Evaluating an Enhanced Recovery After Surgery implementations (iERAS) program using data from the National Surgical Quality Improvement Program (NSQIP)

L.M. Gresham¹, M. Sadiq¹, R. Helewa¹, M. McGrath², K. Lacelle², Szeto M¹, J. Trickett³, D. Schramm¹, R.C. Auer¹ on behalf of the iERAS group

¹ University of Ottawa - Faculty of Medicine ² The Ottawa Hospital

Introduction

Efforts to improve the value of our health care delivery include increasing quality while reducing costs. Enhanced Recovery After Surgery (ERAS) refers to multimodal peri-operative interventions that aim to standardize perioperative care established in evidence-based literature in order to reduce post-operative complications and length of stay (LOS).

Objectives:
The primary objective was to evaluate outcomes of patients undergoing elective surgery during ERAS protocol implementation, specifically whether iERAS was associated with reductions in LOS and overall postoperative complications as measured by prospectively collected NSQIP data.

Hypothesis: The iERAS program at TOH will be associated with reductions in:
1) hospital LOS;
2) post-operative complication rates

Methods

CAHO: ERAS implementations Timeline

- CAHO funded an ERAS that was initiated at 12 academic hospitals in Ontario.
- TOH implemented a hospital-wide ERAS program beginning in September 2013 for all patients undergoing colorectal surgery.

- TOH has been participating in NSQIP since 2010 with data on 546 of colon cases collected since March 2014. Data on actual and risk-adjusted 30 day outcomes was accessed for all patients undergoing open or laparoscopic colorectal surgery.

- There were 137 colorectal cases collected between March 2010 and September 2015.
- Pre- and post-ERAS implementation outcome data was compared for patients undergoing elective colorectal surgery. Exclusion criteria included patients who had an emergency admission (n = 1), as well as those who underwent a pelvic exenteration (n = 1) or a transoral resection (n = 2) (Figure 1). The outcome measures of interest included LOS, surgical site infection and overall complications, as well as return visits to the emergency department and 30-day mortality.

Patient Demographics and Clinical Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Pre-ERAS (N = 189)</th>
<th>Post-ERAS (N = 435)</th>
<th>Total (N = 619)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>67.3 ± 14.4</td>
<td>64.1 ± 13.1</td>
<td>65.4 ± 14.9</td>
</tr>
<tr>
<td>Male/female gender</td>
<td>98/86</td>
<td>247/188</td>
<td>392/424</td>
</tr>
<tr>
<td>Colon Procedure</td>
<td>89 (48.4%)</td>
<td>231 (53.1%)</td>
<td>320 (51.7%)</td>
</tr>
<tr>
<td>Rectal Procedure</td>
<td>95 (51.6%)</td>
<td>204 (46.9%)</td>
<td>299 (48.3%)</td>
</tr>
<tr>
<td>Laparoscopic Procedure</td>
<td>57 (31.0%)</td>
<td>126 (29.0%)</td>
<td>183 (29.6%)</td>
</tr>
<tr>
<td>Ostomy Creation</td>
<td>39 (21.2%)</td>
<td>70 (16.1%)</td>
<td>109 (17.6%)</td>
</tr>
</tbody>
</table>

Data are expressed as mean ± SD or n (%)

ERAS = enhanced recovery after surgery

Conclusion

- The implementation of ERAS was associated with a significant reduction in LOS and overall post-operative complications for patients undergoing colorectal surgery. These findings are concordant with other studies evaluating the effects of ERAS programs in colorectal surgical patients.
- NSQIP is an effective tool to monitor outcomes following implementation.
- The introduction of an ERAS-NSQIP module for standardized peri-operative care and collection of process quality indicators may help inform implementation teams where best to focus their efforts and address specific barriers to iERAS.

Selected references


For more information, contact Louise Gresham at lgresham@uottawa.ca

Acknowledgements

The authors would like to thank CAHO, NSQIP and the stakeholders of ERAS for their ongoing support. We would also like to recognize the participation of the surgeons, anaesthesiologists, nurses and patients at the Ottawa Hospital for their participation. Their contributions are invaluable.