Navigating Risk in a Capitated or Bundled Payment Model for Spine Surgery: Introduction of the Carolina - Semmes Prediction Tool

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Introduction

Extended length of hospital stay(LOS), unplanned hospital readmission,

and need for inpatient rehabilitation following spine surgery contribute

significantly to variation in surgical healthcare cost. As novel payment

models shift, the risk of cost over runs from payers to providers,

understanding patient-level risk of these events is critical. We set out to

develop a grading scale that stratifies risk of these costly events after

elective surgery for degenerative lumbar pathologies.

Methods

6,921 cases prospectively enrolled into the QOD registry were queried

(elective 1-3 level lumbar surgery for degenerative pathology). The

association between pre-operative patient variables and extended

LOS(=7 days), discharge status (inpatient facility vs. home), and 90-day

Results

290 (4.2%) patients required extended LOS, 654 (9.4%) required

inpatient facility rehab, and 474 (6.8%) 90-day hospital readmission.

Variables independently associated with these unplanned events in

multivariate analysis are summarized in Table 1. Increasing point totals

in the Carolina-Semmes scale effectively stratified the incidence of

extended LOS, discharge to facility, and re-admission in both the

aggregate QOD dataset and when subsequently applied to two

practice groups.

Conclusions

For patients undergoing first time elective 1-3 level degenerative lumbar

spine surgery, we introduce the Carolina-Semmes grading scale that

effectively stratifies risk of prolonged hospital stay, need for postdischarge

inpatient facility care, and 90-day hospital readmission. This

Learning Objectives

We introduce a novel grading scale to risk-stratify the patients based on

their need for extended LOS, discharge to inpatient rehabilitation facility

and 90-day readmission. Analyses such as these can allow hospitals

and surgeons to risk stratify their practices to allow for more appropriate

third party evaluations of patient outcomes. Furthermore, understanding

and accurately predicting which patients may require additional resource

utilization within a global period after surgery may help facilitate the

creation and implementation of risk-adjusted bundled payment systems

that would more fairly compensate surgeons and hospitals for advanced

services. Regular use of such a predictive model based grading scale

can lead to more informed decision-

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