

Paper #38

Predicting the Incremental Hospital Cost of Adverse Events among Medicare Beneficiaries in the Comprehensive Joint Replacement Program

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Introduction: The purpose of this study is to estimate the effect of adverse events on the incremental cost of Medicare Beneficiaries (MBs) undergoing lower extremity joint replacement (LEJR) during their index hospitalization in FY-2014 to understand how these complications will impact episode costs in the comprehensive care for joint replacement (CJR) program.

Methods: This retrospective study consists of all MBs undergoing LEJR. There were 674,777 hospitalizations in 2014. Eight adverse events (death, acute myocardial infarction, pneumonia, sepsis or shock, surgical site bleeding, pulmonary embolism, mechanical complications, and perioprosthetic joint infection) were identified. Hospital costs were estimated using the hospital's overall cost-to-charge ratio. Separate multi-variable regression equations were modeled to estimate the incremental cost associated with each adverse event relative to all MBs who did not experience any of the study complications. Demographic characteristics (age groups, gender, and race) and 61 comorbid variables were used as controls in all cost equations.

Results: A total of 8,906 (1.32%) MBs who underwent LEJR experienced an adverse event during the index hospitalization. The unadjusted average hospital cost of patients who experienced at least one of the adverse events was \$26,518 compared to an average of \$14,511 among MBs who did not experience any adverse events. The estimated cost ranged from a high of \$29,063 (patients experiencing hip fracture and joint infection) to a low of \$6,308 (MBs without hip fracture that experienced pulmonary embolism).

Conclusions: All but three adverse events increased hospital costs associated with LEJR by more than \$10,000. In addition, three adverse events (pneumonia, sepsis or shock, or perioprosthetic joint infection) were associated with greater cost to treat compared to the average hospital cost of MBs undergoing LEJR who did not experience an adverse event. Avoidance of adverse events will play an important role in economic sustainability in the CJR program.