Colorectal Surgery (Dr. Rentea) ERAS: Enhanced Recovery After Surgery

Abbreviations (laboratory and radiology studies excluded):
ERAS = Enhanced recovery after surgery
PAT = pre-admission testing
SDS = same day surgery

Inclusion criteria:
- Colostomy
- Ileostomy
- Laparotomy
- Colon resection
- MACE/appendicostomy
- Posterior sagittal anorectoplasty (PSARP)
- Posterior sagittal anorectal vaginal urethral plasty (PSARVUP)

Exclusion criteria:
- Intensive Care Nursery (ICN) patients

Medication/Diet Instructions received (at Surgery Clinic and/or PAT):
- ***Medication***:
  - Patient takes all normal daily medications night prior to surgery unless specifically instructed to stop
- ***Diet:***
  - Standard NPO guidelines
  - **2-3 hrs prior to surgery**: Carbohydrate-rich drink: Gatorade, Powerade, or Pedialyte
- ***Arrival time/location***

Prior to surgery day

Patient scheduled for colorectal surgery

Patient seen in either **Colorectal Surgery Clinic or PAT** for pre-surgery evaluation to review the following:
- Pain management and regional anesthesia
- Bowel program regimen night before surgery
- ClearCarb diet plan
- Medication instructions
- Discuss anesthesia risks and plan (including mitigation of pre-op anxiety)
- Pre-op Colorectal Surgery ERAS checklist
- Colorectal Surgery ERAS pathway

48 hours prior to surgery date, SDS calls caregiver

Intraoperative to discharge algorithm

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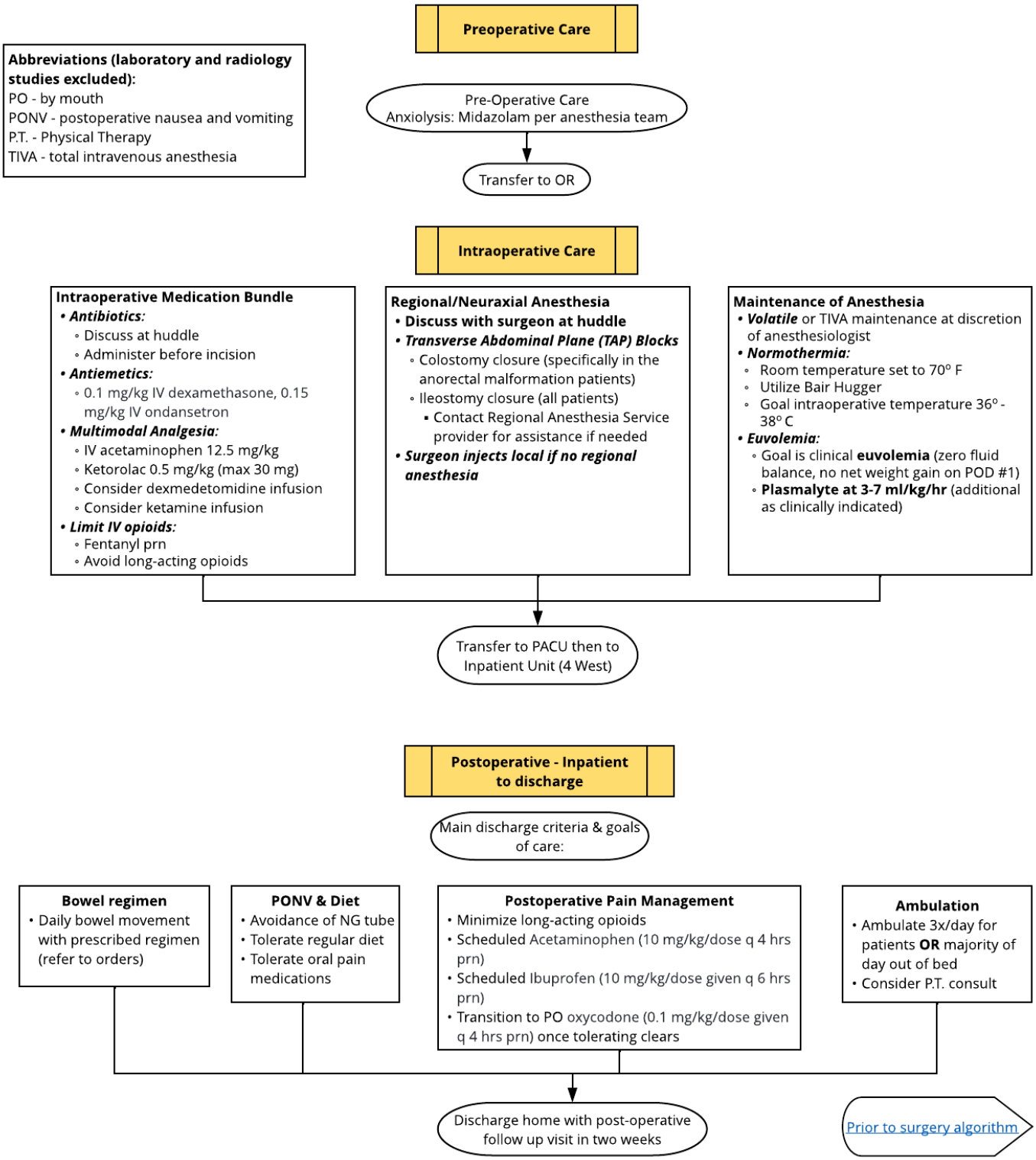

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Objective of ERAS Model

The objectives for the Colorectal Surgery ERAS pathway are to minimize the variation of care for the patient undergoing colorectal surgery starting with the pre-admission testing visit through hospital discharge. This includes preoperative nutrition/metabolism optimization, decreasing adverse medication side effects such as opiate induced ileus and PONV, promotion of earlier return of bowel function, improving wound and anastomotic healing, and reducing overall hospitalization length of stay. In the last several decades the application of ERAS principles has shown significant improvements in various surgeries regarding length of stay, opioid use, pain control, and return to diet (Fearon 2005, Thiele 2014, Liu 2017).

Background

Pediatric colorectal surgical patients with complex anatomy have historically undergone lengthy complex surgery with preoperative bowel preparation, long intra-operative multidisciplinary cases, and lengthy time to oral intake initiation, all in the setting of underlying anatomic and physiologic complexity (for example VACTERL association). Pediatric surgical patients undergoing complex colorectal and pelvic reconstruction require collaborative multidisciplinary perioperative management to ensure the best outcomes. The creation of an Enhanced Recovery After Surgery (ERAS) protocol, implemented to standardize perioperative care to accelerate recovery for colorectal surgery patients is aims to reduce opioid utilization, improve compliance with infection prevention/wound healing/adverse drug related side effect strategies, expedite the resumption of oral intake and return of bowel function, and reduce the length of hospitalization.

Target Users

Anesthesiologists, Colorectal Surgeons (Dr. Rebecca Rentea), Colorectal nurses

Target Population

ERAS Surgical Procedure Inclusion Criteria

- Colostomy
- Ileostomy
- Laparotomy
- Colon resection
- MACE/appendicostomy
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ERAS Exclusion Criteria

- Intensive Care Nursery (ICN) patients

Core Principles of ERAS (Melnyk et al., 2011)

- Preoperative education of patients and family with an introduction to ERAS
- Reduced pre-operative fasting, with clear liquid oral carbohydrate loading until 2 hours prior to surgery
- Goal-directed strict intraoperative intravenous fluid therapy guidelines to avoid hypo-or hypervolemia
- Avoidance of pre-operative mechanical bowel preparation
- Avoidance of routine nasogastric tube use
- Minimizing long-acting opioid analgesia, in favor of regional anesthesia with epidural and/or local anesthesia for intra-operative and postoperative pain control when appropriate and using alternative non-opioid medications when appropriate (e.g., non-steroidal anti-inflammatories or acetaminophen)
- Early post-operative mobilization
- Early post-operative enteral feeding

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ERAS Management Recommendations:

Pre-Operative Care

- The beginning of this ERAS protocol begins well before the surgical date. The concept of ERAS is presented to the patient/family at the initial surgical appointment, pre-operative clinic visit, and then reinforced if there is a pre-anesthesia testing (PAT) clinic visit.
- At PAT there are educational items discussed including pre-op diet restrictions, medication management, and the risks of anesthesia.
- Also discussed are some of the core concepts of ERAS, including the emphasis on early post-op PO intake and a multimodal pain management approach. Expectation management is crucial in the preoperative phase. Two handouts (Appendices A and B), approved by the Health Literacy, are given to the family prior to departing PAT.
- Patients are contacted 48 hours prior to the procedure to review arrival time and answer any questions.
- On the morning of surgery, the patient drinks carbohydrate rich liquids up to two hours before surgery start time.

Intra-Operative Care

The principal goals during the intraoperative care of these patients are:

- Utilize regional anesthesia when applicable:
  - Transverse abdominal plane (TAP blocks) for colostomy closures or ileostomy closures
  - Have surgeon inject local at incision site if regional anesthesia isn't performed
- Maintain normothermia during the entire procedure
- Ensure that antibiotics are administered prior to surgical incision
- Eliminate or minimize the use of opioids
- Multimodal pain management including IV acetaminophen and ketorolac
- Post-operative nausea and vomiting prophylaxis with dexamethasone and ondansetron
- Maintain euvolemia with an emphasis on not administering excess IV fluids

Post-Operative Care

The principal goals during the postoperative care of these patients are:

- Prevent/treat post-operative nausea and vomiting; avoid nasogastric (NG) tube
- Multimodal pain control with long-acting opioids as the last option
- Move towards PO intake as early as possible
- Early mobilization if patient is a candidate
- Focus on early discharge from hospital with individualized home instructions

Additional Questions Posed by the ERAS Committee

No clinical questions were posed for this review.

Key Metrics to Be Monitored:

Pre-Op	Intra-Op		Post-Op
Carb-rich drink	Dexamethasone/ Ondansetron	Acetaminophen	PONV PACU score
	Regional Anesthesia	Ketorolac	Opioids
	Euvolemia	Avoidance of Long-Acting Opioids	Time to diet
	Antibiotics administered prior to incision	Normothermia	Length of stay

Potential Cost Implications

The following potential improvements may reduce costs and resource utilization for healthcare facilities and reduce healthcare costs and non-monetary costs (e.g., missed school/work, loss of wages, stress) for patients and families.

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- Decreased inpatient length of stay
- Decreased unwarranted variation in care

Potential Organizational Barriers and Facilitators

Potential Barriers

- Variability of acceptable level of risk among providers
- Challenges with follow-up faced by some families

Potential Facilitators

- Collaborative engagement across care continuum settings during ERAS development
- High rate of use of ERAS pathways within the hospital setting

Power Plans

- No new power plans were developed with this ERAS pathway

Associated Policies

- Colorectal Surgery/Comprehensive Colorectal Center Clinic Standing Order

ERAS Model Preparation

This care process was prepared by the Department of Evidence Based Practice (EBP) in collaboration with content experts at Children's Mercy Kansas City. The development of this care process supports the Division of Service and Performance Excellence's initiative to promote care standardization that builds a culture of quality and safety that is evidenced by measured outcomes. If a conflict of interest is identified the conflict will be disclosed next to the committee member's name.

Implementation & Follow-Up

Once approved, this ERAS pathway was shared with appropriate care teams and implemented. New handouts for patients and families were created for pre-surgery visits including a preparation checklist and an overview of the ERAS pathway. Key metrics will be assessed and shared with the appropriate care teams to determine if changes need to occur. This ERAS pathway is scheduled to be revisited by all teams within six months of the release date.

Colorectal Surgery ERAS Committee Members and Representation

- Christian Taylor, MD | Anesthesiology | Committee Co-chair
- Rebecca Rentea, MD, MS, FACS, FAAP | Comprehensive Colorectal Center, Pediatric Surgery | Committee Co-chair
- Wendy Lewis, MSN, APRN, FNP-C | Comprehensive Colorectal Center| Committee Member
- Azita Roberson, FNP-C | Anesthesiology | Committee Member
- Mandy Riemer, MSW | Patient and Family Engagement | Committee Member

EBP Committee Members

- Todd Glenski, MD, MSHA, FASA | Anesthesiology, Evidence Based Practice
- Andrea Melanson, OTD, OTR/L | Evidence Based Practice

ERAS Development Funding

The development of this ERAS pathway was underwritten by the Departments of Evidence Based Practice, Anesthesiology, and the Comprehensive Colorectal Center.

Approval Obtained:

Department/Unit	Date Approved
Anesthesiology	July 2022
Comprehensive Colorectal Center	July 2022
Evidence Based Practice	July 2022

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Version History

Date	Comments
July 2022	First version completed and implemented

Disclaimer

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Appendix A

ERAS

Enhanced Recovery After Surgery

Patient Pre-Operative Checklist

ERAS program helps to:

- Promote overall healing from surgery
- Decrease opioid pain medicine use and side effects by using regional anesthesia
- Advance diet faster and speed up return of bowel function
- Decrease length of hospitalization

SURGERY	My child's colon surgery starts at _____ on _____. You will receive a call 48 business hours before surgery with more instructions on eating and drinking, when to arrive, and where to go on the day of surgery.	☐
BOWEL ROUTINE	Give your child MiraLAX to help soften the stool the day before surgery. If your child is younger than 2 years old, give: 1 capful of MiraLAX mixed in 16 ounces of Pedialyte in the am 1 capful of MiraLAX mixed in 16 ounces of Pedialyte in the pm If your child is 2 years and older, give: 2 capfuls of MiraLAX mixed in 16 ounces of Pedialyte in the am 2 capfuls of MiraLAX mixed in 16 ounces of Pedialyte in the pm **Already following an enema regimen? Your team will let you know if your child will continue this the night before surgery.*	☐ ☐
CLEAR CARB	Choose a clear, carbohydrate-rich drink like Gatorade or Pedialyte for your child to drink 2-3 hours before surgery. Try to have them drink about _____ oz. before surgery. They must finish drinking it no later than 2 hours before the surgery time.	☐
QUESTIONS	We are here to help with your questions before surgery. For surgery questions, call the Colorectal Center: (816) 234-3199 For anesthesia questions, call the PAT Clinic: (816) 802-1238	☐

Developed by Anesthesiology and Evidence Based Practice
7.20.22

Children's Mercy KANSAS CITY

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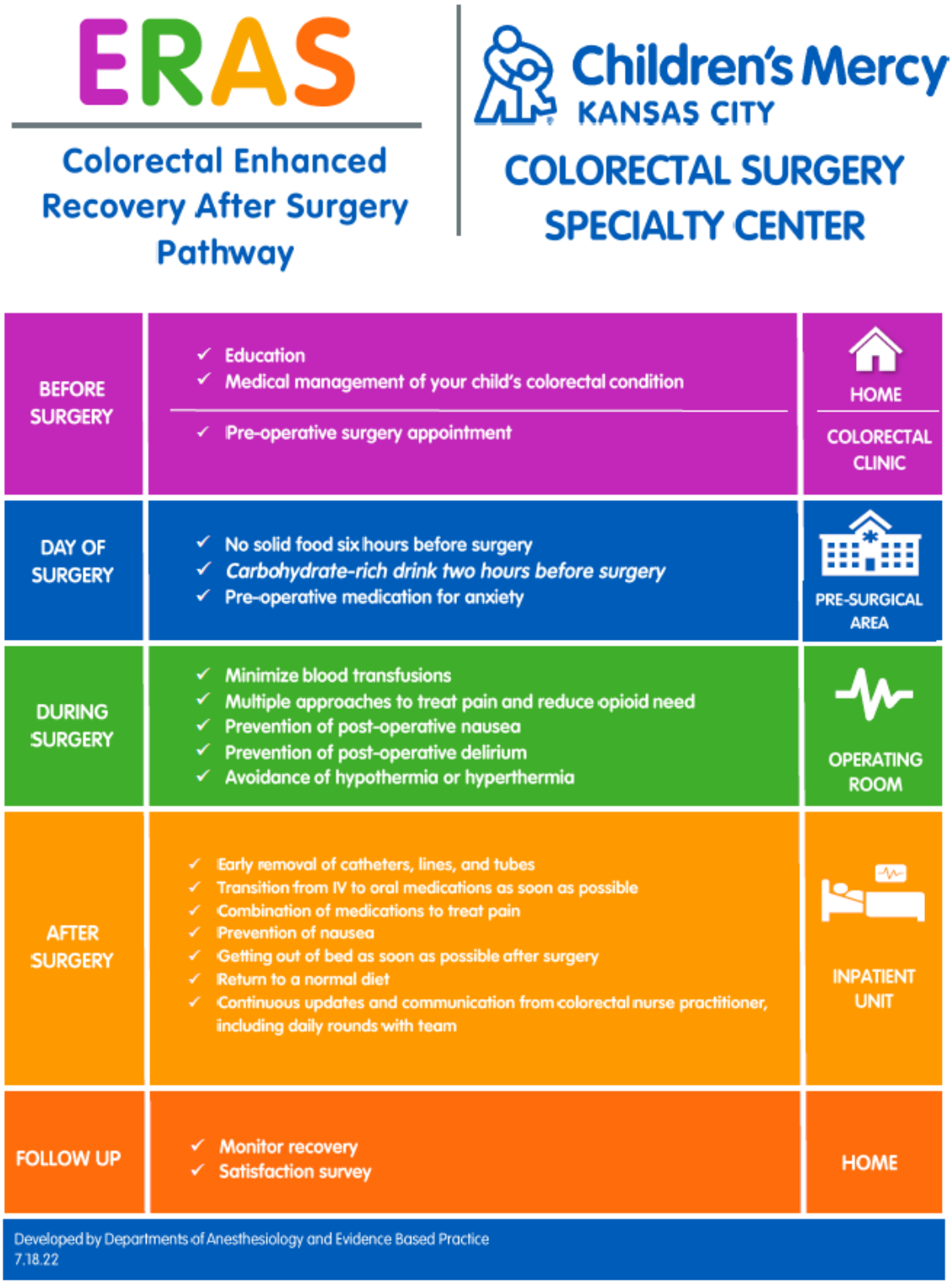
Appendix B



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