

# Medicare Advantage is Associated with a Higher Rate of Inpatient Mortality following Treatment of Periprosthetic Joint Infection: A Tale of Two Medicares

Nathanael D Heckmann<sup>1</sup>, Julian Wier, Kevin Liu, Mary Richardson<sup>2</sup>, Andrew Vega<sup>3</sup>, Nicholas Bedard<sup>4</sup>, Daniel J Berry<sup>4</sup>, John J Callaghan<sup>5</sup>, Jay R Lieberman<sup>6</sup>

<sup>1</sup>Orthopaedic Surgery, Keck School of Medicine of USC, <sup>2</sup>Keck School of Medicine - Department of Orthopaedi, <sup>3</sup>USC/LAC+USC Medical Center, <sup>4</sup>Mayo Clinic, <sup>5</sup>Univ of Iowa Hospital, <sup>6</sup>Keck School of Medicine of USC

## INTRODUCTION:

Medicare Advantage (MA) plans are gaining popularity as an alternative to traditional Medicare (TM). However, some MA plans require pre-authorization or out-of-network referrals which may delay care for complex surgical problems. As such, the outcomes following the treatment of periprosthetic joint infection (PJI) among MA beneficiaries are unknown. We sought to identify differences in 90-day postoperative mortality and non-fatal adverse events between TM and MA patients undergoing the first stage for the treatment of PJI.

## METHODS:

The Premier Healthcare Database was queried from 2016 to 2020 for adult patients undergoing stage one antibiotic spacer placement for a PJI of the hip or knee. Using International Classification of Disease, Tenth Revision and Current Procedural Terminology codes, patients undergoing a first stage surgery for PJI were screened. This cohort was cross-referenced by using antibiotic charges to verify that an antibiotic spacer was placed. Patients were then grouped into TM and MA cohorts. The primary outcome was odds of 90-day mortality. Secondary outcomes included odds of 90-day medical and surgical complications. Multivariable logistic regressions were created to address possible confounding demographic, comorbidity, and hospital characteristics.

## RESULTS:

Of the 40,346 patients (27,674 total knee arthroplasties, 12,672 total hip arthroplasties) undergoing stage one spacer placement for PJI, 16,637 (41.2%) had TM coverage and 9,218 (22.8%) had MA coverage. Inpatient mortality rates were higher in the MA cohort (1.43% vs. 1.03%, p=0.004). Significantly higher rates of acute respiratory failure (6.39% vs. 5.57%, p=0.007) and pneumonia (3.11% vs. 2.51%, p=0.005) were found in the MA cohort. Multivariable logistic regression models demonstrated higher odds of inpatient mortality (aOR=1.42 95% CI=1.11-1.81, p=0.005), acute respiratory failure (aOR=1.12 95% CI=1.00-1.24, p=0.042), and pneumonia (aOR=1.21 95% CI=1.03-1.42, p=0.019) in the MA cohort. (Table 1)

## DISCUSSION AND CONCLUSION:

Patients with Medicare Advantage plans treated for a PJI of the hip or knee had higher rates of postoperative mortality. Further research is needed to understand the drivers of this concerning finding.

**Table 1:** Univariate and multivariable regression on primary and secondary study outcomes by traditional Medicare and Medicare Advantage insurance status. (aOR: adjusted odds ratio. CI: confidence interval)

Complication	Traditional Medicare N= 16,637		Medicare Advantage N= 9,218		P-Value	aOR	Multivariable Regression		P-Value
	N	%	N	%			95%-CI Lower Bound	95%-CI Upper Bound	
Acute Renal Failure	2849	17.12%	1616	17.53%	0.408	0.99	0.92	1.07	0.793
Acute Respiratory Failure	927	5.57%	589	6.39%	<b>0.007</b>	1.12	1.00	1.24	<b>0.042</b>
Deep Vein Thrombosis	349	2.10%	198	2.15%	0.788	1.05	0.85	1.28	0.666
Myocardial Infarction	164	0.99%	92	1.00%	0.924	0.98	0.74	1.30	0.898
Pulmonary Embolism	140	0.84%	85	0.92%	0.504	1.07	0.81	1.40	0.641
Stroke	106	0.64%	44	0.48%	0.106	0.73	0.51	1.06	0.100
Pneumonia	418	2.51%	287	3.11%	<b>0.005</b>	1.21	1.03	1.42	<b>0.019</b>
Sepsis	1940	11.66%	1150	12.48%	0.053	1.08	1.00	1.18	0.057
Urinary Tract Infection	1040	6.25%	548	5.94%	0.326	0.92	0.82	1.03	0.135
Wound Dehiscence	1015	6.10%	565	6.13%	0.927	0.97	0.87	1.08	0.620
Inpatient Mortality	171	1.03%	132	1.43%	<b>0.004</b>	1.42	1.11	1.81	<b>0.005</b>