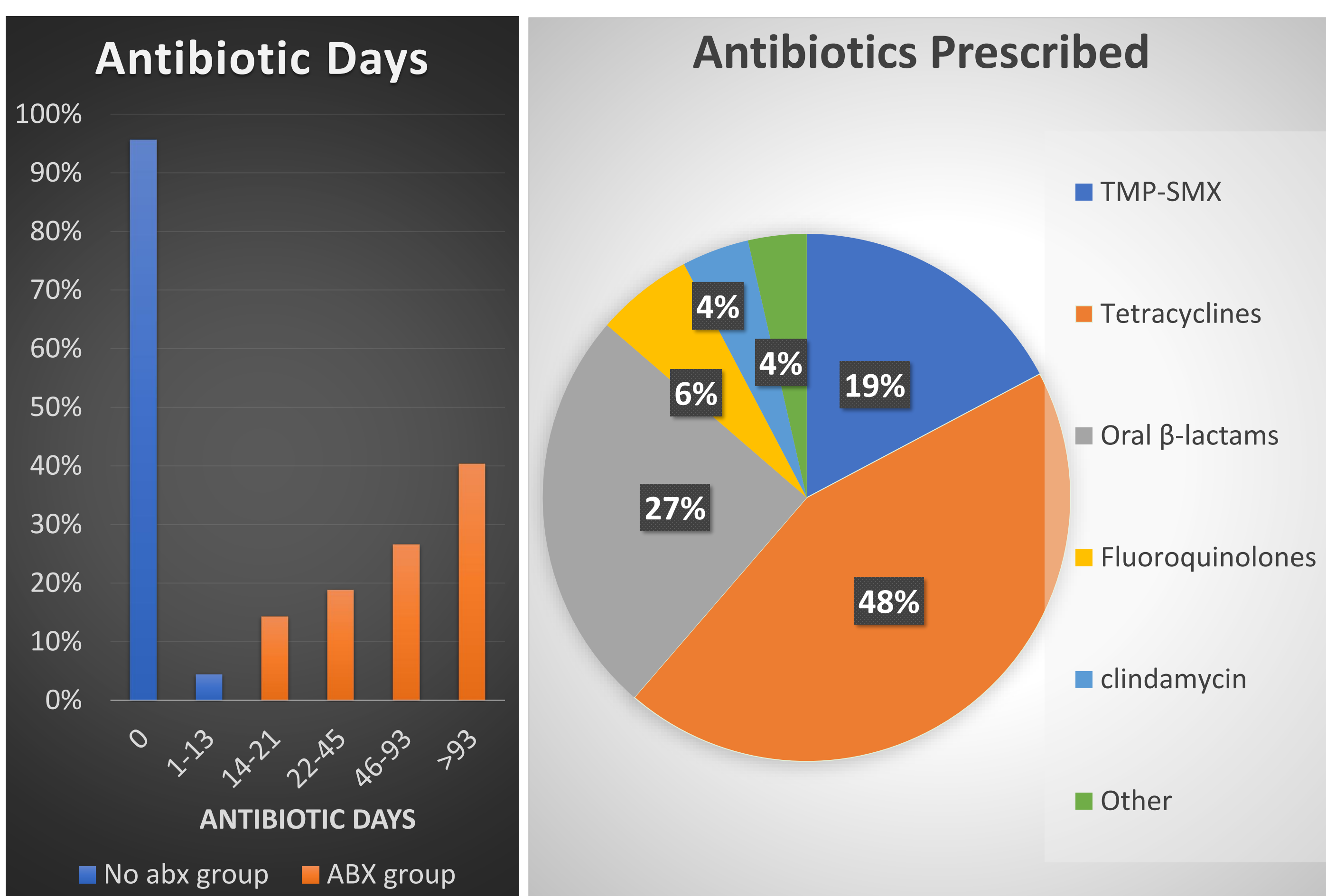
- Studies have shown reduced rates of recurrence of peri-prosthetic joint infection (PJI) with the use of oral antibiotics after stage-two revision.
- We examined the effects of these antibiotics on the antibiotic susceptibility patterns of subsequent PJI.

Patient Demographics

	No Antibiotics (N=451)	≥2 Weeks Antibiotics (N=154)
Knee (vs Hip)	80%	87%
Age	67 yr	65 yr
Male	95%	94%
BMI	30.8	32.1
ASA class 3	84%	79%
Tobacco use	23%	24%
Rheumatoid arthritis	3.8%	4.5%
Diabetes	45%	34%
Kidney disease	18%	24%
Immunosuppression	2.0%	1.9%
ID consult for PJI	91%	84%

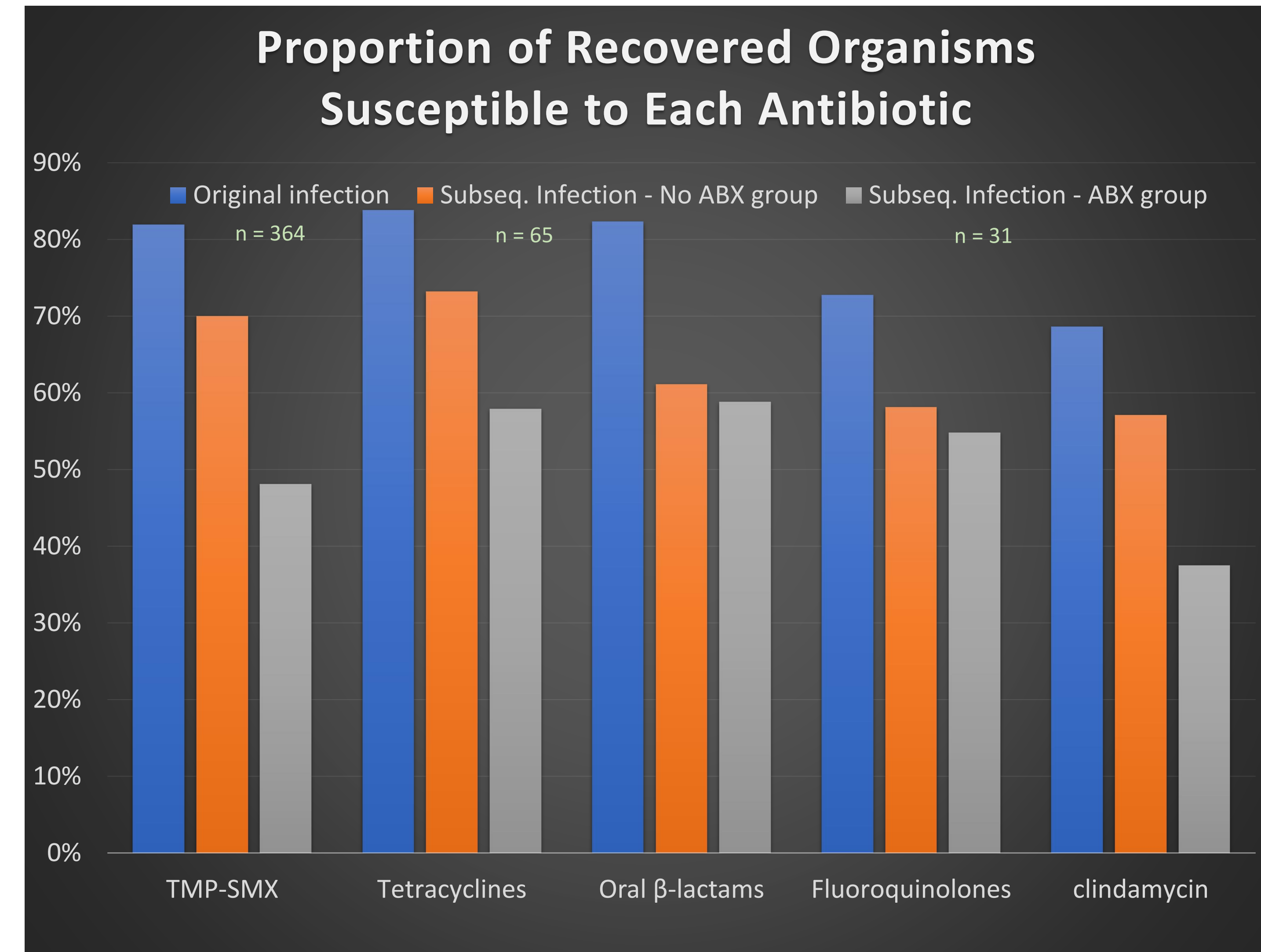
METHODS

- Retrospective cohort study: patients who underwent two-stage exchange for PJI in the Veterans Affairs system (1/1/2015 – 6/1/2020).
- Patients prescribed oral antibiotic prophylaxis for >14 days following stage-two revision arthroplasty compared with those who received <14 days of antibiotics.
- Primary outcome: presence of antibiotic-resistant organisms isolated in cultures from subsequent infections of the same joint.
- Secondary outcomes: comparisons of rates of recurrent PJI and time-to-subsequent PJI between each group.
- Statistical analysis used Chi square and Fisher exact tests.



RESULTS

- 605 patients met inclusion criteria. Of these, 154 received >14 days of oral antibiotics following stage 2 surgery.
- Tetracyclines (48%), beta-lactams (27%) and trimethoprim-sulfamethoxazole, TMP-SMX (19%) were the most common antibiotics used, with some patients receiving >1 antibiotic.
- Decreased susceptibility observed to tetracyclines (58 vs 73%, p 0.24), TMP-SMX (48 vs 70%, p 0.059), and clindamycin (38 vs 57%, p 0.22) in organisms isolated from subsequent PJI in the antibiotic prophylaxis group compared to the control group.
- In the antibiotic prophylaxis group 29 of 154 (19%) were diagnosed with subsequent PJI, compared with 80 of 451 (18%) in the no antibiotics group.
- Median days to subsequent infection was higher for those who received antibiotics compared to those who did not (101 vs 65 days, respectively; not statistically significant).



Description of Clinical Outcomes

	Overall (n=605)	No antibiotics group (n=451)	Antibiotics group (n=154)	P
Recurrent infections (%)	109 (18)	80 (17)	29 (19)	0.76
Weeks to recurrence (median [IQR])	11.1 [4.0, 48.9]	9.3 [3.3, 49.2]	14.4 [4.7, 46.7]	0.39
Recurrent infection caused by same organism as primary infection (%)	16 (14.7)	12 (15.0)	4 (13.8)	0.88
1-Year Mortality (%)	14 (2.3)	9 (2.0)	3 (1.9)	1.0
Months of follow-up (median [IQR])	38.1 [24.8, 55.3]	39.3 [25.2, 55.7]	36.6 [25.2, 52.6]	0.29

CONCLUSIONS

- Prolonged prophylactic antibiotics following stage 2 revision for PJI may increase the risk for drug-resistant organisms in subsequent index joint infections, most notably against TMP-SMX, clindamycin and to a lesser extent, tetracyclines.
- Based on our data, antibiotics given after stage 2 revision did not prevent subsequent infection.

