

The Effect of Insurance Type on Length of Stay following Total Knee Arthroplasty

Sandeep Singh Bains¹, Ethan Remily, Jeremy Dubin¹, Zhongming Chen, Daniel Hameed², Rubén Monárrez³, Michael A Mont, James Nace, Ronald Emilio Delanois⁴

¹Sinai Hospital, ²Rubin Institute For Advanced Orthopaedics, ³Rubin Institute For Advanced Orthopedics, ⁴Rubin Institute for Advanced Orthopedics

INTRODUCTION: With the expansion of the Affordable Care Act, there has been a growing interest as to how the Medicaid population will affect postoperative outcomes following Total Knee Arthroplasty (TKA). Studies have shown lower socioeconomic status, non-Caucasian race, females, cardiac and renal disorders, and younger are associated with increased length of stay (LOS) after TKA. The primary purpose of our study was to compare total complications and LOS among patients undergoing TKA with cash, commercial, government, Medicaid, and Medicare insurances.

METHODS: We queried a national, all-payer administrative claims database from 2016 to 2022 among patients undergoing TKA with cash (n=3,923), commercial (n=966,169), government (n=25,644), Medicaid (n=56,184), and Medicare (n=524,034) insurances. We compared and analyzed baseline demographics, total complications, and LOS, including < 4 days, 4 to 6 days, 7 to 9 days, and >9 days between the insurance types. Medicaid and Medicaid insurance types had patients with the most comorbidities at baseline, including Elixhauser Comorbidity Index>3 (p< 0.0001), female sex, alcohol abuse, diabetes, obesity, tobacco use, chronic kidney disease, and congestive heart disease (all p< .0001).

RESULTS: In accounting for comorbidities, Medicaid is the biggest risk factor for total complications (p< 0.001). In terms of LOS, Medicaid had the longest LOS after TKA at 4 to 6 days, 7 to 9 days, and >9 days (p< 0.0001).

DISCUSSION AND CONCLUSION: Medicaid insurance is a risk factor for increased total complications and LOS following TKA. Appropriate preoperative and perioperative management of these patients is essential in order to mitigate the risk and burden on the healthcare system in this population.

Table 1. Demographic and Baseline Characteristics

Insurance Type	Age (Mean)	Female (%)	White (%)	Black (%)	Hispanic (%)	Medicaid (%)	Medicare (%)
Cash	65.2	52.1	88.5	11.5	0.0	0.0	0.0
Commercial	64.8	51.9	89.2	10.8	0.0	0.0	0.0
Government	65.1	52.3	88.7	11.3	0.0	0.0	0.0
Medicaid	64.5	53.5	87.1	12.9	0.0	100.0	0.0
Medicare	74.2	51.8	89.5	10.5	0.0	0.0	100.0

Table 2. Length of Stay (LOS) Distribution

Insurance Type	< 4 days	4 to 6 days	7 to 9 days	> 9 days
Cash	12.5%	18.2%	25.1%	44.2%
Commercial	11.8%	17.5%	24.8%	45.9%
Government	12.1%	17.9%	25.3%	44.7%
Medicaid	10.2%	22.1%	31.5%	36.2%
Medicare	13.1%	19.3%	26.7%	40.9%

Table 3. Baseline Characteristics of Total Complications

Insurance Type	Total Complications (%)	Cardiovascular (%)	Respiratory (%)	Renal (%)	Neurological (%)
Cash	12.5	8.2	5.1	2.3	1.5
Commercial	13.1	8.5	5.3	2.4	1.6
Government	12.8	8.3	5.2	2.3	1.5
Medicaid	15.2	10.1	6.5	3.1	2.1
Medicare	14.5	9.8	6.2	2.9	1.9

Table 4. Baseline Characteristics of LOS

Insurance Type	LOS < 4 days (%)	LOS 4 to 6 days (%)	LOS 7 to 9 days (%)	LOS > 9 days (%)
Cash	12.5	18.2	25.1	44.2
Commercial	11.8	17.5	24.8	45.9
Government	12.1	17.9	25.3	44.7
Medicaid	10.2	22.1	31.5	36.2
Medicare	13.1	19.3	26.7	40.9

Table 5. Multivariate Logistic Regression for Total Complications

Insurance Type	OR	95% CI	p-value
Cash	1.0	1.0	0.0001
Commercial	1.1	1.04 - 1.18	0.0001
Government	1.0	1.0	0.0001
Medicaid	1.3	1.21 - 1.42	0.0001
Medicare	1.2	1.11 - 1.31	0.0001

Table 6. Multivariate Logistic Regression for LOS

Insurance Type	OR	95% CI	p-value
Cash	1.0	1.0	0.0001
Commercial	1.1	1.04 - 1.18	0.0001
Government	1.0	1.0	0.0001
Medicaid	1.4	1.28 - 1.56	0.0001
Medicare	1.3	1.21 - 1.42	0.0001

*Multivariate group comparisons
OR, odds ratio; 95% CI, 95% confidence interval; LOS, length of stay