Does Medicare Advantage Actually Give an *Advantage?* A comparison of Total Knee Arthroplasty Outcomes between Patients with Traditional Medicare and Medicare Advantage

Adrianna Vaskas, Shadi A Baajour, Yagiz Ozdag, John J. Mercuri

INTRODUCTION: The Medicare Advantage (MA) program was started in 2003 with the goal of reducing costs and enhancing the quality of care. MA plans are administered by private insurance companies, which is how MA mainly differs from Traditional Medicare (TM). With increasing enrollment in MA and changes in TM, it is uncertain how these changes have affected total knee arthroplasty (TKA) outcomes. Despite the changing landscape seen in the world of insurance and benefit plans, little research has been done on the impact benefit plans have on TKA outcomes.

METHODS: This was a retrospective study of TKA outcomes for patients who were enrolled in TM and MA with a minimum of two years follow-up. Baseline demographics, surgical variables and surgical outcomes were compared between cohorts using bivariate analyses. We utilized multivariate and linear logistic regression analyses to identify and define risk factors for the complication development after TKA, increased length of stay (LOS), and discharge to a skilled nursing facility (SNF).

RESULTS: 2,287 TM (66.3%) and 1,160 (33.7%) MA patients were identified. On average TM patients were slightly younger (70.9 vs 72, p=0.001) and had lower BMI (32.6 vs 33.3, p=0.003) at the time of TKA. There was lower robotic TKA utilization MA compared to TM (8.7% vs 6%, p=0.001). MA patients had longer LOS (2.1 vs 2.3 days, p=00.001), higher rate of complications (2.9% vs 4.6%, p=0.001) and a higher number of clinical encounters per complication (2 vs 2.2, p=0.007). Carrying MA showed higher odds (OR:1.882 [95%CI; 1.084 -2.332]) for developing complication.

DISCUSSION AND CONCLUSION: Compared to patients with TM, we found that MA beneficiaries required more follow-up encounters, had longer LOS and suffered a higher rate of post-operative complications. Considering these findings, it is uncertain if MA can cut costs or provides higher-quality care for patients undergoing TKA.

	Traditional Medicare (n=2287)	Medicare Advantage (n=1160)	p-value
Average age (SD)	70.9 (7.6)	72 (7.7)	**0.001**
Average BMI (SD)	32.6 (6.5)	33.3 (6.9)	**0.003**
Gender, n (%)			
Male	789 (34.5%)	392 (33.8%)	0.671
Female	1498 (65.5%)	768 (66.2%)	
Race, n (%)			
White	2230 (97.5%)	1140 (98.3%)	
Black/AA	30 (1.3%)	7 (0.6%)	
Asian	10 (0.4%)	2 (0.2%)	0.056
American Indian	3 (0.1%)	1 (0.1%)	
Native Hawaii	6 (0.3%)	1 (0.1%)	
Other/Not Reported	8 (0.3%)	9 (0.8%)	
Laterality, n (%)			
Right	1183 (51.7%)	593 (51.1%)	0.734
Left	1104 (48.3%)	567 (48.9%)	
Active smoker, n (%)	366 (16%)	170 (14.7%)	0.301
Employment status, n (%)			
Retired	1998 (87.4%)	1038 (89.5%)	
Unemployed	163 (7.1%)	63 (5.9%)	**0.029**
Full time	104 (4.5%)	37 (3.2%)	
Part Time	22 (1%)	17 (1.5%)	
Marital Status, n (%)			
Married/with partner	1254 (54.8%)	613 (52.8%)	0.268
Single/Divorced/Separated	1033 (45.2%)	547 (47.2%)	
ASA, n (%)			
One	5 (0.2%)	2 (0.2%)	
Two	842 (36.8%)	381 (32.8%)	0.074
Three	1282 (56.1%)	708 (61%)	
Four	40 (1.7%)	18 (1.6%)	
Average follow-up in years (SD)	4.7 (2.1)[a]	5.1 (2.3)[b]	**0.001**

Table 1: Baseline demographics

a: median follow-up = 4.2 years, b: median follow-up = 4.7

	Traditional Medicare (n=2287)	Medicare Advantage (n=1160)	p-value
Surgical technique, n (%)			
Manual TKA	2089 (91.3%)	1090 (94%)	**0.001**
Robotic TKA	198 (8.7%)	70 (6%)	
Average length of stay (SD)	2.1 (1.3)	2.3 (1.2)	**0.001**
Discharge disposition			
Home	455 (19.9%)	245 (21.1%)	
SNF/Rehab	1830 (80%)	913 (78.7%)	0.544
Other	2 (0.1%)	2 (0.2%)	
Complication Rate, n (%)	67 (2.9%)	53 (4.6%)	**0.013**
Complications, n (%)			
Acute blood loss anemia	62 (92.5%)	49 (92.5%)	
Deep venous thrombosis	-	3 (5.7%)	0.986*
Post-operative malabsorption	2 (3%)	-	
Superficial infection	3 (4.5%)	-	
Periprosthetic joint infection	-	1 (1.9%)	
Average number of clinical encounters per complication (SD)	2 (0)	2.2 (0.6)	**0.007**

Table 2: Surgery and outcomes

*: Chi square test performed for ABLA vs others

Variable	OR [95% CI]	p-value
Age	1.148 [1.018 – 1.546]	**0.017**
BMI	1.034 [1.001 – 1.069]	**0.044**
Manual TKA	1.047 [0.519 – 2.111]	0.897
Retired	1.275 [0.675 – 2.107]	0.454
Male gender	0.788 [0.528 -1.176]	0.243
Married	1.280 [0.867 – 1.891]	0.215
Medicare Advantage Insurance	1.882 [1.084 – 2.332]	**0.018**
ASA		
Two	1.012 [0.998 – 1.369]	0.998
Three	1.017 [0.998 – 1.401]	0.998

Table 3: MVR for patient and surgical variables vs **complication rate**

Variable	OR [95% CI]	p-value
Age	0.998 [0.983 -1.009]	0.553
BMI	0.996 [0.991 – 1.004]	0.166
Manual TKA	0.786 [0.542 – 1.072]	0.119
Retired	0.943 [0.698 – 1.272]	0.699
Male gender	0.958 [0.796 – 1.153]	0.650
Married	1.054 [0.882 – 1.258]	0.565
MedicareAdvantage Insurance	0.903 [0.920 – 1.315]	0.771
ASA		
Two	0.916 [0.714 - 1.002]	0.988
Three	0.927 [0.810 – 1.006]	0.991

Table 4: MVR for patient and surgical variable vs d/c to a SNF/Rehab

Variable	Coefficient [95% CI]	p-value
Age	0.015 [0.008 – 0.022]	**0.001**
BMI	0.018 [0.001 – 0.025]	**0.001**
Manual TKA	0.999 [0.841 – 1.157]	**0.001**
Retired	0.22 [-0.125 – 0.170]	0.767
Male gender	0 [-0.93 – 0.93]	0.992
Married	-0.279 [-.368 – -0.197]	**0.001**
Medicare Advantage Insurance	0.106 [0.016 – 0.197]	**0.021**
ASA		
Two	0.142 [-0.098 – 0.286]	0.891
Three	0.156 [-0.102 – 0.303]	0.926

Table 5: Linear logistic regression for patient and surgery variables vs length of stay