

Introduction

The cost-effectiveness of various surgical aspects is constantly assessed in order to facilitate informed decisions and treatment choices. The literature can be used to assess the cost of different elements, but this valuable information is spread between multiple sources.

We aim to offer estimations for the costs of the main hospitalization cost components, allowing a convenient and efficient calculation of the cost-reduction. This approach is demonstrated by calculating the cost reduction due to a new surgical device used in our institution to improve transforaminal lumbar interbody fusion (TLIF) efficiency.

Methods

The cost per unit of different components affecting the overall cost was calculated or extracted from multiple sources, adjusted to 2017 US Dollars.

The records of all single-level non-revision TLIF procedures performed in our facility since October 2013 were reviewed for this study. 93 procedures performed using the new device were included and 29 procedures performed using traditional tools and methods were used as a control group.

The TLIF cost reduction due to the use of the new device was calculated by calculating the average changes of hospital costs due to changes in operation length, blood loss and complication and readmission rates.

Results

The reported 2017-adjusted cost ranges per unit, type and severity were: OR minute: \$30-\$40, hospitalization day: \$600, dural tears: \$2,645-\$8,376, blood loss: \$0.71/cc, infection: \$4,659-\$38,701, adverse drug reactions: \$1,025-\$10,251 and readmissions: \$16,163-\$16,602.

The cost reduction in the test-case was estimated at \$1,373. 35% due to a reduction in OR time (of 13:01 minutes) and 44% due to readmission rate reduction (from 6.9% to 3.2%).

Conclusions

Calculating the expected cost reduction due to surgical modification or the use of a new device can be simplified using the suggested method. The test case presented showed a cost reduction of \$1,373 for the device studied.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe potential methods for cost-analysis and their advantages and disadvantages 2) Be familiar with the cost of different hospitalization components, depending on type, severity and other parameters 3) Perform a cost-analysis on relevant test-cases.