Interstate Variations in Cost and Volume Shifts After Removal of Primary Joint Arthroplasty Procedures From the Medicare Inpatient Only List

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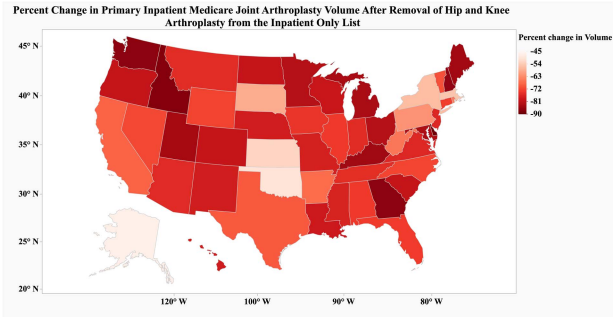
INTRODUCTION:
The landscape of Medicare joint arthroplasty (JA) was fundamentally changed when total knee arthroplasty (TKA) and total hip arthroplasty (THA) procedures were removed from the Inpatient Only (IPO) List in 2018 and 2020, respectively. Currently, since Medicare outpatient JA procedures are covered, many factors affect whether a given Medicare JA is performed as an inpatient or outpatient procedure. Logically, these include comorbidities and healthcare access. However, some research has shown that there are racial, gender and socioeconomic disparities in access to outpatient JA. The current study sought to quantify the variations in the shift away from inpatient Medicare JA, and the consequences of this redistribution on the amount patients must pay for inpatient JA procedures.

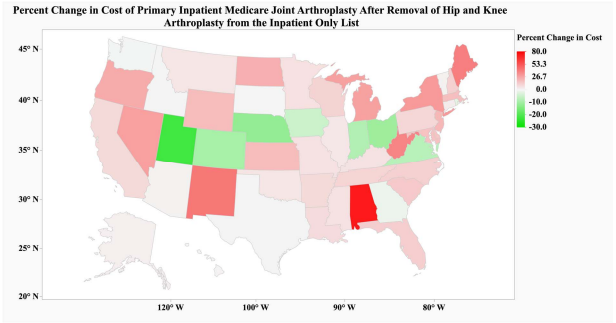
METHODS:
This retrospective study of the Medicare Inpatient Hospitals database collected all Medicare inpatient primary hip and knee arthroplasty procedures for three years before TKA was removed from the IPO list (2015-2017) and three years after both TKA and THA had been removed (2020-2022). This database included 1,960,946 arthroplasties at 2,828 hospitals. Patient/third-party payments were calculated as the portion of total payment not covered by Medicare. Discharge weighted averages across states and study periods were calculated. T tests and analyses of variance were utilized to compare groups and study periods.

RESULTS:
After removal of primary JA procedures from the IPO list, the nationwide volume of inpatient Medicare JAs decreased by 73.3%. In addition, these inpatient procedures were on average significantly more expensive in the post-IPO-list-removal years ($3234.97 vs. $2915.85, $p<0.0001$). However, these changes in inpatient volume and cost were highly variable across the U.S. While all states exhibited decreased inpatient volume, the volume in Alaska and Oklahoma decreased by 46.7% and 49.7% whereas Idaho and Delaware exhibited decreases of 87.3% and 89.2%, respectively. Interestingly, some of the states that contained high volume arthroplasty centers such as New York and Massachusetts demonstrated less substantial reductions in inpatient Medicare JA volume (56.0% and 54.9% declines, respectively).

The changes in cost of these inpatient procedures after JA removal from the IPO list displayed even greater geographic variation. At the extremes, the cost of arthroplasty increased by 74.9% in Alabama ($p<0.0001$) and declined by 22.1% in Utah ($p=0.0029$). Eleven states exhibited price decreases while all others and Washington DC sustained price increases. The changes in arthroplasty cost following removal from the IPO list, did not normalize the cost of JA across the country or relieve existing geographic cost disparities. Both before and after JA removal from the IPO list there was a statistically significant difference in JA cost by state ($p<0.0001$ for both time periods).

DISCUSSION AND CONCLUSION:
The wide geographic variability in the shift away from inpatient Medicare primary JA suggests disparate rates of adoption of outpatient JA. These differences, and the wide divergence in JA costs are potentially impacted by interstate differences in availability of outpatient surgical centers and local healthcare economic environments. For example, it is possible that some states with smaller percentage reductions in inpatient volume such as Alaska and Oklahoma exhibit this behavior because they lack significant ambulatory surgical center infrastructure; whereas states like New York and Massachusetts exhibit similar behavior because their high volume surgical centers serve many medically complicated patients who may not be appropriate outpatient JA candidates. The disparities in the shift to outpatient care and the resultant changes in the cost of inpatient care may greatly impact the type of care accessible to patients and compound with existing disparities across other demographic and population factors.


Percent Change in Primary Inpatient Medicare Joint Arthroplasty Volume After Removal of Hip and Knee Arthroplasty from the Inpatient Only List
Percent change in Volume
-45
-54
-63
-72
-81
-90
45° N
40° N
35° N
30° N
25° N
20° N
120° W
100° W
90° W
80° W


Percent Change in Cost of Primary Inpatient Medicare Joint Arthroplasty After Removal of Hip and Knee Arthroplasty from the Inpatient Only List
Percent Change in Cost
80.0
53.3
26.7
0.0
-10.0
-20.0
-30.0
45° N
40° N
35° N
30° N
25° N
20° N
120° W
100° W
90° W
80° W