Comparing Routine Elective Inpatient Spine Surgery to Orthopedic and Non-Orthopedic Surgery Trends

Mustfa K. Manzur, MPH, MS¹; Andre M. Samuel, MD²; Catherine Himo Gang, MPH²; Sheeraz A. Qureshi, MD, MBA²,³

1. Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia
2. Hospital for Special Surgery, New York City
3. Weill Cornell Medical College, New York City

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Background

- Comparison of volume, quality, and facility cost trends for inpatient elective spine surgery in the United States (US) relative to other routine inpatient elective orthopedic and non-orthopedic surgical procedures have not been previously described
Methods

- Retrospective cohort study was conducted utilizing the United States National Inpatient Sample (NIS) dataset.
- The oldest data available (2008) was compared with the most recently available data (2017).
- Threshold for statistical significance was $p<0.05$. 

Routine Elective Inpatient Spine Surgery Trends
Results

• Routine inpatient elective procedures for comparison to spine surgery included bariatric surgery, coronary artery bypass graft (CABG) surgery, hernia repair, and extremity-focused vascular surgery.

• Volume significantly increased for spine fusion (+1.2% annually to 436,745) and bariatric surgery (+4.4% annually to 182,915) \( p<0.05 \).

• Volumes significantly declined for CABG (-2.3% annually to 157,005), hernia repair (-3.8% annually to 22,170), and extremity-focused vascular surgery (-4.2% annually to 154,600).

• For spine surgery, LOS increased +0.2 days to 3.7 days and mortality rate decreased 0.40% to 2.36% without significance \( p>0.05 \).
Results

- Among comparison elective surgeries, bariatrics LOS decreased the most (-0.4 days to 1.8 days) with a reduction in mortality rate from 0.07% to 0.00% while vascular surgery LOS increased the most (+0.6 days to 6.0 days) along with the highest increase in mortality +0.39% to 1.90% [p<0.05].

- Regarding cost, spine fusion procedures facility cost grew +$7,115 to $31,946; however, this cost grew 2.8% annually on average – lower than the US healthcare consumer price index (CPI) over the same period (3.2%).

- Among comparable elective surgeries, costs grew fastest for hernia repair (4.9% annually) and slowest for bariatrics (0.5%).

- Net change in total cost was greatest for CABG which increased +$9,819 to $43,854.
Discussion

• From 2008 through 2017, inpatient routine elective spine surgery volumes significantly increased.

• In contrast, only bariatrics net volume grew during the period (+47.2%) while other routine elective procedure net volume declined: CABG (-18.8%), hernia repair (-29.6), and (-32.0%).

• Overall quality of spine surgery has improved in terms of both LOS and morality rate relative to comparisons.

• Despite cost to provide routine inpatient spine surgery increasing, the overall annualized growth rate of facility cost was less than US healthcare CPI and average annual growth rate for facility costs of comparable procedures.