Venous Thromboembolus (VTE) Prevention & Treatment
Institute for Healthcare Improvement (IHI)

This compilation of resources and information is designed to help organizations establish risk assessment, prevention, and links to treatment for VTE.

The IHI Improvement Map

Why address VTE?
- Mortality (HSMR): Decreased mortality (hospital standardized mortality ratio, or HSMR)
- Harm: Decreased harm to patient (e.g., Harms per 100 patient days, as measured by the IHI Global Trigger Tool)
- Cost of Care: Decreased cost per inpatient case
- Readmissions within 30 Days: Decreased readmissions within 30 days
- Reliability: Increased delivery of evidence-based care 100% of the time

Elements:
- Assess all patients on admission for venous thromboembolism (VTE) risk
- Provide appropriate venous thromboembolism (VTE) prophylaxis, including pharmaceutical and mechanical approaches based on national guidelines:
  - Surgical patients with procedures designated in SCIP measures
  - Intensive care ventilated patients as part of the Ventilator Bundle
  - All other patients assessed to be at risk (based on ACCP Guidelines)

Measures:
- Percent of patients screened on admission for VTE risk
- Venous Thromboembolism Prophylaxis
  - Percent of patients who received venous thromboembolism (VTE) prophylaxis or have documentation why no VTE prophylaxis was given within 24 hours of hospital admission or surgery end time (medical and surgical inpatients with inpatient stays of >48 hours and >18 years of age)
- Venous Thromboembolism Discharge Instructions
  - VTE patients with documentation that they or their caregivers were given written discharge instructions or other educational material addressing all of the following:
    - Follow-up monitoring
    - Compliance issues
    - Dietary restrictions
    - Potential for adverse drug reactions/interactions
    - Activity requirements or restrictions

Find more information and the most recent updates, please visit the IHI Improvement Map.
Society of Hospital Medicine (SHM) & Agency for Healthcare Research and Quality (AHRQ)

See the full document for more details.

Essential First Steps
1. Ensure support from the institution
2. Survey previous or ongoing efforts and resources
3. Clarify key stakeholders, reporting hierarchy, and approval process
4. Assemble an effective team
5. Set general goals and a timeline
6. Follow a framework for improvement

Lay Out the Evidence / Identify Best Practice
Review what the literature says about risk factors for VTE and options for preventing VTE.

Analyze Care Delivery
Qualitative analysis: diagram care delivery to identify failure modes
Quantitative analysis: analyze care delivery to identify rate-limiting steps

Performance Tracking
Key metric #1: Percent of appropriate VTE prophylaxis
Key metric #2: Incidence of hospital-acquired VTE

Layer Interventions
Start with an effective VTE protocol. The VTE protocol consists of a standardized VTE risk assessment with a linked menu of appropriate prophylaxis options (plus a method to determine contraindications to pharmacologic VTE prophylaxis).
Components of the VTE protocol:
1. VTE risk assessment
2. Linked menu of appropriate prophylaxis options
3. Contraindications to pharmacologic or heparin prophylaxis

Key principles for effective interventions (including the VTE protocol)
Principle #1. Keep it simple for the end user.
Principle #2. You can’t interrupt the workflow.
Principle #3. Design reliability into the process.
Principle #4. Pilot your interventions on a small scale before attempting wide implementation.
Principle #5. Monitor use of your protocol.

Continue to Improve
1) Learning in the clinical setting: Plan-Do-Study-Act
2) Spreading improvement to other units.

Measurement
It is important to measure both key process measures and outcomes when working to prevent VTE. The three measures included in the Improvement Map are process measures for the three key points in hospital VTE prevention: assessment, prophylaxis (aligns with SHM key metric #1) and discharge instructions. The discharge instruction component is important as many patients develop VTE post-discharge, leading to readmission, complications and even death. The incidence of VTE in hospital (SHM key metric #2) is the key outcome measure to track. Also consider readmissions for VTE.

More Resources:

- **Venous Disease Coalition**
- **American College of Chest Physicians (ACCP)**
  - Antithrombotic and Thrombolytic Therapy, 8th Ed: ACCP Guidelines, Table of Contents
- **Map of Medicine**
  - Venous Thromboembolism Risk Assessment
- **The Commonwealth Fund**
  - Why Not the Best?
  - Comparative performance data on surgical care, including VTE prevention
- **National Blood Clot Alliance**
  - Stop the Clot
- **Scottish Intercollegiate Guidelines Network (SIGN)**
  - Prevention and management of venous thromboembolism: A national clinical guideline
- **NICE Pathways**
  - NICE Pathways is an interactive tool for health and social care professionals providing fast access to NICE guidance and associated products.
- **US Department of Health and Human Services**
  - Partnership for Patients
- **Centers for Disease Control and Prevention (CDC)**
  - Deep Vein Thrombosis/Pulmonary Embolism (DVT/PE)