

Temporal Trends in Postoperative Oral Antibiotic Prophylaxis and Infections for Outpatient Total Hip and Knee Arthroplasty from 2015-2020

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INTRODUCTION: Increased utilization of outpatient total hip and knee arthroplasty (THA/TKA) may coincide with changing patterns in perioperative care, including antibiotic infection prophylaxis. We aimed to describe temporal trends in oral antibiotic prophylaxis prescriptions, 90-day surgical site infection (SSI), and 1-year periprosthetic joint infection (PJI) for outpatient THA/TKA from 2015-2020.

METHODS: This retrospective cohort study included outpatient THA (n=9,548) and TKA (n=17,751) procedures in patients aged 18-64 (Merative MarketScan Commercial Claims and Encounters database). We identified oral antibiotic prescriptions filled perioperatively (5 days preoperatively to 3 days postoperatively) to represent postoperative antibiotic prophylaxis. We examined annual unadjusted trends of antibiotic prophylaxis, specific medications, and infection outcomes and also visually trended adjusted annual estimates for prophylaxis and outcomes using percentages and 95% confidence intervals (CI).

RESULTS: In the study period, 17.5% of THA and 14.1% of TKA patients received prophylaxis. There were no significant unadjusted temporal trends in antibiotic prophylaxis for either THA or TKA. After adjustment, there were visual trends toward increased prescribing after 2017, including a significant increase in 2020 for TKA versus earlier years. There were no significant trends in infection outcomes for THA. However, for TKA, there were significant unadjusted temporal trends for decreasing 90-day SSI (P=0.003) and decreasing 1-year PJI (P=0.004) as well as a significant decrease in adjusted 1-year PJI from 2.2% [CI 1.5-3.3%] in 2017 to 1.1% [CI 0.9-1.4%] in 2020.

DISCUSSION AND CONCLUSION: We did not identify significant overall temporal trends in prescribing patterns of prophylactic oral antibiotics in this outpatient cohort. However, there were some significant changes for TKA including increased prophylaxis from earlier years to 2020 and decreased infections. Further research is needed to understand how prescribing patterns coincide with the incidence of periprosthetic joint infection, especially for TKA.

Figure 1. Adjusted probabilities over time for (A, D) receipt of any prophylactic antibiotics (B, E) surgical site infection and (C, F) periprosthetic joint infection for outpatient total hip and knee arthroplasty

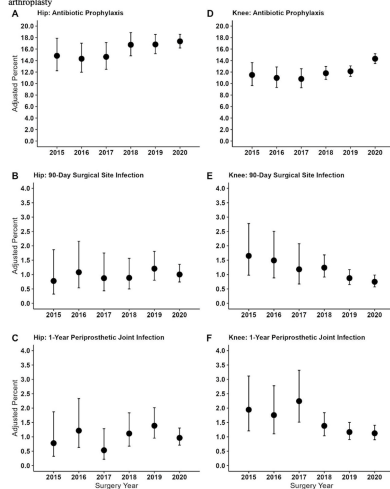


Table 1. Unadjusted percentages for receipt of prophylactic antibiotics and outcomes for outpatient total hip and knee arthroplasty

	Total Hip						Total Knee					
	2015 (%)	2016 (%)	2017 (%)	2018 (%)	2019 (%)	2020 (%)	2015 (%)	2016 (%)	2017 (%)	2018 (%)	2019 (%)	2020 (%)
Any perioperative antibiotic	16.3	15.9	16.8	19.2	19.4	17.1	14.6	14.7	15.3	13.0	13.1	15.1
Cephalexin	72.2	67.5	72.7	67.6	64.0	52.4	<0.001	66.1	71.4	64.9	61.6	57.5
Cefadroxil	*	*	*	4.5	12.2	22.4	<0.001	*	*	*	10.4	10.4
Clindamycin Hydrochloride	*	*	9.1	7.4	8.1	6.0	0.09	10.2	9.5	11.1	7.0	6.4
Sulfamethoxazole/Trimethoprim	*	*	*	*	4.9	6.1	0.12	*	*	*	5.3	7.5
Doxycycline	*	*	*	*	*	6.5	0.005	*	*	*	3.9	6.2
90-Day Surgical Site Infection	*	*	*	0.9	1.3	1.2	0.32	1.6	1.4	1.1	1.3	0.9
1-Year Periprosthetic Joint Infection	*	*	*	1.3	1.5	1.2	0.26	2.0	1.8	2.1	1.5	1.2
90-Day Emergency Department Visit	8.4	7.4	8.5	9.1	9.5	8.7	0.41	10.6	12.6	11.6	12.3	10.8
90-Day Readmission	4.4	2.9	2.8	2.7	3.1	2.8	0.21	6.0	4.8	4.0	3.5	3.7

Based on Cochran-Armitage Trend Test; *Among those receiving perioperative antibiotics
*Cell size suppressed to comply with data use agreement (n <11)