Adverse perioperative events represent a significant burden to the U.S. health care system. For surgical procedures, risk assessment calculators serve as valuable instruments for determining high-risk candidates for increased morbidity and mortality. The American College of Surgeons (ACS) National Surgical Quality Improvement Program (NSQIP) Universal Surgical Risk Calculator was introduced in 2013 and uses individual patient characteristics to estimate the percent risk for a defined list of complications. The calculator can accurately predict 30-day mortality in neurosurgical patients, but it is not currently used to predict cost of hospitalization.

RESULTS

Correlation between post-operative neurosurgical complication risk scores and various costs associated with operating room costs:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Direct Fixed Cost</th>
<th>Indirect Fixed Cost</th>
<th>Direct Variable Cost</th>
<th>Indirect Variable Cost</th>
<th>Total Cost</th>
<th>Direct OR Cost</th>
<th>Indirect OR Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>W Reese</td>
<td>0.317 ± 0.073</td>
<td>0.677 ± 0.422</td>
<td>0.516 ± 0.454</td>
<td>0.677 ± 0.498</td>
<td>0.632 ± 0.593</td>
<td>0.677 ± 0.498</td>
<td>0.645 ± 0.593</td>
</tr>
<tr>
<td>Min</td>
<td>0.334 ± 0.075</td>
<td>0.677 ± 0.422</td>
<td>0.516 ± 0.454</td>
<td>0.677 ± 0.498</td>
<td>0.632 ± 0.593</td>
<td>0.677 ± 0.498</td>
<td>0.645 ± 0.593</td>
</tr>
</tbody>
</table>

### CONCLUSIONS

Previous work has demonstrated the ACS NSQIP Surgical Risk Calculator can accurately predict mortality but is poorly predictive of other potential adverse events and clinical outcomes. However, this study demonstrates that neurosurgical patients predicted to be high risk by the ACS NSQIP Surgical Risk Calculator have a statistically significant positive correlation with in-hospital cost. Cost correlating with operative times charges the Pearson coefficient demonstrated moderate positive correlation between risk profiles and hospital costs.

Given the current healthcare climate emphasizing value-driven care future iterations of the ACS Universal Risk Calculator may be valuable tool in predicting in-hospital costs.

### REFERENCES


