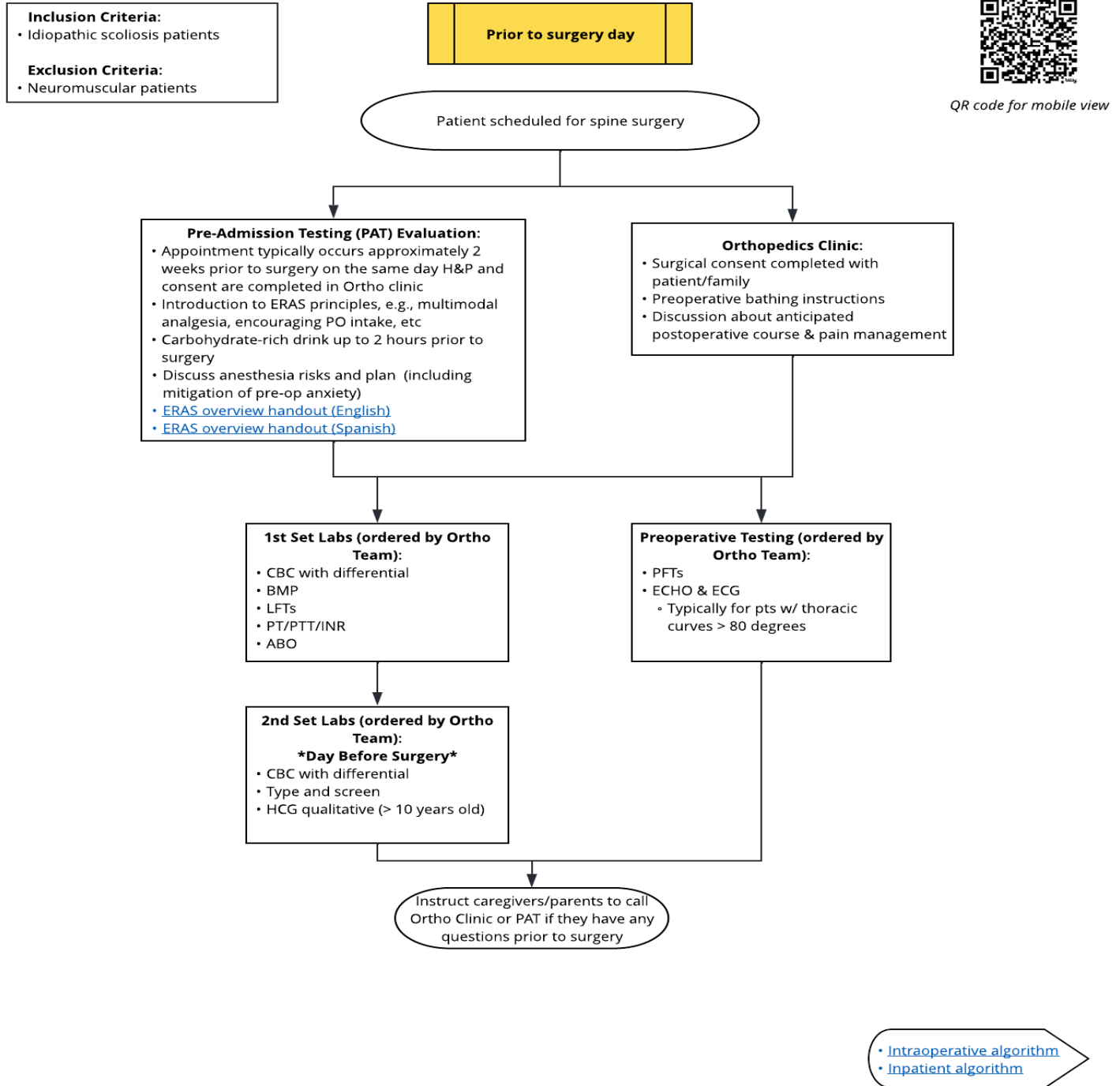


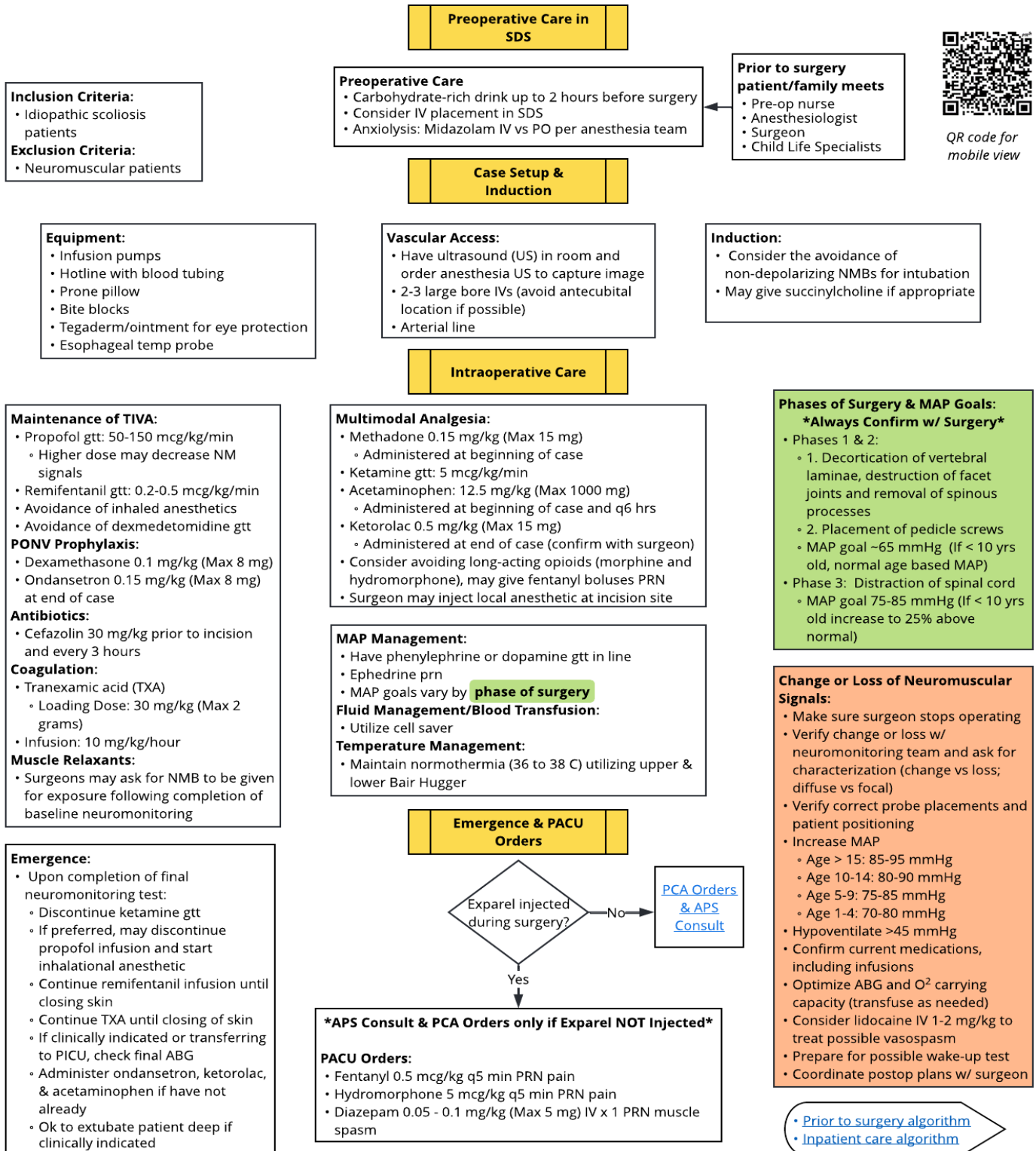
Idiopathic Posterior Spinal Fusion Enhanced Recovery After Surgery Synopsis

Idiopathic Posterior Spinal Fusion: Prior to Surgery Algorithm



**This Enhanced Recovery After Surgery (ERAS) does not establish a standard of care to be followed in every case. It is recognized that each case is different, and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time. It is impossible to anticipate all possible situations that may exist and to prepare pathways for each. Accordingly, this pathway should guide care with the understanding that departures from them may be required at times.*

Idiopathic Posterior Spinal Fusion: Intraoperative Algorithm

 QR code for
 mobile view


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Idiopathic Posterior Spinal Fusion: Inpatient Care Algorithm

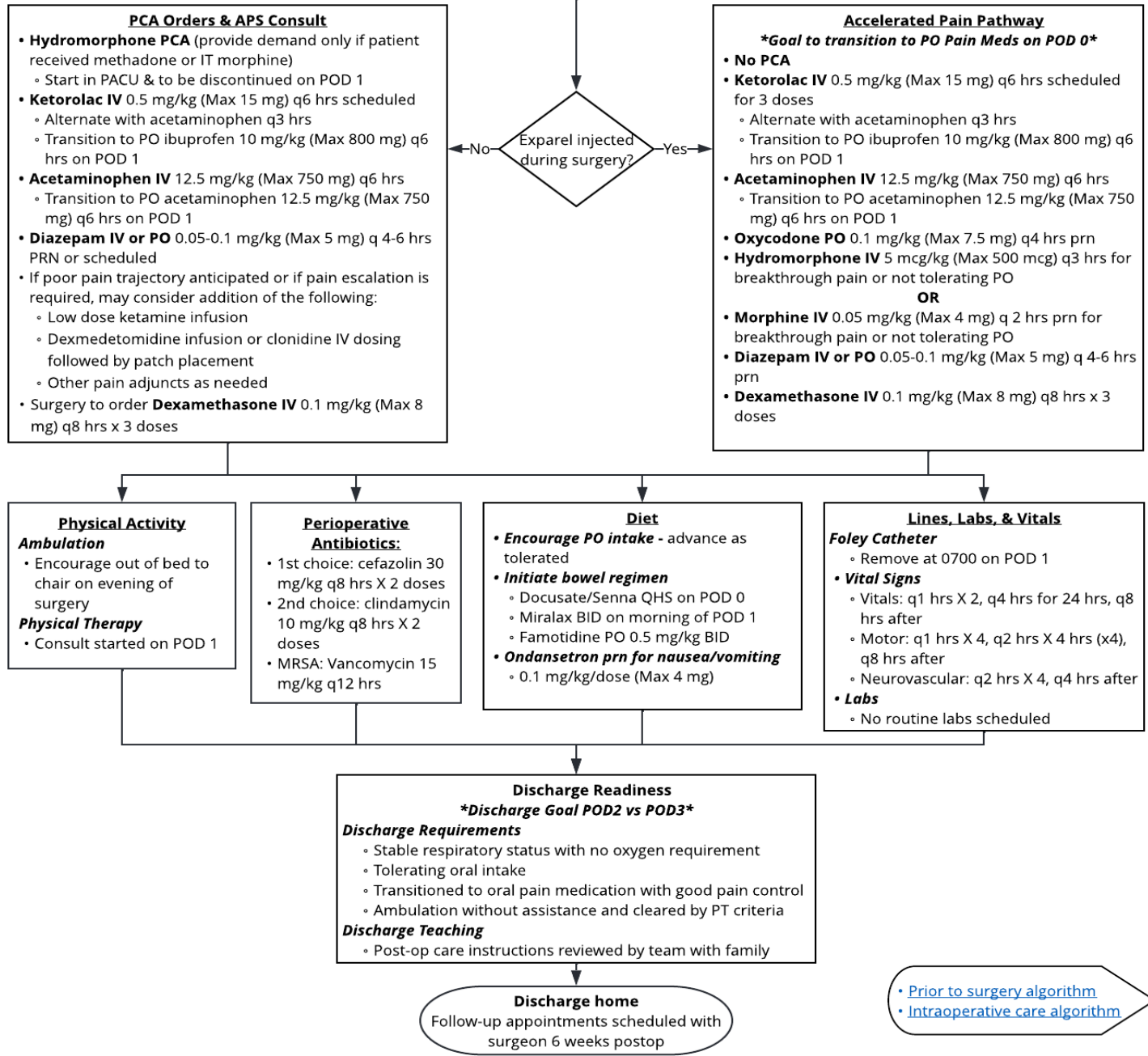
- Inclusion Criteria:**
- Idiopathic scoliosis patients
- Exclusion Criteria:**
- Neuromuscular patients

Inpatient (5 Henson/Hall) to Discharge

- Key ERAS Principles:**
- Keep patient/family/team focused on early discharge
 - Advance diet, minimize IV fluids
 - Multimodal analgesia: minimize opioids, transition to orals quickly
 - Encourage time out of bed
 - Remove invasive lines (E.g., Foley)



QR code for mobile view



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Objective of ERAS Clinical Pathway

The Spinal Fusion Enhanced Recovery After Surgery (ERAS) pathway aims to minimize the variation of care for the patient undergoing posterior spinal fusion for idiopathic scoliosis, starting with the surgical visit through hospital discharge. This includes optimizing pre-operative nutrition/metabolism, decreasing adverse medication side effects, promoting 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 (Liu 2017).

Target Users

- Anesthesiologists
- Pediatric Spine Surgeons
- Nurse practitioners
- Nurses (Operating Room, Inpatient)

Target Population

ERAS Inclusion Criteria

- Patients presenting for a posterior spinal fusion procedure for idiopathic scoliosis

ERAS Exclusionary Criteria

- Neuromuscular patients

Core Principles of ERAS

- Pre-operative education of patients and families with an introduction to ERAS
- Reduced pre-operative fasting, with clear liquid oral carbohydrate loading until 2 hours prior to surgery
- Goal-directed strict intra-operative 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 post-operative 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 postoperative enteral feeding

ERAS Management Recommendations:

Preoperative Care

- This ERAS pathway begins well before the surgical date. The concept of ERAS is presented to the patient/family at the initial surgical appointment and reinforced pre-operatively.
- At the initial surgical appointment, the patient and family are provided with educational items, including pre-op diet restrictions, risks of anesthesia, and pain management strategies.
- At the Pre-Admission Testing (PAT) clinic, the core concepts of ERAS are introduced to the patient/families, including the emphasis on early post-op PO intake and a multimodal pain management approach. Expectation management is crucial in the pre-operative phase. An ERAS handout is also given to the family.
- On the morning of surgery, the patient drinks carbohydrate-rich clear fluids up to two hours before the procedure starts time.
- Anxiolysis is determined by the anesthesia team, and midazolam is used as needed.

Intraoperative Care

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

- Multimodal approach to pain management
- Blood loss mitigation strategies
- Post-operative nausea and vomiting prophylaxis with dexamethasone and ondansetron
- Fluid management goal of euvolemia
- Ensure that antibiotics are administered prior to surgical incision
- Maintain normothermia throughout the entire procedure
- Long-acting local anesthetic injection performed by the surgical team

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Postoperative Care

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

- Transition from IV to oral medications as soon as possible
- Encouraging oral intake
- Multimodal pain control
- Prevention of nausea
- Postoperative bowel regimen
- Getting out of bed to bedside chair evening after surgery
- Remove the Foley catheter the evening after surgery or the morning post-operative day one
- Focus on early discharge from the hospital with individualized home instructions.

Additional Questions Posed by the ERAS Pathway Committee

No clinical questions were posed by this committee.

Key Metrics To Be Monitored:

Preop	Intraop	Postop
Carbohydrate-rich drink	IV acetaminophen	PACU PONV score
	PONV prophylaxis	Average pain score
	ABX prior to incision	Long-acting opioids
	Liposomal Bupivacaine	IV Dexamethasone
	Ketorolac	Diazepam
	Ketamine	NSAID
	Normothermia	Length of stay

Value 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.

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

Potential Organizational Barriers and Facilitators
Potential Barriers

- 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

- Ortho AIS Post-Op

Associated Policies

There are no associated policies with this ERAS pathway.

ERAS Pathway Preparation

This ERAS pathway was prepared by the Department of Evidence Based Practice (EBP) in collaboration with content experts at Children's Mercy Kansas City. If a conflict of interest is identified the conflict will be disclosed next to the committee member's name.

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Implementation & Follow-Up

- Once approved, this ERAS pathway was presented to appropriate care teams and implemented.
- Care measurements will be assessed and shared with appropriate care teams to determine if changes need to occur.
- This ERAS pathway is scheduled to be reviewed by all teams yearly.

Idiopathic Scoliosis ERAS Committee Members and Representation

- Trent Sims, DO, MS | Anesthesiology | Co-Committee Chair
- Emily Weisberg, MD, FASA | Anesthesiology | Co-Committee Chair
- Nichole Doyle, MD, FASA | Anesthesiology | Committee Member
- John Anderson, MD | Orthopaedic Surgery | Committee Member
- Aaron Shaw, DO, FAAOS | Orthopaedic Surgery | Committee Member
- Michael Benvenuti, MD | Orthopaedic Surgery | Committee Member
- Anne Stuedemann, MSN, RN, CPNP | Orthopaedic Surgery | Committee Member
- Heather Sambol, RN, APRN | Anesthesiology | Committee Member
- Azita Roberson, FNP-C | Anesthesiology | Committee Member

EBP Committee Members

- Todd Glenski, MD, MSHA, FASA | Anesthesiology, Evidence Based Practice
- Jarrod Dusin, MS, RD, LD, CPHQ | Evidence Based Practice

Additional Review & Feedback

- The ERAS pathway was presented to each division or department represented on the ERAS committee as well as other appropriate stakeholders. Feedback was incorporated into the final product.

ERAS Development Funding

The EBP, Anesthesiology, and Surgery Departments underwrote the development of this guideline.

Approval Obtained

Department/Unit	Date Approved
Anesthesiology	January 2024
Surgery	January 2024
Evidence Based Practice	January 2024

Version History

Date	Comments
January 2024	Version 1 – new algorithms and synopsis

Disclaimer

When evidence is lacking or inconclusive, options in care are provided in the ERAS algorithm(s) and the power plans that accompany the guideline. This ERAS pathway does not establish a standard of care to be followed in every case. It is recognized that each case is different, and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time. Accordingly, this ERAS pathway should guide care with the understanding that departures from the pathway may be required at times.

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Appendix A
ERAS Pathway Overview

ERAS

Pectus Excavatum Repair with Bar
Placement Enhanced Recovery After
Surgery Pathway



Children's Mercy
KANSAS CITY

Pectus Center

BEFORE SURGERY	<ul style="list-style-type: none"> ✓ Attend preop visit on the diagnosis, treatment and management of pectus excavatum (www.childrensmercy.org/pectus) ✓ Sign up for the patient portal ✓ Perform daily pectus exercises ✓ Take 1 capful of MiraLAX once daily starting 3 days prior to surgery ✓ Bathe or shower the night before or morning of surgery. No lotions, oils, powders, or creams after the bath/shower 	PECTUS CLINIC  HOME
DAY OF SURGERY	<ul style="list-style-type: none"> ✓ Do not eat solid food six hours before surgery ✓ Finish drinking a carbohydrate-rich drink 2-3 hours before surgery – you must not eat or drink anything a full 2 hours before surgery ✓ Take pre-operative medication for anxiety, if needed 	 PRE-SURGICAL AREA
DURING SURGERY	<ul style="list-style-type: none"> ✓ Cryoablation will be performed to freeze the intercostal nerves on each side prior to placing the bar. This will temporarily decrease pain transmission through these nerves. ✓ Multiple approaches to treat pain and reduce opioid need ✓ Prevention of post-operative nausea 	 OPERATING ROOM
AFTER SURGERY	<ul style="list-style-type: none"> ✓ Transition from IV to oral medications as soon as possible ✓ Combination of medications to treat pain ✓ Prevention of nausea and tolerate oral intake of food ✓ Getting out of bed as soon as possible after surgery ✓ Achieve good pain control ✓ Review postoperative instructions including recommended pain and bowel medication regimen 	 OBSERVATION UNIT
FOLLOW UP	<ul style="list-style-type: none"> ✓ Monitor recovery and appearance of incisions ✓ Follow recommended medications and methods for pain control ✓ Complete the satisfaction survey ✓ Attend follow-up clinic visit in approximately 2 weeks after surgery 	 HOME

Developed by Departments of Surgery and Evidence Based Practice
9.10.22

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