

# INFLUENCE OF MEDICAID AND MEDICARE ON TOTAL JOINT ARTHROPLASTY OUTCOMES: 10-year Report of Michigan Hospitals

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## INTRODUCTION

- Access to healthcare significantly varies by medical insurance type, particularly for individuals for low socioeconomic status.
  - Medicaid often covers these individuals (a government-funded program for low-income adults and children).
  - Only 45% of primary care providers accept new Medicaid patients, versus 94% for private insurance.<sup>1</sup>
  - Large non-profit medical centers accept Medicaid but still present considerable access challenges for patients.
  - Lower reimbursement rates, complex medical needs, and extensive administrative requirements are key barriers for providers accepting Medicaid.
- Studies, such as those by Deans et al., highlight greater travel burdens for Medicaid patients needing revision hip or knee arthroplasty.<sup>2</sup>
- Medicaid patients often receive care in facilities where surgeries are performed less frequently, correlating with poorer outcomes.<sup>3</sup>
- Medicare primarily serves the over-65 demographic, those with disabilities, and end-stage renal disease patients → a significant portion of orthopedic cases
  - Better access than Medicaid but challenged by declining reimbursements.

## Purpose

- To elucidate the impact of insurance type—Medicaid, Medicare, and private insurance—on short-term outcomes, complications, and patient reported outcomes (PRO's) following total joint arthroplasty over a ten-year period.

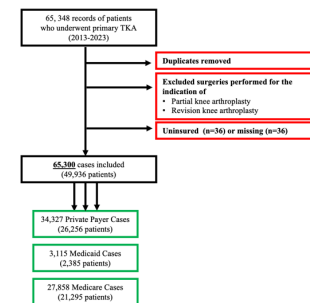
## Hypothesis

- Individuals with Medicaid or Medicare are hypothesized to experience higher complication rates and inferior PROs compared to those with private insurance

## METHODS

- Patients who underwent primary total hip arthroplasty (THA) or total knee arthroplasty (TKA) from 2013 to 2023 were identified from Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI) database.
- Patients were separated into three groups based on their primary insurance payer type: Medicaid, Medicare, and private-payer insurance (including Medicare Advantage plans).
- Outcome variables of interest were evaluated at 90 days postoperatively and included: emergency department (ED) visits, readmissions, death, DVT, PE, urinary tract infections (UTIs), dislocation, fracture, hematoma, periprosthetic joint infection (PJI), and the occurrence of events within 90 days of surgery.
- Patient Reported Outcomes Measurement Information System (PROMIS) Mental and Physical scores, Knee injury and Osteoarthritis Outcome Score (KOOS), and Hip injury and Osteoarthritis Outcome Score (HOOS) were collected pre-operatively and at 12-114 days.
- All statistical analyses were performed using SAS v9.4.

Figure 1. Flow chart of excluded and included patients with reasoning according to STROBE standards.



## RESULTS

- Our cohort consisted of 65,300 TJA cases (49,936 patients), with 52.6% privately insured, 42.64% Medicare, and 4.77% Medicaid. Medicaid recipients were younger, with higher BMIs, smoking rates, and preoperative opioid usage ( $p < 0.001$ ).
- Medicaid patients had 81.7% higher emergency department visit odds than those privately insured and 63.6% more than Medicare ( $p < 0.001$ ).
- Medicaid is associated with a 63.3% increase in developing deep vein thrombosis (DVT) compared to private insurance ( $p = 0.0119$ ). Medicaid and Medicare patients faced 24.3% and 31.1% greater readmission odds to the hospital than privately insured ( $p < 0.0001$ ).
- Medicare patients had higher odds of urinary tract infections (UTI), periprosthetic joint infections (PJI), dislocation, and fracture ( $p < 0.001$ ).
- Private-payer patients were less likely to take pre-operative medications and had fewer 90-day post-operation complications ( $p < 0.0001$ ).
- Medicaid patients reported the lowest pre- and post-operative Patient Reported Outcomes Measurement Information System (PROMIS) Mental and Physical scores, Knee injury and Osteoarthritis Outcome Score (KOOS), and Hip injury and Osteoarthritis Outcome Score (HOOS), although they exhibited the greatest improvement in KOOS and HOOS scores after surgery.

TABLE 1. Patient characteristics and demographics of patients with Medicaid, Medicare, and private payer insurance.

| Characteristic         | Medicaid Cohort | Medicare Cohort | Private Cohort | Significance |
|------------------------|-----------------|-----------------|----------------|--------------|
| Age, Mean ± SD (range) | 58.1 (14.7)     | 71.8 (10.4)     | 68.1 (12.5)    | <.0001*      |
| Female, %              | 48.1 (21.2%)    | 48.1 (21.2%)    | 48.1 (21.2%)   | <.0001*      |
| White, %               | 78.1 (36.2%)    | 78.1 (36.2%)    | 78.1 (36.2%)   | <.0001*      |
| Black, %               | 18.1 (8.5%)     | 18.1 (8.5%)     | 18.1 (8.5%)    | <.0001*      |
| Hispanic, %            | 4.1 (1.9%)      | 4.1 (1.9%)      | 4.1 (1.9%)     | <.0001*      |
| Other, %               | 0.1 (0.0%)      | 0.1 (0.0%)      | 0.1 (0.0%)     | <.0001*      |
| Married, %             | 48.1 (21.2%)    | 48.1 (21.2%)    | 48.1 (21.2%)   | <.0001*      |
| Unemployed, %          | 18.1 (8.5%)     | 18.1 (8.5%)     | 18.1 (8.5%)    | <.0001*      |
| Medicaid, %            | 4.77 (2.2%)     | 4.77 (2.2%)     | 4.77 (2.2%)    | <.0001*      |
| Medicare, %            | 42.64 (19.8%)   | 42.64 (19.8%)   | 42.64 (19.8%)  | <.0001*      |
| Private, %             | 52.6 (24.3%)    | 52.6 (24.3%)    | 52.6 (24.3%)   | <.0001*      |

FIGURE 2. 90-Day postoperative events of patients with Medicaid vs. Medicare vs Private payer insurance for primary total knee arthroplasty

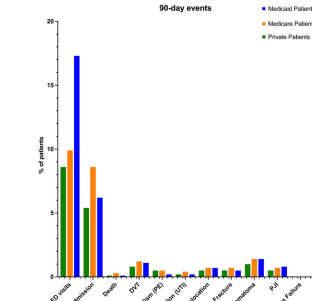
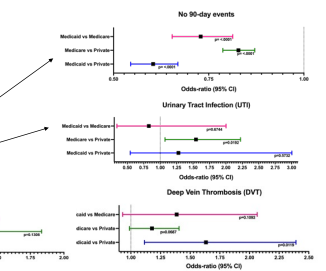


TABLE 3. Comparison of Preoperative and Postoperative PROMIS, KOOS, and HOOS Scores by Insurance Type

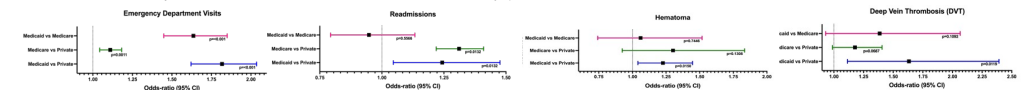
| Insurance Type | Preoperative | Postoperative | N    | P-value |
|----------------|--------------|---------------|------|---------|
| Medicaid       | 32.2 (12.2)  | 44.0 (17.1)   | 1111 | <.0001* |
| Medicare       | 38.1 (14.5)  | 49.9 (19.4)   | 1187 | <.0001* |
| Private        | 48.1 (18.8)  | 59.9 (23.1)   | 1187 | <.0001* |

The change (Δ) in scores indicates the degree of improvement, with all groups demonstrating statistically significant improvements ( $p < .0001$ ).



Medicaid cohort is the youngest on average and has a higher percentage of females and Black patients compared to the other groups. The Medicare cohort is the oldest, with the highest percentage of Caucasian patients, and a higher proportion undergoing knee arthroplasty. The private cohort has a higher percentage of patients discharged to home health care.

FIGURE 3. Multivariable-adjusted odds ratios for the absence of adverse events within 90 days post-treatment.



## CONCLUSION

- Insurance payer type is a significant determinant of postoperative outcomes, with Medicaid and Medicare patients experiencing higher complication rates and lower PRO's than their privately insured counterparts. These disparities underscore the necessity for tailored pre- and postoperative management in TJA patients based on insurance status.

## REFERENCES

<sup>1</sup>Hsiang WR, Lukaszewicz A, Gentry M, et al. Medicaid patients have greater difficulty scheduling health care appointments compared with private insurance patients: a meta-analysis. *Inquiry*. 2019;56:46958019838118. doi:10.1177/0046958019838118.

<sup>2</sup>Deans CJ, Hudson LA, Ziembka-Davis M, Meneghini RM, Buller LT. Medicaid patients travel disproportionately farther for revision total joint arthroplasty. *J Arthroplasty*. 2024;39(1):32-37. doi:10.1016/j.arth.2023.08.001.

<sup>3</sup>Cohen-Rosenblum A, Richardson NK, Liu KC, et al. Medicaid patients undergo total joint arthroplasty at lower-volume hospitals by lower-volume surgeons and have poorer outcomes. *J Bone Joint Surg Am*. 2023;105(13):979-989. doi:10.2106/JBJS.22.01336.