

# A 90-Day Episode of Care Cost Analysis of Robotic-Assisted Total Knee Arthroplasty

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## Goal of the study

This was a longitudinal, retrospective analysis of payer (CMS Medicare) claims data designed to evaluate the 90-day episode of care (EOC) for manual (mTKA) vs. robotic-arm assisted (rTKA) total knee arthroplasties.

## Materials and methods

Primary TKA procedures were identified using the Medicare 100% Standard Analytic Files (SAF) including:

- Inpatient services
- Hospital outpatient (HOPD) services
- Skilled Nursing Facility (SNF) services
- Home Health Care (HHC) services

**Period analyzed:** 1/1/2016 to 3/31/2017. After propensity score matching in a 1-to-5 ratio, robotic to manual based on age, sex, race, geographic division, and comorbidities, 519 rTKA and 2,595 mTKA were included for analysis. Ninety-day episode-of-care cost, index cost, LOS, discharge disposition and readmission rates were assessed.

## Results

- Average 90-day Medicare EOC costs were \$2,391 less for rTKA patients compared to mTKA patients (\$18,568 vs. \$20,960; p<.0001).
- Index facility costs were \$640 less for rTKA patients compared to manual (\$12,384 vs. \$13,024; p=.0001).
- rTKAs were associated with a LOS reduction of 0.7 days (p<0.0001).
- rTKA patients were discharged to SNF less frequently (12.52% vs. 21.70%; p<0.0001) and home with health aid (56.65% vs. 46.67%; p<0.0001) or self-care (27.55% vs. 23.62%; p=0.0566) more frequently.
- rTKA patients had a 90-day readmission reduction of 33% (p=.0423).

Discharge status	% mTKA	% rTKA	% difference	Statistically significant
Discharged/transferred to HHC home care	46.67%	56.65%	21.39%	p<0.0001
Discharged to home self-care	23.62%	27.55%	16.64%	p=0.0566
Discharged/transferred to SNF	21.70%	12.52%	-41.27%	p<0.0001

## Conclusion

- rTKA patients had overall lower average 90-day EOC cost compared to mTKA.
- Cost savings were driven by:
  - Reduced index facility costs
  - Lower LOS
  - Discharge destinations
  - Decreased readmissions

Average costs	rTKA	mTKA	p-value
Index facility costs	\$12,384	\$13,024	0.0001
Total 90-day EOC	\$18,568	\$20,960	<0.0001

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