

# Postoperative Physical Therapy Use and Outcomes among Commercially Insured Patients Undergoing Total Knee Arthroplasty

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**INTRODUCTION:** Postoperative physical therapy (PT) has been recommended as an essential component in the recovery of total knee arthroplasty (TKA). However, recent literature has shown that long duration or home setting of PT are associated with worse clinical outcomes. In order to investigate this topic among the US population, we analyzed a nationwide database to understand the clinical outcomes and financial burden of postoperative PT.

**METHODS:** A total of 164,510 TKAs with a diagnosis of osteoarthritis were queried from the Merative MarketScan Commercial and Medicare Supplemental Database based on CPT and ICD-10 codes. The 30-day readmission rate, 90-day reoperation (including manipulation under anesthesia (MUA)) rate, 90-day postoperative outpatient care costs, number of orthopedic clinic visits, and costs of orthopedic clinic visits were compared between TKA patients who received PT and those who did not. Comparisons were also made among PT settings (home, clinic, or combined). Univariate and multivariate analyses were performed to detect these associations.

**RESULTS:** There were significant differences in age, TKA setting (inpatient vs. outpatient), insurance type, region, and Charlson Comorbidity Index between patients who underwent PT and those who did not. In both univariate and multivariate analyses, patients who had postoperative PT demonstrated higher readmission rate (7.9% vs 6.7%, odds ratio=1.2, p<0.001), higher reoperation rate (4.2% vs 1.4%, odds ratio=2.75, p<0.001), higher postoperative spending (\$4379.25 vs \$2631.87, coefficient=1635.51, p<0.001), and higher spending on orthopedic clinic visits (\$9.84 vs \$5.80, coefficient=3.471, p<0.001). Among those who attended PT, 99,338 patients received PT in clinic, 2,540 patients received home PT, and 53,755 received PT from both settings. Patients who received PT at a dedicated clinic had significantly lower 30-day readmission rate, higher reoperation rate, and lower postoperative outpatient spendings compared to those who underwent home PT.

**DISCUSSION AND CONCLUSION:** Postoperative physical therapy utilization following TKA was associated with increased rates of readmission and reoperation, suggesting inferior clinical outcomes. Among commercially insured patients, elevated postoperative healthcare expenditures did not correlate with improved outcomes, underscoring the need for critical evaluation of PT-related resource utilization and value optimization in postoperative care.

Table 1. Patient Characteristics comparison between Total Knee Arthroplasty Patients who had postoperative physical therapy and those who did not have (n=164,510)

	Total	Had postoperative PT within 90 days	No PT	p-value
n	164510	155989	8521	
Age (mean (SD))	63.15 (9.02)	63.05 (8.95)	65.04 (10.06)	<0.001
Outpatient vs. Inpatient (%)	112700 (68.5)	108169 (69.3)	4531 (53.2)	<0.001
Region (%)				<0.001
Northeast	19004 (11.5)	17600 (11.3)	1404 (16.5)	
North Central	61350 (37.3)	58632 (37.6)	2718 (31.9)	
South	64788 (39.4)	61455 (39.4)	3333 (39.1)	
West	19111 (11.6)	18083 (11.6)	1028 (12.1)	
Unknown	257 (0.1)	219 (0.1)	38 (0.4)	
Female (%)	97473 (59.2)	92433 (59.3)	5040 (59.1)	0.85
Medicare (%)	52273 (31.8)	48838 (31.3)	3435 (40.3)	<0.001
Charlson Comorbidity Index (mean (SD))	2.22 (1.29)	2.21 (1.28)	2.43 (1.41)	<0.001

Table 2. Outcomes comparison between those who had PT and those who did not (n=164,510)

	Total	Had postoperative PT within 90 days	No PT	p-value	Multivariable odds ratio/coefficient	p-value
n	164510	155989	8521			
30-day readmission (%)	12953 (7.9)	12384 (7.9)	569 (6.7)	<0.001	1.2 OR	<0.001
90-day reoperation (including MUA) (%)	6637 (4.0)	6514 (4.2)	123 (1.4)	<0.001	2.75 OR	<0.001
All postoperative outpatient services costs (mean (SD))	4295.86 (5230.06)	4379.25 (5209.91)	2631.87 (5352.38)	<0.001	1635.51 CE	<0.001
No. of orthopedic clinic visits (mean (SD))	0.11 (0.40)	0.11 (0.41)	0.33 (0.33)	<0.001	0.04 CE	<0.001
Orthopedic clinic visits costs (mean (SD))	9.63 (39.74)	9.84 (40.11)	31.92 (31.92)	<0.001	3.47 CE	<0.001

Table 3. Outcomes comparison among those who had PT in different settings (n=155,633)

	Clinic PT	Home PT	Combined	p-value	Multivariable odds ratio/coefficient	p-value
n	8521	164510	155989			
30-day readmission (%)	6841 (6.9)	205 (8.1)	5318 (9.9)	<0.001	Reference (home) 1.02 (combined) 0.72 (clinic)	0.83 <0.001
90-day reoperation (including MUA) (%)	4137 (4.2)	53 (2.1)	2308 (4.3)	<0.001	Reference(home) 2.18 (combined) 2.06 (clinic)	<0.001 <0.001
All postoperative outpatient services costs (mean (SD))	3948.72 (4977.70)	4770.76 (7502.35)	5150.08 (5386.99)	<0.001	Reference(home) 421.06 (combined) 166.72 (clinic)	<0.001 <0.001
No. of orthopedic clinic visits (mean (SD))	0.11 (0.40)	0.14 (0.48)	0.12 (0.41)	<0.001	Reference (home) -0.02 (combined) -0.02 (clinic)	0.04 0.003
Orthopedic clinic visits costs (mean (SD))	9.69 (40.28)	11.67 (46.69)	9.96 (39.22)	0.03	Reference (home) -1.41 (combined) -1.9 (clinic)	0.08 0.02