



# Evaluating the Implementation of an Enhanced Recovery After Surgery Protocol for Colorectal Surgery at a Midwestern Community Hospital

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## Objectives

- Determine the extent of utilization Enhanced Recovery After Surgery (ERAS) protocols compared to current evidence-based recommendations.
- Assess the impact of a colorectal ERAS protocol on hospital length of stay, 30-day readmission rates, and postoperative opioid use using a retrospective review of cohort data.
- Propose recommendations to support protocol compliance.

## Background

Colorectal surgery has been associated with significant morbidity and prolonged length of stay. ERAS protocols have demonstrated the ability to improve patient outcomes by:

- Decreased LOS (WMD = -2.28 days [95% CI -3.09 to -1.47]) without an increase in readmission rates
- Decreased total opioid use in MME (63.7 vs. 280.9,  $p < 0.0001$ )
- Decreased postoperative pain scores on POD #1 (2.6 vs. 3.2,  $p = 0.002$ )
- Net health system savings of \$1768 (range: \$920-\$2619) per patient

## Methods

- Retrospective data collection from 154 colorectal surgery patients at Northwestern Medicine Kishwaukee Hospital from January 2018 to March 2024
  - Non-ERAS (n=60)
  - ERAS (N=94)
- Data collected using existing hospital reports and manual chart review
- Primary outcomes
  - Length of stay
  - 30-day readmission
- Secondary outcomes
  - Protocol compliance
  - Perioperative opioid use
  - Postoperative pain burden
- Statistical analysis using IBM SPSS Statistics, Version 29.0.0.0.
  - Chi-Square test for independence, independent-samples Mann-Whitney U test, and independent samples t-test

## Primary Outcomes

	Non-ERAS (n=60)	ERAS (n=94)	p-value
LOS (days)	3.029	2.281	0.006
Readmission within 30 days	5 = (8.3%)	10 = (10.6%)	0.64

*Note. LOS: length of stay.. Independent-samples Mann-Whitney U & Chi-square test of independence; \* $p < 0.05$*

## Protocol Compliance

	Non-ERAS (n=60)	ERAS (n=94)	p-value
Intraoperative IV fluids (mls)	1,250	1,000	0.009
Preoperative acetaminophen	24 = (40%)	86 = (91.5%)	< 0.001
Preoperative ibuprofen	25 = (41.7%)	84 = (89.4%)	< 0.001
Intraoperative ketamine	10 = (16.7%)	30 = (31.9%)	0.04
Intraoperative ketorolac	17 = (28.3%)	40 = (42.6%)	0.08
Intraoperative acetaminophen	30 = (50%)	45 = (47.9%)	0.80
Sugammadex	1 (1.7%)	25 (26.6%)	< 0.001
TAP block	31 = (51.7%)	83 = (88.3%)	< 0.001
Epidural analgesia	0 = (0%)	0 = (0%)	N/A
Intraoperative lidocaine infusion	0 = (0%)	12 = (12.8%)	0.004
Propofol infusion for PONV	0/2 = (0%)	1/4 = (25%)	0.43

*Note. IV = Intravenous; mls = milliliters; post-anesthesia care unit; IQR: interquartile range; TAP = transversus abdominis plane; PONV = post-operative nausea and vomiting. Chi-square test of independence & independent-samples Mann-Whitney U; \* $p < 0.05$*

## Opioid Use

	Non-ERAS (n=60)	ERAS (n=94)	p-value
Intraoperative opioid use (MME)	10.33	10	0.30
PACU opioid use (MME)	2.50	0	0.19
Opioid use in first 24 hours (MME)	1.67	1.67	0.71
Total perioperative opioid use (MME)	22.05	16.60	0.12

*Note. IQR: interquartile range; MME: morphine milligram equivalents; PACU = post-anesthesia care unit. Independent-Samples Mann-Whitney U; \* $p < 0.05$*

## Results

- ERAS group had a 25% reduction in median LOS (2.28 days vs. 3.03;  $p = 0.006$ ) without an increase in 30-day readmissions (5 vs 10;  $p = 0.64$ )
- No statistically significant difference in opioid use or pain burden between the two groups
- ERAS protocol compliance was 55.8%

## Discussion

- A shorter hospital stay suggests reduced costs for both the patient and the hospital.
- Low protocol compliance may have been influenced by provider adherence, incomplete documentation of specific protocol components, and limited researcher access to detailed information for all protocol elements.
- The non-traditional method of evaluating pain scores highlights the need for future research to confirm the accuracy of the results.
- A significant amount of data was hard to access, disorganized, and incomplete.

## Recommendations

- Promote protocol adherence through ongoing in-service education on the ERAS protocol and its components.
- Engage a multidisciplinary team to promote compliance.
- Assess protocol compliance monthly or semiannually annually by generating detailed data reports to enhance sustainability.

## References

