

Introduction

Although there are several papers showing variation in rates and costs of spinal procedures (1-7), there is a paucity of similar research in cranial neurosurgery. Our goal is to determine which factors underlie the variation in cost for the two most common intracranial neurosurgical DRGs: 025 (craniotomy & endovascular intracranial procedure w/ MCC) and 027 (craniotomy & endovascular intracranial procedure w/o CC/MCC).

Methods

We obtained patient information (age, gender, race, severity of illness (SOI), risk of mortality (ROM), # chronic conditions, payor, median zipcode income), hospital data (region, teaching vs non-teaching, private vs government-owned, bed size, wage index), and admission information (elective vs emergent, length of stay (LOS)) for all patients with DRGs 025 (n=12,293) or 027 (n=11,344) in the 2013 Nationwide Inpatient Sample (NIS) database. We created multivariate regression models for each DRG to determine which patient, hospital, and admission-specific factors affect total cost.

Results

The mean costs (range) for DRGs 025 and 027 were \$39,756 (\$1,869-\$865,812) and \$21,685(\$939-\$222,466). Our multivariate model for DRG 025 showed that younger patient age, higher SOI, higher zipcode income, longer LOS, higher wage index, private insurance, government-owned hospitals, and hospital region were significantly associated with higher cost (p<0.01). More specifically, government-owned private hospitals were \$7,055 more expensive than investor-owned private hospitals, and hospitals located in the Pacific United States were \$9,544 more expensive than those in New England. For DRG 027, we found that younger patient age, female gender, higher SOI higher ROM, greater # chronic conditions, longer LOS, higher wage index, private insurance, and government-owned hospitals were associated with higher cost (p<0.01).

Conclusions

Even after controlling for patient factors (age, risk of mortality, severity of illness) and wage index, geographic region (specifically, the Pacific region) and government hospital ownership are significantly associated with higher costs for DRGs 025 and 027.

Learning Objectives

By conclusion of this session, participants should be able to:
1)Identify the patient, hospital, and admission-specific factors that are correlated with total cost for intracranial DRGs 025 and 027
2)Discuss the important hospital characteristics that affect total cost for intracranial DRGs

References

1.Ugiliweneza B, Kong M, Nosova K, et al. Spinal surgery: variations in health care costs and implications for episode-based bundled payments. Spine. Jul 1 2014;39(15):1235-1242.
2.Goz V, Rane A, Abtahi AM, Lawrence BD, Brodke DS, Spiker WR. Geographic variations in the cost of spine surgery. Spine. Sep 1 2015;40(17):1380-1389.
3.Schoenfeld AJ, Harris MB, Liu H, Birkmeyer JD. Variations in Medicare payments for episodes of spine surgery. Spine. Dec 1 2014;14(12):2793-8.
4.Weinstein JN, Lurie JD, Olson PR, Bronner KK, Fisher ES. United States’ trends and regional variaitons in lumbar spine surgery: 1992-2003. Spine Nov 1 2006;31(32):2707-14.
5.Cook C, Santos GC, Lima R, Pietrobon R, Jacobs DO, Richardson W. Geographic variation in lumbar fusion for degenerative disorders: 1990 to 2000. Spine Sep-Oct 2007;7(5):552-7.
6.Wang MC, Kreuter W, Wolfla CE, Maiman DJ, Deyo RA. Trends and variations in cervical spine surgery in the United States: Medicare beneficiaires, 1992 to 2005. Spine April 20 2009;34(9):955-61.
7.Oglesby M, Fineberg SJ, Patel AA, Pelton MA, Singh K. Epidemiological trends in cervical spine surgery for degenerative diseases between 2002 and 2009.June 15 2013;38(14):1226-32.