Determining the Drivers of Cost for Elective Anterior Cervical Discectomy and Fusion for Cervical Degenerative Disease

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Background: Bundle payments are being investigated as a value-based payment model for reimbursement. Variability in the cost of index surgery affects the payment bundling during the 90-day global period. We determined drivers of variability in total cost associated with elective anterior cervical discectomy and fusion (ACDF) for degenerative cervical disease.

Methods: 457 consecutive patients undergoing elective ACDF for degenerative cervical conditions were enrolled into prospective longitudinal registry. Hospital discharge and billing records were collected prospectively. Total direct cost during 90-day global period included: diagnosis-related group (DRG) code (hospital fee), CPT code (surgeon fee), pre and post-operative provider visits, emergency room visit, readmission within 90 days of discharge, diagnostic imaging, and medication cost. Cost data was adjusted based on Medicare national allowable payment amounts. Multivariable stepwise linear regression analyses were conducted to determine influence of baseline patient characteristics on total direct cost at 90-days.

Result: Median cost for ACDF was $15,837 (range: $6580–$55550). Based on linear regression model, baseline 90-day direct cost of ACDF was $10,700, controlling for all variables. R2 of model was 26.8%. History of diabetes (n=105, 23%; p = 0.009), length of hospital stay(mean = 1.2 days, p < 0.001), length of surgery(mean=156 minutes, p < 0.001), 23-hour observation status(n = 200, 44%, p < 0.001), and readmission (n = 15, 3.3%; p < .001) were statistically significant drivers of direct cost.

Model constructed regression equation revealed: Total direct cost for ACDF =$10,700 +$30(Length of surgery per minute) +$1,172 (Length of hospital stay per day) +$2,261(history diabetes) +$3,071(readmission) -$2,696 (23-hour observation status).

Conclusion: There was considerable variation in total cost for ACDFs. Baseline direct cost for primary single-level ACDF in patients with no comorbidities was $10,700 based on Medicare allowable reimbursement. Payment bundling during 90-day global period following elective ACDF for degenerative cervical disease should account for a history of