Patients age 10 to 17 years who are expected to have a surgical procedure lasting at least 60 minutes.

Assess for VTE risk factors.

---

**INITIAL ASSESSMENT**

**RISK**

**HIGH RISK**
- Expected altered mobility greater than 48 hours and 2 or more VTE risk factors.

**MODERATE RISK**
- Expected altered mobility greater than 48 hours and either 0 or 1 VTE risk factor.
- Fully ambulatory and 1 or more VTE risk factors.

**LOW RISK**
- Fully ambulatory with 0 VTE risk factors.

**TREATMENT**

Is patient a candidate for pharmacological prophylaxis?

**Yes**

- Initiate mechanical prophylaxis prior to anesthesia in the OR and continue postoperatively until patient is ambulatory if no contraindications exist.
- Consider pharmacological prophylaxis to start 12-24 hours (24-48 hours for neurosurgical cases) postoperatively and continue until patient is ambulatory. Notify anesthesia team as this may affect anesthetic choice.
- Encourage ambulation.
- Mitigate risk factors.

**No**

- Initiate mechanical prophylaxis prior to anesthesia in the OR and continue postoperatively until patient is ambulatory if no contraindications exist.
- Consider pharmacological prophylaxis to start 12-24 hours (24-48 hours for neurosurgical cases) postoperatively and continue until patient is ambulatory. Notify anesthesia team as this may affect anesthetic choice.
- Encourage ambulation.
- Mitigate risk factors.

**Reassess for pharmacologic contraindications daily**

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1 See Appendix A for VTE Risk Factors
2 See Appendix B for Contraindications to Pharmacological Options for VTE Prophylaxis
3 See Appendix C for Mechanical VTE Prophylaxis
4 See Appendix D Enoxaparin Dosing for VTE Prophylaxis in Pediatric Patients
5 Obtain Hematology consult when weighing risk versus benefit in patients at risk of bleeding

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Department of Clinical Effectiveness V1
Approved by the Executive Committee of the Medical Staff on 08/29/2017
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 greater than 320 mOsm/kg)
- History of inflammatory diseases (e.g., IBD, SLE)
- Obesity (BMI greater than 95th percentile for age)
- Orthopedic procedures: hip or knee reconstruction
- History of nephrotic syndrome
- History of familial and/or acquired hypercoagulability
- Major trauma: greater 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 less than 30 K/microliter)
- Heparin-induced thrombocytopenia (HIT)
- Hypersensitivity to enoxaparin, heparin, pork products, or any component of the formulation
- Epidural or paraspinal hematoma

**Relative Contraindications**
- Moderate thrombocytopenia (platelets between 30 and 50 K/microliter)
- Lumbar puncture or epidural catheter removed within past 12 hours
- 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

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: Enoxaparin Dosing for VTE Prophylaxis in Pediatric Patients

<table>
<thead>
<tr>
<th>Category</th>
<th>Dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 50 kg</td>
<td>0.5 mg/kg subcutaneously twice daily</td>
</tr>
<tr>
<td>Greater than or equal to 50 kg</td>
<td>40 mg subcutaneously once daily</td>
</tr>
</tbody>
</table>

This practice algorithm has been specifically developed for MD Anderson using a multidisciplinary approach and taking into consideration circumstances particular to MD Anderson including the following: MD Anderson’s specific patient population; MD Anderson’s services and structure; and MD Anderson's clinical information. Moreover, this algorithm is not intended to replace the independent medical or professional judgment of physicians or other health care providers. This algorithm should not be used to treat pregnant or lactating females.
SUGGESTED READINGS


This practice consensus algorithm is based on majority expert opinion of the Pediatric VTE workgroup at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following clinical staff:

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Lauren Mayon, PA-C
Maria Mireles, PharmD
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DEVELOPMENT CREDITS

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