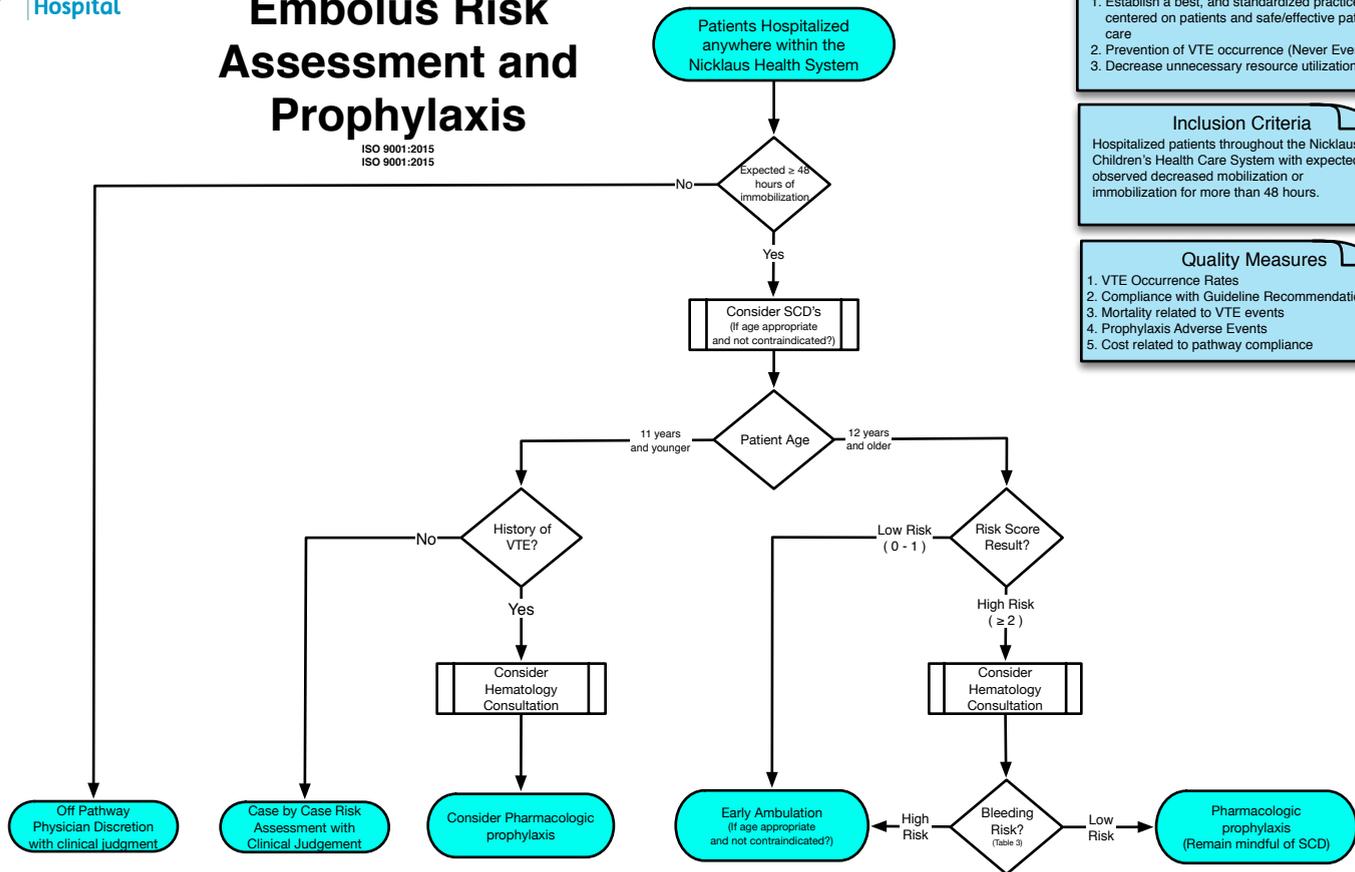


# Venous Thrombosis Embolus Risk Assessment and Prophylaxis

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**Pathway Goals**

1. Establish a best, and standardized practice, centered on patients and safe/effective patient care
2. Prevention of VTE occurrence (Never Event)
3. Decrease unnecessary resource utilization

**Inclusion Criteria**

Hospitalized patients throughout the Nicklaus Children's Health Care System with expected or observed decreased mobilization or immobilization for more than 48 hours.

**Quality Measures**

1. VTE Occurrence Rates
2. Compliance with Guideline Recommendations
3. Mortality related to VTE events
4. Prophylaxis Adverse Events
5. Cost related to pathway compliance

Risk Factor	Assigned Score (if clicked yes)
<b>Acute Hospital-Related Conditions</b>	
<input type="checkbox"/> Critically ill mechanically ventilated	1 point
<input type="checkbox"/> Central venous line present	1 point
<input type="checkbox"/> Severe systemic infection (i.e., sepsis, severe or necrotizing pneumonia, intra-abdominal abscess, osteomyelitis, CNS infection, infective endocarditis)	1 point for any
<input type="checkbox"/> Hyperosmolar state (i.e., DKA, severe dehydration, hypernatremia, serum osmolality >320 mOsm/kg)	1 point for any
<input type="checkbox"/> Major trauma or spinal cord injury	1 point
<input type="checkbox"/> Post-major surgery (orthopedics) within past 30 days	1 point
<input type="checkbox"/> Pregnancy	1 point
<b>Chronic Medical Conditions</b>	
<input type="checkbox"/> Acquired or inherited thrombophilia (antiphospholipid antibodies, antithrombin deficiency, protein C or S deficiency, Factor V Leiden mutation, elevated Factor VIII activity, prothrombin gene mutation, hyperhomocysteinemia, elevated lipoprotein a)	1 point for any
<input type="checkbox"/> History of sickle cell disease	1 point
<input type="checkbox"/> History of inflammatory disorder (BD, SLE, chronic GVHD, JIA/JRA)	1 point for any
<input type="checkbox"/> Protein losing disorders (nephrotic syndrome, protein-losing enteropathy, draining chylous effusion)	1 point for any
<input type="checkbox"/> Active malignancy	1 point
<input type="checkbox"/> High-risk medications (oral, intramuscular or implantable estrogen containing contraceptive within past 30 days OR high dose steroids for more than 14 days in past 30 days OR asparaginase)	1 point for any
<input type="checkbox"/> Obesity (BMI >95 <sup>th</sup> percentile for age)	1 point
<b>Historical Conditions</b>	
<input type="checkbox"/> Previous history of DVT or PE*	1 point
<input type="checkbox"/> Family history of DVT/PE in first degree relative <50 years or multiple	1 point
<input type="checkbox"/> Active smoker	1 point
<input type="checkbox"/> Long-distance travel within last 4 weeks	1 point
<b>Total Score</b>	<b>_____ points</b>

\*Previous history of DVT/PE considered high-risk regardless of VTE risk assessment score

VTE Risk Assessment Category	VTE Risk Assessment Score	Recommendation
Low Risk	0 - 1	Administer mechanical prophylaxis (sequential compression devices (SCDs)), encourage early ambulation; reassess risk at 48-72 hours
High Risk	2 or more	Low bleeding risk: Administer mechanical prophylaxis (SCDs); Consider pharmacologic prophylaxis and hematology consult
		High bleeding risk (refer to Table 1): Administer mechanical prophylaxis (SCDs) and encourage early ambulation

**References**

1. Braga AJ, Young AE. Preventing venous thrombosis in critically ill children: what is the right approach? Paediatr Anaesth. 2011 Apr;21(4):435-40.
2. Raffini L, Trimarchi T, Bellevue J, Davis D. Thromboprophylaxis in a pediatric hospital: a patient-safety and quality-improvement initiative. Pediatrics. 2011 May;127(5):e1326-32.
3. Hanson SJ, Puzanec FC, Arca MJ, Simpson P, Christensen MA, Hanson SK, Yan K, Braun K, Havens PL. Effectiveness of clinical guidelines for deep vein thrombosis prophylaxis in reducing the incidence of venous thromboembolism in critically ill children after trauma. J Trauma Acute Care Surg. 2012 May; 72(5):1292-7.
4. Mahajerin A, Webber EC, Morris J, Taylor K, SAYSANA M. Development and Implementation Results of a Venous Thromboembolism Prophylaxis Guideline in a Tertiary Care Pediatric Hospital. Hosp Pediatr. 2015 Dec;5(12):630-6.
5. Meier KA, Clark E, Tarango C, Chima RS, Shaughnessy E. Venous thromboembolism in hospitalized adolescents: an approach to risk assessment and prophylaxis. Host Pediatr. 2015 Jan;5(1):44-51.
6. Vidal E, Sharathkumar A, Clover J, Fausino EV. Central venous catheter-related thrombosis and thromboprophylaxis in children: a systematic review and meta-analysis. J Thromb Haemost. 2014 Jul;12(7):1096-109.
7. Badawy SM, Rychlik K, Sharathkumar AA. Current Practice of Pharmacologic Thromboprophylaxis for Prevention of Venous Thromboembolism in Hospitalized Children: A Survey of Pediatric Hemostasis and Thrombosis Experts in North America. J Pediatr Hematol Oncol. 2016 May;38(4):301-7301-77.
8. Monagle P. Antithrombotic therapy in neonates and children: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest. 2012.
9. Jaffray J, Mahajerin A, Young G, Goldenberg N, Ji L, Sposto R, Stillings A, Krava E, Branchford B. A multi-institutional registry of pediatric hospital-acquired thrombosis cases: The Children's Hospital-Acquired Thrombosis (CHAT) project. Thromb Res. 2017 Dec 1;161:67-72.
10. Kim SJ, Sabharwal S. Risk factors for venous thromboembolism in hospitalized children and adolescents: a systemic review and pooled analysis. J Pediatric Orthop B. 2014 Jul;23(4):389-93.
11. Takemoto CM, Sohi S, Desai K, Bharaj R, Khanna A, McFarland S, Klaus S, Irshad A, Goldenberg NA, Strouse JJ, Streiff MB. Hospital-associated venous thromboembolism in children: incidence and clinical characteristics. J Pediatric. 2014 Feb;164(2):332-8.
12. Wright JM, Watts RG. Venous thromboembolism in pediatric patients: epidemiologic data from a pediatric tertiary care center in Alabama. J Pediatr Hematol Oncol. 2011 May;33(4):261-4.

**VTE Pharmacologic Prophylaxis Contraindicated for: (Bleeding Risk Determination) Table 3**

<input type="checkbox"/>	Active bleeding
<input type="checkbox"/>	Intracranial hemorrhage
<input type="checkbox"/>	Spinal cord injury with known or suspected paraspinous hematoma
<input type="checkbox"/>	Uncorrected coagulopathy
<input type="checkbox"/>	Severe thrombocytopenia (platelets less than 50,000/uL)
<input type="checkbox"/>	Recent or anticipated neuraxial anesthesia (epidural or spinal anesthesia) or spinal lumbar puncture
<input type="checkbox"/>	Known AVM, aneurysm, CNS mass or Moyamoya
<input type="checkbox"/>	Post-operative bleeding concerns
<input type="checkbox"/>	Known bleeding disorder/history of unexplained hemorrhage

**VTE Mechanical Prophylaxis Contraindicated for: Table 4**

<input type="checkbox"/>	Diagnosed VTE
<input type="checkbox"/>	Extremity to be used has acute fracture
<input type="checkbox"/>	Skin conditions affecting extremity (dermatitis, burn)
<input type="checkbox"/>	Swelling of extremity
<input type="checkbox"/>	Surgical site on extremity