

Out-of-Pocket Cost Burden in Patients Undergoing Unicompartmental, Total, and Revision Knee Arthroplasty

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INTRODUCTION:

Out-of-pocket costs (OOPC) associated with medical and surgical care can cause significant financial burden for patients. There is little information showcasing OOPC for knee arthroplasty and its associated change over time. The purpose of this study was to quantify and trend OOPC for the surgical treatment of unicompartmental (UKA), total (TKA), and revision knee arthroplasty (revTKA).

METHODS:

A retrospective analysis of patients who underwent UKA, TKA, and revTKA from 2015-2020 was conducted using a commercial insurance claims database. Patients were identified using Current Procedure Terminology (CPT) and International Classification of Disease (ICD) 10- procedure codes. The primary outcome variable was OOPC, calculated as the sum of deductibles, copayments, and coinsurance. All financial data was adjusted to 2020 US dollars using the Bureau of Labor Statistics' Consumer Price Index (CPI). Total net payments from health insurance was also recorded. The ratio of OOP costs to total net payments was calculated. Payments were stratified by occurrence preoperatively, directly attributable to the surgery, and postoperatively. Generalized linear regression, Chi-Square, and Wilcoxon-Mann-Whitney, and Kruskal-Wallis tests were utilized, as appropriate.

RESULTS:

In total, 9,259 UKA, 34,942 TKA, and 1,297 revTKA patients were included in the analysis. The total calculated OOPC for UKA, TKA, and revTKA patients were \$2,661 (standard deviation [SD]: \$2,372), \$2,472 (SD: \$1,990), and \$1,978 (SD: \$1,791), respectively. The total net payments were \$26,922 (SD=14,730) for UKA surgery, \$26,641 (\$16,002) for TKA surgery, and \$21,839 (\$18,145) for revTKA surgery. Total OOPC as well as the total net payments from insurance significantly increased from 2015 to 2020 for all three evaluated surgical procedures ($P < 0.05$). However, there was no significant increase in OOPC ratio to total net payments in any of the evaluated surgical procedures ($P > 0.05$). For all knee arthroplasties, the highest OOPC were seen in patients with High-Deductible Health Plan (HDHP) insurance while the lowest were seen in those with Point of Service (POS) with capitation. OOPC was significantly higher when surgeries were performed in an ambulatory surgical center (ASC) (\$2,944[SD(\$2105)]) when compared to outpatient hospital setting (\$2,366[\$1932]), $p < 0.01$.

DISCUSSION AND CONCLUSION: Out-of-pocket costs significantly increased over time for all the surgeries evaluated with higher costs incurred in the ASC. There was significant variation between commercial insurance types, with HDHP plans exhibiting the highest OOPC. Given the growing burden of healthcare costs, it is crucial for physicians and patients to have a comprehensive understanding of the growing OOPC associated with knee arthroplasty procedures.

Figure 1: Total Out-of-Pocket Costs (OOPC) in 2020 USD for unilateral knee arthroplasty (UKA), total knee arthroplasty (TKA) and revision total arthroplasty (revTKA) from the years 2015-2020.

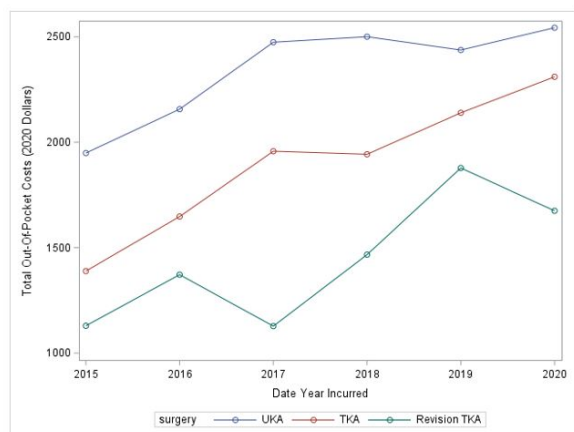


Figure 2: Ratio of OOPC to total net payments in TKA by commercial insurances for the years 2015-2020.

