Current Payment Model for Geriatric Hip Fractures Underestimates Cost to Treat

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INTRODUCTION:

To curb rising healthcare costs, the Centers for Medicare and Medicaid Services (CMS) experimented with alternative payment models (APMs) to incentivize cost containment and care coordination. For example, APMs like bundled payments, which provide a single lump sum for a patient's entire episode of care, may align incentives across hospitals, physicians, and post-acute care providers to reduce costs and improve care coordination. In orthopaedics, the most popular application of bundled payments has been the Comprehensive Joint Replacement model introduced in 2016. Since then, CMS has considered bundled payments for other orthopaedic conditions like hip and femur fractures. However, concerns arose that the proposed models for nonelective conditions did not adequately adjust for the complexity and heterogeneity inherent in the more acute trauma population.

Today, over 75% of acute-care hospitals are reimbursed for inpatient stays by the Inpatient Prospective Payment System (IPPS), including surgery for hip and femur fractures. IPPS pays a flat rate for a patient's entire inpatient hospital stay based on the patient's primary diagnosis or procedure. Payments are made for defined episodes of care, which are coded into Medicare Severity Diagnosis Related Groups (MS-DRGs). Each MS-DRG represents a group of patients estimated to require equivalent resource utilization based on similar clinical conditions. The hip and femur fracture bundles are MS-DRG 482, "hip and femur procedures except major joint without complication or comorbidity (CC)", 481 "… with CC", and 480 "… with major CC (MCC)". Thus, MS-DRGs classify inpatient admissions and determine reimbursement.

A successful alternative payment model for trauma care requires appropriate risk adjustment for factors associated with higher costs to avoid penalizing hospitals that care for a disproportionate number of high-risk, high-cost patients. Concerns remain whether the current payment system is adequately adjusting for risk.

The primary aim of this study is to evaluate the degree to which estimates of resource utilization by CMS for geriatric hip and femur fractures is consistent with utilization at a large academic medical center and whether further risk adjustment is needed.

The primary outcome is the difference in total cost of care and profitability for hip and femur fracture patients coded with a complication/comorbidity or major complication/comorbidity compared to patients without a complication/comorbidity.

METHODS:

This is a retrospective study of 198 patients between March 2018 – August 2020 at a Level 1 Trauma Center in North America. Inclusion criteria were (1) patients who underwent surgical repair of a femoral neck or intertrochanteric hip fracture; (2) at least age 65 at the time of the surgery; (3) and having a Frailty Index recorded from the injury admission.

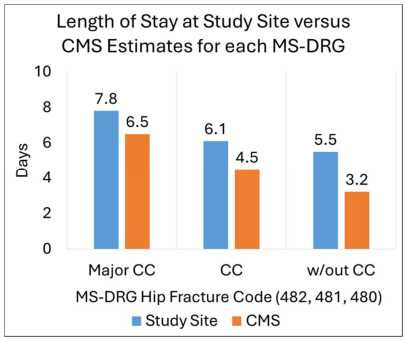
Patient-specific variables were collected from the electronic medical record (EMR). Financial data was collected on a per patient, per encounter basis using EPSi, the hospital's costing system. Total Cost was defined as all costs associated with the encounter. Direct Cost was defined as expenses that can be directly attributed to a patient's care or associated costs (e.g., healthcare personnel salaries, supplies, equipment use). Net Profit was calculated as Total Cost subtracted from Revenue. Data on length of stay and reimbursement was also obtained from publicly available CMS data.

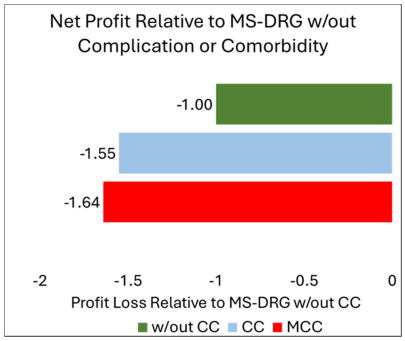
Statistical tests to evaluate for between group differences included student's t-test and one-way ANOVA.

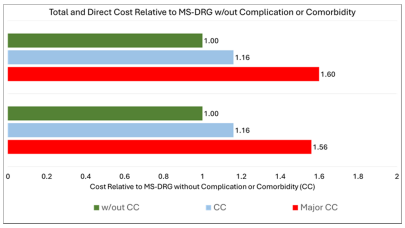
RESULTS: Compared to patients without CC, MCC patients incurred 60% higher total costs and 56% higher direct costs (both $p<0.05$). Patients with CC incurred 16% higher total and 16% higher direct costs compared to patients w/out CC (both $p<0.05$). Average profit was negative across all three MS-DRGs. MCC patients resulted in 64% greater profit loss than patients w/out CC ($p=0.94$). Compared to our study site, the length of stay cited by CMS for was 1.3 days shorter for MCC patients, 1.6 days shorter for CC patients, and 2.3 days shorter for patients without CC.

DISCUSSION AND CONCLUSION:

The current payment model for hip and femur fractures underestimates the cost to treat and penalizes hospitals caring for higher-risk, higher-cost patients. This is supported by a baseline profit loss across all three MS-DRGs. The profit loss is exacerbated by caring for patients with major complications or comorbidities as evidenced by these patients resulting in 64% greater loss than patients without a CC. One explanation may be that CMS is underestimating the resource utilization of these patients, as evidenced by the length of stay CMS cites for these conditions being lower than what was found in our study population.


Length of Stay at Study Site versus CMS Estimates for each MS-DRG
Days
10
8
6
4
2
0
7.8
6.5
6.1
4.5
5.5
3.2
Major CC
CC
w/out CC
MS-DRG Hip Fracture Code (482, 481, 480)
Study Site
CMS


Net Profit Relative to MS-DRG w/out Complication or Comorbidity
-1.00
-1.55
-1.64
-2
-1.5
-1
-0.5
0
Profit Loss Relative to MS-DRG w/out CC
w/out CC
CC
MCC


Total and Direct Cost Relative to MS-DRG w/out Complication or Comorbidity
1.00
1.16
1.60
1.00
1.16
1.56
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Cost Relative to MS-DRG without Complication or Comorbidity (CC)
w/out CC
CC
Major CC