THE UNIVERSITY OF TEXAS MD Anderson Cancer Center
Making Cancer History®

Venous Thromboembolism (VTE) Prophylaxis for Hospitalized Surgical Pediatric Patients (Age 10-17 years)

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.*

INITIAL EVALUATION

Patients 13-17 years old[1] who are expected to have a surgical procedure lasting ≥ 60 minutes

Assess for VTE risk factors[2]

VTE RISK

HIGH RISK
Expected altered mobility[3] > 48 hours and ≥ 2 VTE risk factors

Does patient have contraindications to pharmacologic prophylaxis[4]?

MODERATE RISK
- Expected altered mobility[3] > 48 hours and either 0 or 1 VTE risk factor
- Fully ambulatory and ≥ 1 VTE risk factor(s)

LOW RISK
Fully ambulatory with no VTE risk factors

MANAGEMENT

Yes
- Initiate mechanical prophylaxis prior to anesthesia in the OR and continue postoperatively until patient is ambulatory if no contraindications[5] exist
- Encourage ambulation
- Reassess for pharmacologic contraindications[4] daily

No
- Initiate mechanical prophylaxis prior to anesthesia in the OR and continue postoperatively until patient is ambulatory if no contraindications[5] exist
- Discuss pharmacological prophylaxis[6,7] with pediatric hematology. Notify anesthesia team as this may affect anesthetic choice.
- Encourage ambulation
- Mitigate risk factors
- If neuraxial catheter or spinal procedure planned or in place, see Appendix E

MODERATE RISK
- Initiate mechanical prophylaxis prior to anesthesia in the OR and continue postoperatively until patient is ambulatory if no contraindications[5] exist
- Encourage ambulation
- Mitigate risk factors

LOW RISK
- Initiate mechanical prophylaxis prior to anesthesia in the OR if no contraindications[5] exist
- Encourage ambulation
- Mitigate risk factors

OR = operating room

[1] Patients < 10 years old do not need VTE prophylaxis perioperatively unless there is known inherited thrombophilia or previous history of DVT; consult Pediatric Hematology in such case
[2] See Appendix A for VTE risk factors
[3] Altered mobility is defined as a permanent or temporary state in which the child has a limitation in independent, purposeful physical movement of the body or of one or more extremities
[4] See Appendix B for contraindications to pharmacological options for VTE prophylaxis
[5] See Appendix C for mechanical VTE prophylaxis
[6] See Appendix D dosing for VTE pharmacologic prophylaxis in pediatric patients
[7] Obtain hematology consult when weighing risk versus benefit in patients at risk of bleeding

Department of Clinical Effectiveness V3
Approved by the Executive Committee of the Medical Staff on 04/18/2023

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APPENDIX A: VTE Risk Factors

- Active cancer (or suspicion of cancer)
- Blood stream infection
- Central venous catheter (including non-tunneled, tunneled and PICCs)
- Chemotherapy (especially asparaginase, bevacizumab, thalidomide/ lenalidomide plus high-dose dexamethasone)
- Exogenous estrogen compounds (contraceptives, hormone replacement, tamoxifen/raloxifene, diethylstilbestrol) within past two months
- History of venous thrombosis
- Hyperosmolar state (serum osmolality > 320 mOsm/kg)
- History of inflammatory diseases (*e.g.,* IBD, SLE)
- Obesity (BMI > 95th percentile for age)
- Orthopedic procedures: hip or knee reconstruction
- History of nephrotic syndrome
- History of familial and/or acquired hypercoagulability
- Major trauma: more than 1 lower extremity long bone fracture, complex pelvic fractures, spinal cord injury
- Major surgery (abdominal, pelvic, orthopedic surgery)
- Erythropoietin stimulating agents in patients undergoing orthopedic surgery
- Immobility
- History of antiphospholipid antibodies
- History of polycythemia
- History of congenital heart disease (non-biologic reconstruction)

APPENDIX B: Contraindications to Pharmacological Options for VTE Prophylaxis

Absolute Contraindications

- Active bleeding (cerebral, GI, GU) – evidence of or high risk of
- Uncorrected coagulopathy
- Bleeding disorder (known or tendency)
- Severe thrombocytopenia (platelets < 30 K/microliter)
- Hypersensitivity to enoxaparin, heparin, pork products, or any component of the formulation
- Epidural or paraspinal hematoma

Relative Contraindications

- Moderate thrombocytopenia (platelets 30-50 K/microliter)
- For patients undergoing spinal procedures and/or epidural placement/removal, see Appendix E
- Intracranial or spinal lesion at high risk of bleeding
- Recent major surgery at high risk of bleeding (*e.g.,* neurosurgical)
- Pelvic fracture within past 48 hours
- Uncontrolled hypertension
- Renal failure

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APPENDIX C: Mechanical VTE Prophylaxis

Options
- Sequential compression devices (SCDs) (preferred)
- Graduated compression stockings (TED hoses)
- Goal is to use for 18 hours a day

Contraindications
- DVT, suspected or existing (can use graduated compression stockings)
- Extremity to be used has acute fracture
- Extremity to be used has PIV access
- Skin conditions affecting extremity (*e.g.,* dermatitis, burn)
- Unable to achieve correct fit due to patient size

APPENDIX D: Dosing for VTE Pharmacologic Prophylaxis in Pediatric Patients

Enoxaparin:
Weight < 50 kg: 0.5 mg/kg subcutaneously twice daily
Weight ≥ 50 kg: 40 mg subcutaneously once daily
Aspirin (may be used in orthopedic patients, not recommended in other populations): 81 mg

APPENDIX E: Spinal Procedure and/or Neuraxial Catheter Management

Hold times prior to Lumbar Puncture (LP) or neuraxial catheter removal or placement:
- Enoxaparin: 12 hours

Hold time after LP or neuraxial catheter placement
- Enoxaparin: 8 hours (if bloody tap: 24 hours)

Hold time after neuraxial catheter removal
- Enoxaparin: 8 hours

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SUGGESTED READINGS

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