Association of Medicare Merit-Based Incentive Payment System Quality Scores with Unplanned Hospital Visits after Outpatient Orthopaedic Surgery

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INTRODUCTION:

The Medicare Merit-Based Incentive Payment System (MIPS) ties financial incentives to clinician performance with the goal of improving quality of care. Clinicians in the MIPS program may receive a bonus or penalty based on the overall MIPS score. The overall MIPS score could change a clinician's reimbursement by as much as 7% in 2021 based on 2019 performance. Clinicians are required to report only six of 271 possible measures for the quality component of the MIPS score. The MIPS quality score is primarily computed from process measures which are not necessarily associated with outcomes representing quality of care. Medicare has recently indicated that the risk-adjusted rate of unplanned hospital visits following outpatient surgery is an important marker of healthcare quality by linking facility reimbursement to public reporting of this metric. Our purpose was to evaluate the association of surgeon MIPS quality scores with unplanned hospital visits within 7 or 30 days of outpatient orthopaedic surgery (i.e., surgeries performed in both hospital outpatient departments [HOPDs] and ambulatory surgery centers [ASCs]) among Medicare beneficiaries.

METHODS:

We used the 2018-2019 files from the New York Statewide Planning and Research Cooperative System (SPARCS) database. We included patients undergoing outpatient orthopaedic surgical procedures performed in HOPDs and ASCs. Because MIPS is a Medicare program, we limited the cohort to patients with Medicare fee-for-service insurance only. Our primary outcome was unplanned hospital visits (any emergency department visit, observation stay, or unplanned inpatient admission) within 7 days of outpatient orthopaedic surgery. Our secondary outcome was unplanned hospital visits within 30 days of outpatient orthopaedic surgery. We used Medicare's algorithm to determine whether admissions were planned vs. unplanned based on diagnoses and procedures performed during postoperative hospital visits. Our key independent variables were percentile-based categories of the MIPS quality score and whether or not surgeons participated in MIPS. We estimated multivariable logistic regression models to examine the association of interest. These models controlled for patient demographics, medical comorbidities, surgical procedure, surgeon volume, and facility characteristics in our multivariable analysis.

RESULTS:

There were 37,735 outpatient orthopaedic surgical encounters included in our study. The mean (standard deviation [SD]) MIPS quality score was 77.30 (29.34) (Table 1). For the 37,735 outpatient orthopaedic surgeries included in our study, the mean (SD) age of patients was 73.18 (6.46) years, 31,550 (83.6%) were White, 22,071 (58.5%) were female, 2,686 (7.1%) were dually eligible for both Medicare and Medicaid. The majority of surgeries were performed in facilities with bed-size <200 (53.4%), and 61.7% were performed in not-for-profit hospitals. There were 606 (1.6%) and 783 (2.1%) encounters that had an unplanned hospital visit within 7 or 30 days of outpatient orthopaedic surgery, respectively. The majority of hospital visits within 7 days (95.0%) or 30 days (93.6%) were due to ED visits.

After controlling for patient-, surgeon-, and facility-level covariates, the adjusted rates of unplanned hospital visits within seven days of outpatient orthopaedic surgery were 1.76% (95% confidence interval [CI] 1.30 to 2.22 %), 1.05 (95% CI 0.73 to 1.38 %), 1.28 % (95% CI 0.96 to 1.60%), and 1.37% (95% CI 1.04 to 1.69%) for patients undergoing surgery with surgeons in the 0-19th, 20-39th, 40-59th, and 60-100th percentiles of MIPS quality score, respectively (Table 2). When compared to patients undergoing surgery with a surgeon in the 0-19th percentile of MIPS quality score, odds of postoperative unplanned hospital visits were 45% lower (OR 0.55, 95% CI 0.37 to 0.82, P=0.003) and 31% lower (OR 0.69, 95% CI 0.48 to 0.94, P=.046) for patients undergoing surgery with a surgeon in the 20-39th and 40-59th percentile of MIPS quality score at 7 days, respectively. When compared to patients undergoing surgery with a surgeon in the 0-19th percentile of MIPS quality score, odds of postoperative unplanned hospital visits were 33% lower (OR 0.67, 95% CI 0.48 to 0.94, P=0.02) for patients undergoing surgery with a surgeon in the 20-39th percentile of MIPS quality score at 30 days (Table 3). There were no differences in adjusted rates of postoperative unplanned hospital visits at 7 or 30 days for other MIPS quality scores (Table 3).

DISCUSSION AND CONCLUSION:

Higher surgeon MIPS quality scores were associated with lower rates of unplanned hospital visits after outpatient surgery. This study highlights the limited validity of the MIPS quality score for outpatient orthopaedic surgery. Given these modest findings, the quality component of the MIPS score may be providing some incentive for surgeon performance but may not be fully aligning incentives between patients, surgeons, and Medicare for outpatient orthopaedic surgery.

Table 1. MIPS, patient, and facility characteristics.

N=37,751 Characteristic	
MIPS Characteristics	
MIPS Quality Score: Mean (SD)	77.20 (28.34)
MIPS Quality Score Percentile: N (%)	
0-19	5,323 (14.1%)
20-39	5,861 (15.5%)
40-59	5,129 (13.6%)
60-100	10,201 (27.0%)
MIPS Participant, Missing	2,665 (7.1%)
Not Participating in MIPS	8,536 (22.6%)
MIPS Source: N (%)	
Individual	7,311 (18.8%)
Group	12,871 (34.1%)
APM	9,217 (24.4%)
Patient Characteristics	
Age: Mean (SD)	73.181 (8.48)
Race and Ethnicity: N (%)	
Non-Hispanic White	31,350 (83.0%)
Non-Hispanic Black	1,447 (3.8%)
Hispanic	1,173 (3.1%)
Asian	262 (0.7%)
Other	3,303 (8.8%)
Gender: N (%)	
Male	15,664 (41.5%)
Female	22,071 (58.5%)
Dual Eligibility Status: N (%)	
Not Dually-Eligible	35,049 (92.9%)
Dually-Eligible	2,688 (7.1%)
Patient Residential Location: N (%)	
Urban	31,871 (84.7%)
Rural	5,764 (15.3%)
Elixhauser Comorbidities: N (%)	
Congestive Heart Failure	778 (2.1%)
Cardiac Arrhythmias	2,414 (6.4%)
Valvular Disease	948 (2.5%)
Pulmonary Circulation Disorders	119 (0.3%)
Peripheral Vascular Disorders	801 (2.1%)
Hypertension, uncomplicated	13,718 (36.4%)
Paralysis	21 (0.1%)
Other Neurological Disorders	525 (1.4%)
Chronic Pulmonary Disease	3,548 (9.4%)
Diabetes, Uncomplicated	4,084 (10.8%)
Diabetes, Complicated	1,390 (3.7%)
Hypothyroidism	3,276 (%)
Liver Disease	165 (0.4%)
Peptic Ulcer Disease Excluding Bleeding	47 (0.1%)
Lymphoma	84 (0.2%)
Metastatic Cancer	77 (0.2%)
Solid Tumor Without Metastasis	299 (0.8%)
Rheumatoid Arthritis/Collagen Vascular Diseases	827 (2.2%)
Coagulopathy	182 (0.5%)
Obesity	2,850 (7.6%)
Weight Loss	∝
Fluid and Electrolyte Disorders	94 (0.2%)
Blood Loss Anemia	∝
Deficiency Anemia	108 (0.3%)
Alcohol Abuse	158 (0.4%)
Drug Abuse	48 (0.1%)
Psychoses	34 (0.1%)
Depression	1,442 (3.8%)
Hypertension, Complicated	1,446 (3.8%)

Abbreviations: MIPS: Merit-Based Incentive Payment System. SD: Standard deviation. N: Number. %: Percentage. APM: Alternative payment model. ASC: Ambulatory Surgery Center. ED: Emergency Department. ∝ indicates masked values in a row with at least one cell containing a value of less than 11 per SPARCS publication policy.

Table 2. Adjusted probabilities (expressed as percentages) for any unplanned hospital visit within 7 days of outpatient orthopedic surgery.

N=37,598 **MIPS Quality Score (Percentile)**	**Adjusted Percentage with Unplanned Hospital Visit within 7 Days (95% CI)**	**Odds Ratio (95% CI)**	**P**
0-19	1.76 (1.30 to 2.22)	Reference	Reference
20-39	1.05 (0.73 to 1.38)	0.55 (0.37 to 0.82)**	0.003
40-59	1.28 (0.96 to 1.60)	0.69 (0.47 to 0.99)*	0.046
60-100	1.37 (1.04 to 1.69)	0.74 (0.51 to 1.08)	0.11
MIPS Participant, Missing	1.37 (0.60 to 2.14)	0.74 (0.37 to 1.48)	0.39
Non-MIPS Participant	2.04 (1.39 to 2.68)	1.19 (0.79 to 1.80)	0.40

Abbreviations: N: Number, MIPS: Merit-Based Incentive Payment System. CI: Confidence Interval. P: P-value from the -margins- command with contrast option in Stata 17.

Notes: Adjusted percentages and 95% confidence intervals, adjusted difference with respect to reference category (MIPS quality score in 0-19th percentile), and odds ratios from multivariable hierarchical regression models controlling for patient- and facility-level covariates and facility random effects. The adjusted outcomes and adjusted differences in outcomes were obtained using the Stata margins command (StataCorp LLC). **: P<0.01, *: P<0.05.

Table 3. Adjusted probabilities (expressed as percentages) for any unplanned hospital visit within 30 days of outpatient orthopedic surgery.

N=37,561 **MIPS Quality Score (Percentile)**	**Adjusted Percentage with Unplanned Hospital Visit within 7 Days (95% CI)**	**Odds Ratio (95% CI)**	**P**
0-19	2.30 (1.77 to 2.82)	Reference	Reference
20-39	1.62 (1.20 to 2.03)	0.67 (0.48 to 0.94)*	0.02
40-59	1.78 (1.38 to 2.18)	0.75 (0.54 to 1.03)	0.08
60-100	1.90 (1.51 to 2.29)	0.80 (0.58 to 1.11)	0.18
MIPS Participant, Missing	1.73 (0.92 to 2.54)	0.72 (0.42 to 1.25)	0.25
Non-MIPS Participant	2.52 (1.84 to 3.21)	1.12 (0.80 to 1.56)	0.52

Abbreviations: N: Number, MIPS: Merit-Based Incentive Payment System. CI: Confidence Interval. P: P-value from the -margins- command in Stata 17 with contrast option.

Notes: Adjusted percentages and 95% confidence intervals, adjusted difference with respect to reference category (MIPS quality score in 0-19th percentile), and odds ratios from multivariable hierarchical regression models controlling for patient- and facility-level covariates and facility random effects. The adjusted outcomes and adjusted differences in outcomes were obtained using the Stata margins command (StataCorp LLC). **: P<0.01, *: P<0.05.