

Assessment of Cost Drivers in Transsphenoidal Approaches for Resection of Sellar and Parasellar Tumors using the Value-Driven Outcome Database

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Introduction

Reducing healthcare costs and improving care value has become imperative in the neurosurgery. The recently implemented Value-Driven Outcome (VDO) database at the University of Utah is one approach that is useful in identifying cost drivers and tracking changes over time. We used the database in the study of transsphenoidal resection of pituitary tumors (TSRPT).

Methods

A retrospective review by common procedural terminology code was performed for TSRPTs for patients with pituitary adenoma from July 2012 to September 2016. Cost drivers and clinical variables were evaluated

Results

A total of 272 patients (mean age 51.1 ± 17.7 years, 45.6% male) with a mean length of stay of 4 ± 4 days were evaluated. Total costs were divided into facility utilization and other services (60%), physician professional fees (16%), pharmacy (11%), supplies and implants (7%), laboratory studies (5%), and imaging (1%). Facility costs were driven by neurocritical care unit (30.7%), neurosurgical operating room (16.6%), and neurosurgical floor (11.2%) costs. Subcategories in surgical supplies (e.g., BioGlue, fibrin sealants, absorbable gelatin, and carotid stent and delivery systems), and pharmaceuticals (e.g., thrombin, miscellaneous treatments, and remifentanyl) could be identified and compared. Multivariable linear regression analysis, after adjusting for length of stay and American Society of Anesthesiologists grade, showed that overall cost was heavily influenced by facility utilization ($\beta=0.581$, $p=0.0001$), pharmacy ($\beta=0.115$, $p=0.0001$), supplies and implants ($\beta=0.351$, $p=0.0001$), and imaging ($\beta=0.045$, $p=0.0001$). The top ten outlier cases accounted for 18.7% of total costs charged in relation to neurosurgical care during the time period while the average case accounted for a mean of $0.24 \pm 0.29\%$ of the total cost.

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