The Impact of Global Budgets on Cost, Access, Provider Practice Patterns, and Complications in Elective Spine Surgery in Maryland

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Purpose
The United States spends more than any developed country on health-care. As a result, there is an increase in the growth of alternative payment models. One such program is the all-payer global budget revenue (GBR) model, implemented in the State of Maryland in 2014 as a Medicare Waiver. The goal of the program was to reduce 30-day readmissions and Potentially Preventable Complications (PPC) while limiting per-capita growth and generating $300 million in Medicare savings. No current studies have evaluated the impact of this program on spine surgery utilization and outcomes. This particular patient population has grown over the past decade and can demonstrate high costs and varying utilization. Understanding the impact of this unique model will 1) Inform spine surgeons, health service researchers, and policy analysts of impact within the State of Maryland 2) Guide future state and national healthcare legislation as more states seek to adopt similar policies 3) Inform the policy advocacy efforts of NASS.

Hypothesis
The investigators believe following implementation of global budgets there was a 1) a decrease in trends of unplanned 30-day readmission rates and PPCs 2) no change in average LOS 3) a contraction of geographic catchment areas, 4) a decrease in the number of overall inpatient surgeries performed by surgeons.

Methods of Research
A retrospective review will utilize the Maryland Health Services Cost Review Commission Public Use Dataset to evaluate trends and differences following implementation of global budgets in 1) readmission and complication rates 2) Length of stay (LOS) and disposition locations 3) geographic catchment areas 4) number of surgeries per surgeon and the distribution of inpatient vs outpatient surgeries performed. A comparative interrupted time series design will be implemented, and hierarchical regression modelling will be performed. This proposed work will build upon the preliminary results outlined below and employ a robust and nuanced methodological analysis while providing a more comprehensive evaluation.

Preliminary Results
An initial preliminary analysis on elective spine fusion patients was performed dichotomizing and evaluating the period following vs before policy implementation. The database returned 31,068 records of elective fusion spine surgeries performed over an approximately 6-year period in GBR hospitals. After hierarchical regression modeling, there was no change in mean length of stay following policy implementation, stratifying by disposition location. Although there was a decrease in readmission rates state-wide in the period following policy implementation from 2.57% to 2.02% \( p=0.001 \), there was no change in odds of readmission after adjusting for patient factors and clustering on hospitals, odds ratio 0.76 (95%
There was an increased risk of being discharged to home with home health services or to rehabilitation following policy implementation compared to before, relative risk ratio 1.62 (95% CI 1.17, 2.23) and 2.07 (95% CI 1.38, 3.12), respectively.