Medicare's New Bundled Payment Rates for Total Hip Arthroplasty Due to Femoral Neck Fracture Do Not Adequately Account for Associated Financial Risks

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INTRODUCTION:
The Centers for Medicare and Medicaid Services (CMS) recently introduced two new Medicare Severity-Diagnosis Related Groups (MS-DRG) to bundle reimbursement rates for total hip arthroplasty (THA) secondary to hip fractures. This study aimed to assess whether the new payment model adequately mitigates the potential financial risks associated with this highly comorbid patient population.
METHODS: The National Surgical Quality Improvement Program (NSQIP) was queried for all primary THAs performed between 2011 and 2018. Two groups were compared: elective THAs secondary to osteoarthritis (control) vs. non-elective THAs due to hip fractures. Multivariate logistic regression analyses were used to calculate cumulative risk for each group to develop a 30-day adverse event as well as associated length of stay (LOS) and discharge destination. The estimated costs associated with each study outcome were then calculated and compared to the control group.
RESULTS: Patients who underwent THA for fracture had significantly greater LOS (4.5 vs. 2.0 days), non-home discharge (OR 3.41, 95% CI 2.44–4.76), and 30-day medical complications (OR 2.94, 95% CI 1.65–5.21). Using conservative estimates, the average costs for THA secondary to hip fractures were at least $29,524 more than elective THA. The new bundled reimbursement rates provide only up to $13,728 increased reimbursement for THA secondary to fracture. This results in a potential underpayment of $15,796 under the new DRGs.
DISCUSSION AND CONCLUSION: Though a step in the right direction, the new reimbursement rates for THA secondary to hip fractures fail to account for the potential financial risks associated with this highly comorbid patient population.

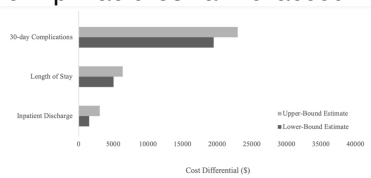

Table 1: Patient characteristics for the THA patient cohorts

	Elective THA (Control)	Non-elective THA (Fracture)	*p*-Value
N (% of total)	88,176 (99.3%)	666 (0.7%)	—
Demographic Characteristics			
Age (years)	65.4 ± 10.6	70.9 ± 13.1	***<0.001***
Sex (male)	39,779 (45.1%)	230 (34.5%)	***<0.001***
BMI	30.5 ± 6.2	25.9 ± 5.7	***<0.001***
Race/Ethnicity			
White	76,122 (86.3%)	567 (85.1%)	0.403
Black	7,742 (8.8%)	28 (4.2%)	***<0.001***
Hispanic	2,934 (3.3%)	30 (4.5%)	0.115
Asian	1,378 (1.6%)	41 (6.2%)	***<0.001***
Comorbidities			
Smoker within 1 year	10,281 (11.7%)	113 (17.0%)	***<0.001***
Chronic steroid use	2,935 (3.3%)	41 (6.2%)	***<0.001***
Diabetes	11,229 (12.7%)	101 (15.2%)	0.070
Hypertension	50,091 (56.8%)	374 (56.2%)	0.765
COPD	3,243 (3.7%)	48 (7.2%)	***<0.001***
Bleeding Disorders	1,628 (1.8%)	35 (5.3%)	***<0.001***
Anemia	25,648 (29.4%)	357 (53.6%)	***<0.001***
Dyspnea	3,707 (4.2%)	31 (4.7%)	0.631
Chronic kidney disease	2,415 (2.7%)	43 (6.5%)	***<0.001***
Perioperative Characteristics			
ASA Physical Classification	2.4 ± 0.6	2.7 ± 0.6	***<0.001***
Operative Time (min)	91.5 ± 36.3	108.0 ± 56.1	***<0.001***
Sodium (mEq/L)	140.0 ± 2.8	138.0 ± 3.7	***<0.001***
Creatinine (mg/dL)	0.9 ± 0.4	1.0 ± 0.8	***0.049***
Albumin (g/dL)	4.2 ± 0.4	3.7 ± 0.6	***<0.001***
WBC (x 10^3 cells/L)	7.0 ± 2.2	8.7 ± 3.1	***<0.001***
Hematocrit (%)	41.3 ± 4.1	37.9 ± 5.0	***<0.001***
Platelets (x 10^3 /L)	249.0 ± 66.5	237.0 ± 89.4	***<0.001***
PTT (sec)	29.2 ± 4.7	29.0 ± 8.3	0.702
INR	1.0 ± 0.3	1.1 ± 0.3	***<0.001***

ASA = American Society of Anesthesiologists; BMI = body mass index; COPD = chronic obstructive pulmonary disease; WBC = White Blood Count; PTT = Partial Thromboplastin Time; INR = International Normalized Ratio. Continuous variables were compared using Welch's T-test with two-tailed P-values. Categorical variables were compared with Pearson's Chi^2 test. Significant P-values (P < 0.05) are bolded and italicized.

Table 2: Multivariate comparison of postoperative outcomes in elective vs non-elective THA for fracture

	Elective THA (Control)	Non-elective THA	Odds Ratio	*p*-Value
Inpatient Discharge	12,939 (14.7%)	326 (48.9%)	3.41 (2.44 – 4.76)	**<0.001**
Length of Stay (Days)	2.0 ± 1.8	4.5 ± 3.8	-*	**<0.001**
Any 30-day Complications	3,958 (4.5%)	80 (12.0%)	1.69 (1.09 - 2.61)	**0.018**
Any Surgical Complications	1,363 (1.5%)	21 (3.2%)	2.01 (0.95 – 4.25)	0.066
Any Medical Complications	1,368 (1.6%)	35 (5.3%)	2.94 (1.65 – 5.21)	**<0.001**
Mortality within 30 days	97 (0.1%)	17 (2.6%)	10.16 (3.15 – 32.76)	**<0.001**
Reoperation within 30 days	1,577 (1.8%)	31 (4.7%)	1.94 (0.99 – 3.80)	0.054
Readmission within 30 days	2,798 (3.2%)	45 (6.8%)	1.00 (0.56 – 1.80)	0.982

*P value for length of stay was obtained via multiple linear regression.