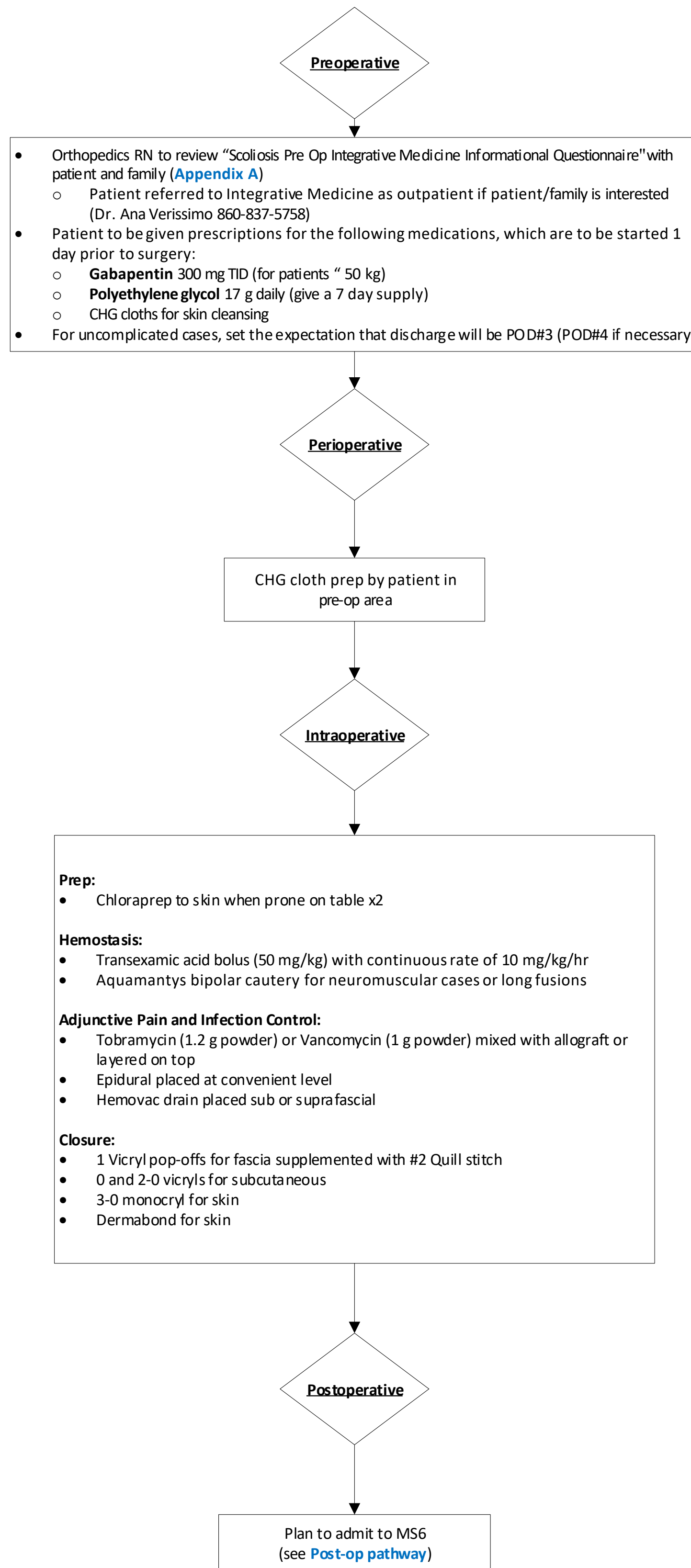
CLINICAL PATHWAY:

Posterior Spinal Fusion for Adolescent Idiopathic Scoliosis

THIS PATHWAY SERVES AS A GUIDE AND DOES NOT REPLACE CLINICAL JUDGMENT.



NEXT PAGE

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Posterior Spinal Fusion for Adolescent Idiopathic Scoliosis

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Medications

POD 0

Pain Control:

- *Epidural:* **Ropivacaine 0.1%** at 0.2 to 0.4 mg/kg/hr (0.2-0.4 ml/kg/hr) up to 14 mL/hr
  - When epidural in use, monitor for systemic toxicity: circumoral paresthesias, tinnitus, irritability, tremor, seizures, visual disturbances, metallic taste, cardiac dysrhythmias. Refer to Epidural Policy.
- **IV ketorolac:** 0.5 mg/kg/dose q6hr x12 doses (max 30 mg/dose). *To alternate with acetaminophen.*
- **IV acetaminophen** 15 mg/kg/dose q6hr (max 1 g/dose) for 4 doses. *To alternate with ketorolac*
- **PCA** (demand only): **hydromorphone** 0.004 mg/kg (max 0.2 mg/dose) with 6 min lock out, up to 0.02 mg/ kg/hr limit (max 1 mg/hr)
- **IV diazepam** 0.05 mg/kg/dose q6hr (max 2.5 mg/dose); hold if RR <10 or oversedation.
- **IV Dexamethasone** 8 mg/dose q8h x 3 doses
- **PO Gabapentin** 300 mg TID (patients ≥ 50 kg) to continue from pre-op
- **EMLA** PRN for needle procedures.

Antibiotic prophylaxis:

- Cefazolin 1-2 grams q8hr x 24h
- If allergy, Clindamycin 600 mg q8hr x 24h

Antiemetics:

- **IV ondansetron** 0.15 mg/kg/dose q8hr (max 8 mg/dose)
- Consider 1 **scopoloamine patch** on POD1 for nausea and dizziness

Bowel Management:

- **PO senokot** 2 tab BID until 1 BM/day
- **Polyethylene glycol** 17 g daily

POD 2

6:00 AM:

- Turn off epidural; if tolerated by noon, leave off (if not, turn on x24 hr)

Begin:

- Convert IV acetaminophen to **PO acetaminophen** q6hr (after 4th IV dose)
- Convert IV diazepam to **PO diazepam** 0.05 mg/kg/dose q6hr (max 2.5 mg/dose); hold if RR <10 or oversedation
- Convert IV ondansetron to **ondansetron ODT** PRN (if tolerating oral opioid)

Continue:

- **IV ketorolac**
- **PO Gabapentin**
- **Polyethylene glycol**
- **PO senokot**

POD 3 *goal discharge date*

If still on epidural, follow POD 2 meds & activity

10:00 AM:

- Turn off PCA (may do sooner if pain well controlled)
- Start **PO oxycodone**
  - < 50 kg: 0.1 mg/kg/dose q4h PRN pain
  - ≥50 kg: 5 mg q4hr PRN pain (max 10 mg)
- **IV hydromorphone** 0.015 mg/kg q3hr PRN breakthrough pain not alleviated by oxycodone (max 0.5 mg/dose) x24 hr

Begin:

- Convert IV ketorolac to **PO ibuprofen** 10 mg/kg q6hr (after 12th IV dose)(max 600 mg/dose)

Continue:

- **PO acetaminophen** ATC
- **PO diazepam** PRN (can schedule if patient is anxious)
- **PO ondansetron** PRN
- **PO senokot** daily until 1 BM/day
- **PO polyethylene glycol** daily
- **PO gabapentin** (to be discontinued upon discharge)

POD 4-5

Studies/ Consults

POD 0	POD 1	POD 2	POD 3
Consults: • Pain Team • Child Life • Integrative Medicine	**Labs:** • CBC **Consults:** • PT consult • Massage consult	**Labs:** • CBC **Consults:** • Occupational Therapy	**Imaging:** • Xray (standing scoliosis series, PA and lateral)

Drains

POD 0–1:

- Hemovac to suction (empty and measure q8hr and PRN); call provider if output increases 100 ml over previous 8 hr
- Foley to gravity

POD 2–3:

- Remove Foley 4 hours after epidural stopped by orthopedics
- Ortho to d/c Hemovac and change dressing

Activity

POD 0	POD 1	POD 2	POD 3
• In bed x 6hrs, head of bed up to 30˚ PRN, or higher based on patient comfort Then leg exercises, log roll, reposition q2hr	• OOB to chair x3 with PT or nursing • Ambulate with PT/ nursing: goal is 1 lap by 2nd or 3rd walk • Leg exercises, log roll, reposition q2hr	• OOB to chair with nursing for breakfast and lunch, and with family for dinner • May walk in room • Leg exercises, log roll, reposition q2hr	• Ambulate at least 1 lap • Stairs • Leg exercises, log roll q2hr • Transition to ambulating independently with family

Nursing

POD 0	POD 1	POD 2	POD 3
• Vitals as ordered by provider • Continuous monitoring • Assess sedation: Pasero Opiod-Induced Sedation Scale (POSS) score (Appendix B) at least q4hr • CMS check q2hr xfirst 12 hrs, then q4hr • BLE function (move leg, flex knee, wiggle toes) q4hr • Pain score q4hr and PRN any med change	• Vitals as ordered by provider • Continuous monitoring • Assess sedation: POSS score (Appendix B) at least q4hr • CMS check q4hr • Pain score q4hr and PRN any med change	• Continuous monitoring x4hr after epidural stopped Assess sedation: POSS score (Appendix B) at least q4hr • CMS check q4hr • Pain score q4hr and PRN any med change	• Assess sedation: POSS score (Appendix B) at least q4hr • CMS check q4hr • Pain score q4hr and PRN any med change

- Sequential compression boots/stockings while in bed, TEDS stockings following four-eyes skin check
- Incentive spirometer q2hr while awake

Diet

POD 0	POD 1	POD 2	POD 3
• IVF (D5 ½ NS + 20 mEq KCl) • Ice chips, sips of clears (advance to clears ad lib if tolerated) • Chew sugarless gum (goal of 20 min TID) as bowel stimulant/decrease nausea	• IVF (D5 ½ NS + 20 mEq KCl) • Clears (advance to regular diet for dinner if tolerating) • Chew sugarless gum (goal of 20 min TID)	• IVF (D5 ½ NS + 20 mEq KCl) • Advance as tolerated • Chew sugarless gum (goal of 20 min TID)	• Stop IVF; saline lock PIV • Regular diet • Chew sugarless gum (goal of 20 min TID)

Discharge Criteria:

Tolerating diet, tolerating PO pain meds, urinating well, able to walk independently and walk up a flight of steps

Discharge Medications (in consultation with Pain Team):

- **Acetaminophen** 15 mg/kg/dose q6h hr PRN pain (max 1 g/dose)
- **Ibuprofen** 10 mg/kg/dose q6h PRN pain (max 600 mg/dose) (stagger with acetaminophen, but may give all at once before sleep)
- **Oxycodone** **Dispense only 30 tablets*
  - < 50 kg: 0.1 mg/kg/dose q4h PRN breakthrough pain
  - ≥50 kg: 5 mg q4hr PRN breakthrough pain (max 10 mg)
- **Diazepam** 0.05 mg/kg/dose q6hr (max 2 mg/dose) PRN **Dispense only 10 tablets*
- **Polyethylene glycol** 17 g daily PRN constipation or if still requiring oxycodone

Discharge Instructions:

- Dressing removed prior to discharge
- Allow glue on back to peel off spontaneously (usually requires 2 weeks)
- Restrictions: no sports, gym or bending at waist for 6 weeks.
- Ortho follow up plan: 4 weeks (wound check), 3 months (PA/ lateral scoliosis film), 1 year (PA/lateral scoliosis film), then annually.
- Bring unused opiods to ortho follow up appointment.
- Call the office (860) 545-9100 for any concerns, especially persistent fevers, increasing back pain or wound drainage.

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Studies suggest that teaching patients self-relaxation and self-coping strategies before and after surgery can assist with decreasing anxiety, pain and discomfort. Connecticut Children's Pediatric Surgery Department has performed research to study the effects of relaxation strategies before and after a "Nuss procedure" (chest repair surgery). The results showed that patients who learned relaxation strategies did better after surgery, and used less pain medication, than those who did not learn relaxation strategies.

Connecticut Children's Orthopedic and Physical Therapy Departments are interested in studying if similar relaxation strategies, such as breathing and imagery, can help patients who will have scoliosis surgery. The purpose of this questionnaire is to help us identify patients who may be interested in learning these relaxation strategies (particularly if you check "yes" to any of the questions below).

If you check "yes" to questions 1-3: please ask Dr. Lee or Dr. Thomson to place a referral to meet with Dr. Verissimo before surgery

If you only check "yes" to question #4: please ask information about Child Life, as they can assist with "pill swallowing"

Pre-op scoliosis patient/family questions:

1. Is your child anxious about the scoliosis surgery? Yes/No

2. Does your child have 'anxious' tendencies? Yes/No

3. Does your child have back pain? Yes/No

4. Can your child swallow pills? Yes/No
(your child will likely need to swallow medication including "pain" pills while in the hospital and at discharge)

Thank you.

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POSS Scale

(Pasero Opioid-Induced Sedation Scale)

Sedation Level	Description	Nursing Intervention
S	Sleep, easy to arouse	Acceptable, no action necessary; may, consider increasing dose if needed
1	Awake and alert	Acceptable, no action necessary; may, consider increasing dose if needed
2	Slightly drowsy, easily aroused	Acceptable, no action necessary; may, consider increasing dose if needed
3	Frequently drowsy, arousable, drifts off to sleep during conversation	**UNACCEPTABLE;** closely monitor respiratory status and sedation level; notify prescriber
4	Somnolent, minimal or no response to verbal and physical stimulation	**PAUSE OPIOID INFUSION; UNACCEPTABLE;** closely monitor respiratory status and sedation level; notify prescriber; consider narcan

*The **POSS Scale** is a validated tool used to assess sedation after every opioid administration (For example: Fentanyl, Morphine, Oxycodone)*

Instructions

1. *Complete POSS score within 1 hour of every opioid administration, including ATC and prn dosing.*
2. *Complete POSS and pain re-assessment at the same time*
3. *Document the level of sedation that best describes the assessment of your patient's sedation*

For Patients on a PCA/NCA or continuous infusion:

1. *Assess POSS sedation level/respiratory status every 1-2 hours for the first 24 hours and with a dose change*
2. *After 24 hours and stable assess POSS every 4 hours with pain assessment and vital signs*

In the PICU POSS is not used when the patient is intubated as long as the patient is being assessed with a validated sedation tool (For example: SBS)

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