

From Operating Room to the Emergency Room: Characterizing Patient-Level Risk Factors of Emergency Department Utilization Following Total Knee Arthroplasty

Manjot Singh, Zachary Fuller, Joyce Margot Harary, Peter Schilling, Wayne E Moschetti

INTRODUCTION: Emergency department (ED) visits may occur in the early postoperative period following total knee arthroplasty (TKA). Understanding the patient-level risk factors and the most frequent clinical triggers of these visitations may provide insights into caring for these patients and reducing unnecessary healthcare utilization.

METHODS:

Patients who underwent TKA between 2018-2024 and used a web-based home therapy program were included in this retrospective cohort study. Free-text explanations of ED visitations were independently open-coded by two investigators to identify overarching themes. Demographics, comorbidities, and patient-reported outcome measures (PROMs) were evaluated in patients who utilized ED services within 90 days of surgery. Backward logistic regression was performed to identify preoperative predictors of ED utilization.

RESULTS: Among 1,957 patients (mean age 69.5 years, 56% female), 240 (12%) presented to the ED within 90 days of their TKA. The most common reasons were knee pain/swelling (22%), respiratory illness (22%), and local or systemic infection (16%). Compared to non-users, ED users had higher rates of hypercholesterolemia (29% vs 21%), heart disease (15% vs 8%), depression (18% vs 11%), and diabetes (14% vs 10%). ED users were more likely to report preoperative falls (40% vs 32%), assistive device use (22% vs 17%), pain medication use (13% vs 9%), and unemployment (70% vs 62%) (all $p < 0.05$). ED users also had worse PROMIS Overall, Physical, and Mental, and HOOS JR scores, both preoperatively and 1-year postoperatively ($p < 0.05$) (**Table 1**). Regression analysis identified heart disease (OR=2.0, 95% CI=1.3-3.1, $p=0.002$), depression (OR=1.6, 95% CI=1.1-2.4, $p=0.026$), diabetes (OR=1.6, 95% CI=1.1-2.5, $p=0.031$), and preoperative fall history (OR=1.6, 95% CI=1.2-2.2, $p=0.004$) as independent predictors of ED utilization.

DISCUSSION AND CONCLUSION: Nearly one in ten patients sought ED care after TKA, most often due to postoperative pain, swelling, or infection. Preoperative history of heart disease, depression, diabetes, and falls may heighten this risk.

Table 1. Patient-Reported Outcome Measures

PROM	Timepoint	No ER Visit (N = 1518)	ER Visit (N = 170)	P-value
VAS Pain	Pre	5.66 (1.96)	5.93 (1.83)	0.062
	1Y	2.63 (1.73)	2.72 (1.67)	0.780
	Δ1Y	-3.13 (2.27)	-3.58 (2.01)	0.295
PROMIS Overall	Pre	34.54 (6.22)	33.08 (6.41)	<0.001
	1Y	38.88 (6.37)	36.36 (7.11)	<0.001
	Δ1Y	4.33 (4.79)	3.57 (5.47)	0.043
PROMIS Physical	Pre	42.23 (6.49)	40.75 (5.96)	0.001
	1Y	50.48 (7.43)	47.71 (8.02)	<0.001
	Δ1Y	8.31 (6.62)	7.29 (6.74)	0.046
PROMIS Mental	Pre	50.95 (8.14)	49.41 (8.86)	0.008
	1Y	53.56 (8.54)	50.84 (8.96)	<0.001
	Δ1Y	2.58 (6.10)	1.63 (7.09)	0.050
HOOS Jr	Pre	52.02 (11.93)	50.11 (12.01)	0.024
	1Y	77.22 (13.63)	74.50 (15.08)	0.009
	Δ1Y	25.42 (15.77)	24.57 (16.52)	0.485