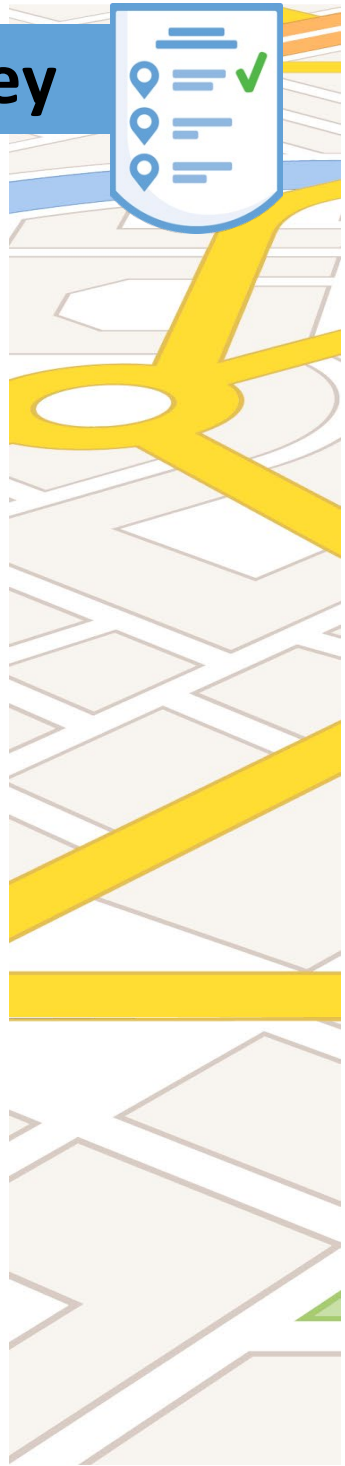
The Roadmap to Success:

Venous Thromboembolism (VTE)

HSAG HQIC

Preparing for Your Journey



Any successful journey begins with planning and preparation. Three key areas should be addressed before beginning any quality improvement or patient safety initiative.

Leadership Commitment

The success of a project can be determined by the level of commitment and support from leadership. It is important for hospital leaders to communicate a consistent, frequent message in support of the project. The executive project champion can establish accountability, dedicate resources, and break through barriers.

Project Champion

It is important to have a person(s) who is a significant influence with frontline staff, physicians, and other key personnel. Frequently, we think of a physician as a champion as they are instrumental in garnering provider buy-in and practice change. However, depending on the project, it can be any key personnel with the authority and skills to influence change, lead by example, and assist in essential messaging of the goals and vision for a project.

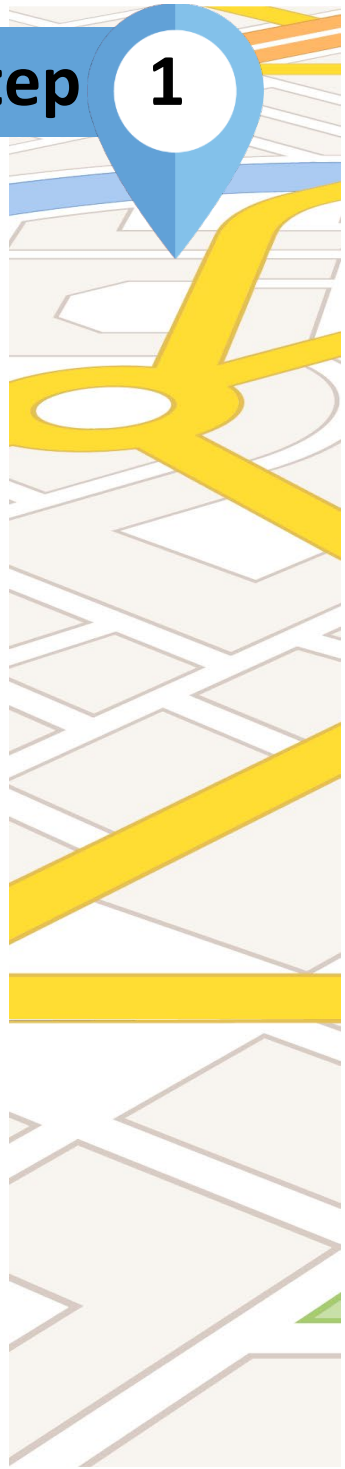
Multidisciplinary Project Team

The project team should consist of representatives from key areas throughout your facility with the skills, knowledge, and experience in their fields of expertise. A team member should possess strong communication skills, have a collaborative mindset, and show a commitment to change. It is vital to **have representation from frontline staff who will be impacted most by the change**. It is also important to keep the size of your team manageable. Remember, a team can have ad hoc members whose role is to provide expertise in a specific area for a short period of time.

For more information on team forming, access the following resource at www.hsag.com/hqic-quality-series:

- Quality and Safety Series Video on Team Forming

Patient and Family Engagement—Step 1



Rationale:

Engaging patients and families is a critical first step to VTE prevention. When patients and family members understand the reasons for preventative measures, they are more likely to adhere to treatment recommendations. Engaged patients and family members may be able to identify early signs and symptoms of blood clot formation and alert the treatment team.

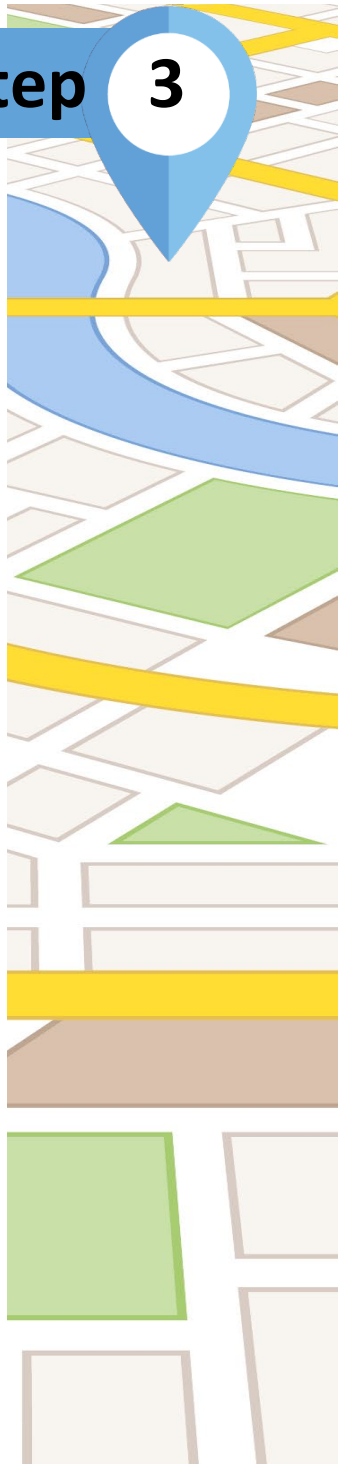
	Strategies to Implement	Tools and Resources
☐	Educate patients, families, and caregivers regarding the importance of ambulation, oral medications or injections, and sequential compression devices in VTE prevention.	• Center for Disease Control and Prevention (CDC). Materials and Multimedia About Blood Clots: https://www.cdc.gov/ncbddd/dvt/materials/index.html • Preventative Cardiovascular Nurses Association (PCNA). VTE and Blood Clot Tools and Handouts: https://pcna.net/clinical-resources/patient-handouts/vte-and-blood-clot-tools-and-handouts/ • The Joint Commission. Discharge Materials for VTE: A Comprehensive Approach to Medication Management: https://www.jointcommission.org/-/media/tjc/idev-imports/blogs/final_web_vte_compendium_of_resources_061420172pdf.pdf • Patient-Centered Outcomes Research Institute. Preventing VTE: Engaging Patients to Reduce Preventable Harm from Missed/Refused Doses of VTE Prophylaxis: https://www.pcori.org/research-results/2016/preventing-venous-thromboembolism-vte-engaging-patients-reduce-preventable • American College of Physicians (ACP). Blood Clot Resources: https://www.acponline.org/practice-resources/patient-education-resources-and-tools/patient-education/blood-clot-resources
☐	Provide education about signs and symptoms of early blood clot formation and encourage patients, families, and caregivers to speak up if they suspect change in the patient's condition.	
☐	Provide written materials in plain language that include information on VTE prevention.	
☐	Use the teach-back method when providing education to patients, families, and caregivers to validate their understanding.	
☐	Engage your organization's patient and family advisory council (PFAC) in VTE prevention program design and education.	
☐	Encourage patients, family members, and caregivers to be proactive in asking healthcare providers about ambulation and include family members and caregivers in any education.	

Risk Stratification—Step 2

Rationale:
Effective risk stratification allows for the development of standardized processes that can drive more effective prophylaxis.

	Strategies to Implement	Tools and Resources
☐	Adopt a VTE risk assessment screening tool.	• American Society of Hematology's Risk-Assessment Models for VTE and Bleeding in Hospitalized Medical Patients: https://ashpublications.org/bloodadvances/article/4/19/4929/464328/Risk-assessment-models-for-VTE-and-bleeding-in • Agency for Healthcare Research and Quality (AHRQ). Preventing Hospital-Associated Venous Thromboembolism: A Guide for Effective Quality Improvement: https://www.ahrq.gov/sites/default/files/publications/files/vteguide.pdf • MDCalc. Risk Assessment Tools: https://www.mdcalc.com/improve-risk-score-venous-thromboembolism-vte
☐	Use a standardized risk assessment for every hospitalized patient. • Use one process for assessing all patients at admission and at standardized times throughout their hospital stay. • Repeat screening for patients on change of condition, change in level of care, and following surgery. • Simplify screening results by grouping patients in low-, medium-, and high-risk categories.	

Standardize Care Processes—Step 3



Rationale:
Standardized tools and processes ensure that every patient is evaluated and treated appropriately.

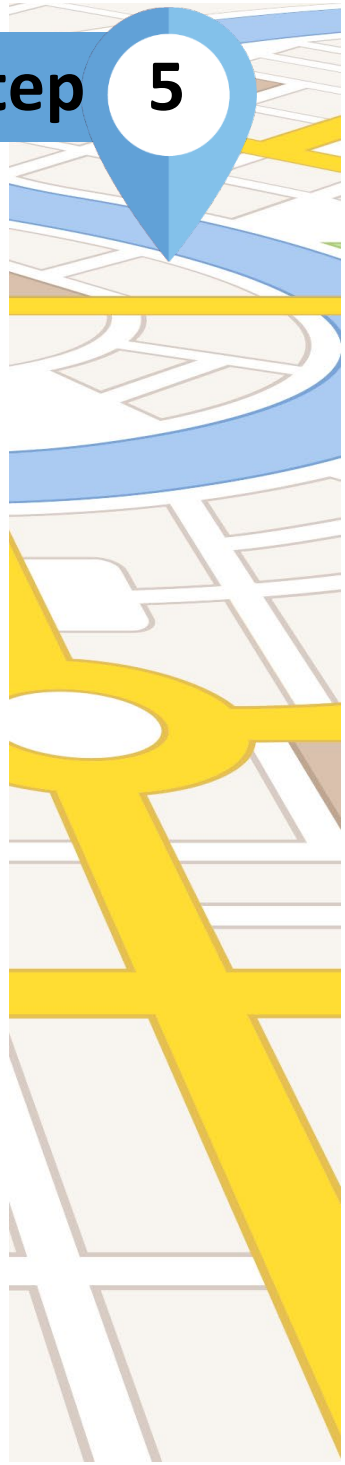
	Strategies to Implement	Tools and Resources
☐	Review current national guidelines. • Develop a process to review published guidelines and stay current with future updates. • Develop a subcommittee to review current medical literature recommendations regarding VTE prevention and treatment. • Limit literature recommendations to a short list of preferred options.	• Clot Connect. VTE Clinical Care Guidelines: https://clotconnect.wpcomstaging.com/guidelines/ • American Society of Hematology (ASH). Clinical Practice Guidelines on Venous Thromboembolism: https://www.hematology.org/education/clinicians/guidelines-and-quality-care/clinical-practice-guidelines/venous-thromboembolism-guidelines • Anticoagulation Form. Order Sets: https://acforum.org/web/education-sets.php • The Journal of the American Medical Association (JAMA). Enhanced Recovery After Surgery—A Review: https://jamanetwork.com/journals/jamasurgery/fullarticle/2595921
☐	Develop standardized order sets that allow for risk-based prescribing of mechanical and chemical prophylaxis, when indicated.	
☐	In collaboration with medical staff members, develop standardized order sets that are specific to individual specialties, such as trauma, cardiology, surgery, and medicine.	
☐	Implement early ambulation protocols. • For surgical patients, provide preoperative conditioning and mobility education when possible. • Record mobility goals and actual mobility on flow sheets and on the whiteboard in patients' rooms. • Reduce the use of narcotics, sedatives, restraints, and inappropriate urinary catheters and intravenous lines, making it easier for patients to ambulate.	

Utilize Clinical Decision Support—Step 4

Rationale:
Clinical decision support builds reliability into ordering systems and processes.

	Strategies to Implement	Tools and Resources
☐	Build risk-based standardized protocols into electronic ordering systems.	• National Academy of Medicine. Optimizing Strategies for Clinical Decision Support. https://www.healthit.gov/sites/default/files/page/2018-04/Optimizing_Strategies_508.pdf • CDC. VTE Training and Education for Healthcare Professionals: https://www.cdc.gov/ncbddd/dvt/training.html • Janssen Pharmaceuticals. Improving DVT/PE Transitions of Care: https://www.carepathhealthyengagements.com/sites/carepathhealthyengagements.com/files/NTOCCInteractivePDF072018.pdf • JAMA. Use of Computerized Clinical Decision Support Systems to Prevent Venous Thromboembolism in Surgical Patients: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5831455/
☐	Use protocols for dosing and monitoring all chemoprophylaxis agents.	
☐	Schedule and perform daily review of appropriateness of prophylaxis orders.	
☐	Engage pharmacists as part of the care team. • Enlist pharmacists to provide real-time decision support for prophylaxis option selection and discuss contraindications and options to assist with protocol development. • Develop a process to facilitate communication between physicians and pharmacists for discussion of optimal prophylaxis on complex patients. • Pilot pharmacist participation on hospital rounds or review of medication orders.	
☐	Use validated tools to assess the current knowledge of nursing staff regarding the risks of VTE and anticoagulant therapies.	

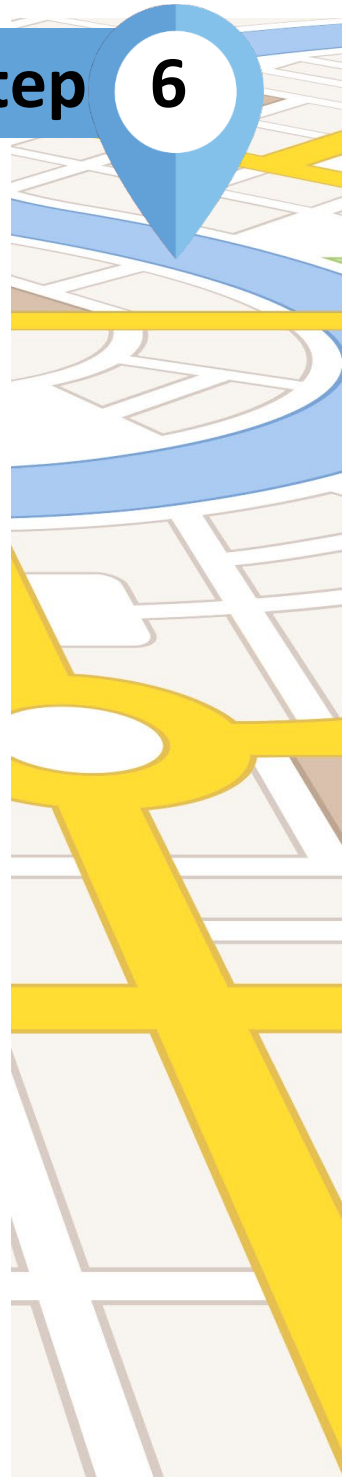
Implement Processes to Prevent Failure—Step 5



Rationale:
Processes to prevent failure provide the best mechanism to provide reliable, effective, and safe care to prevent VTE.

	Strategies to Implement	Tools and Resources
☐	Perform independent double-checks of all VTE prophylaxis orders. • Ask the pharmacist to double check the appropriateness and completeness of the VTE orders. • Give nurses the same risk assessment and prophylaxis tools that you give physicians and use nurses to perform independent periodic checks throughout the course of the hospitalization.	• Agency for Healthcare Research and Quality (AHRQ). Preventing Hospital-Associated Venous Thromboembolism: https://www.ahrq.gov/sites/default/files/publications/files/vteguide.pdf • Partnership for Patients. US Department of Health and Human Services (HHS). Implementation Guide to Prevention of Venous Thromboembolism: https://www.qualityhealthnd.org/wp-content/uploads/vte_change-package_508.pdf
☐	Implement a real-time check of all or certain groups within the hospital (e.g., those without ambulation orders, intensive unit only, those identified as high-risk for VTE) to cross check the accuracy of the VTE risk assessment versus the appropriateness of the ordered intervention.	

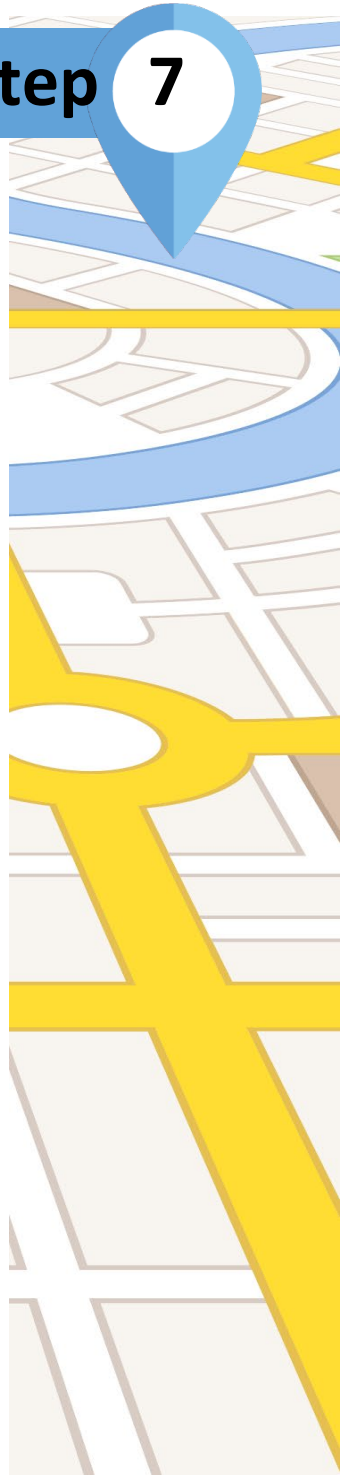
Identify and Mitigate Points of Failure—Step 6



Rationale:
Early identification and mitigation of failure is critical for the promotion of process reliability.

	Strategies to Implement	Tools and Resources
☐	Implement a real-time check of all or certain populations within the hospital to find over- and under-prophylaxis within 24 hours of admission and, if possible, throughout hospitalization. • Conduct unit huddles to review and cross-check the accuracy of the VTE risk assessment versus the appropriateness of the ordered intervention. • Use the "Braden Four-Point Degree Ambulation Scale" to assess ambulation status and determine if the patient should be receiving more prophylaxis, or if prophylaxis can be reduced. • Develop stoplight reports that assess each patient's prophylaxis status to facilitate assessment of appropriateness of prophylaxis.	• Cardinal Health. Implementing VTE Prevention Best Practices: https://www.cardinalhealth.com/en/product-solutions/medical/compression/resources/implementing-prevention-best-practices.html • Prevention Plus—Home of the Braden Scale: http://www.bradenscale.com/index.htm • American Society of Hematology (ASH). Management of Anticoagulation Therapy: A Pocket Guide for the Clinician: https://www.hematology.org/education/clinicians/guidelines-and-quality-care/clinical-practice-guidelines/venous-thromboembolism-guidelines/anticoagulation-therapy • Partnership for Patients. US Department of Health and Human Services (HHS)'s Implementation Guide to Prevention of Venous Thromboembolism: https://www.qualityhealthnd.org/wp-content/uploads/vte_change-package_508.pdf
☐	Use protocols for anticoagulation. • Allow nursing staff to hold heparin administration and/or to administer Vitamin-K based on designated acute laboratory test results via pre-approved protocols. • Allow pharmacists to manage unfractionated heparin and warfarin dosages based on current laboratory values via pre-approved protocols.	
☐	Create policies that allow pharmacists to track and trend daily international normalized ratio (INRs) and intervene when INRs are rising rapidly before they reach the threshold of excessive anticoagulation.	

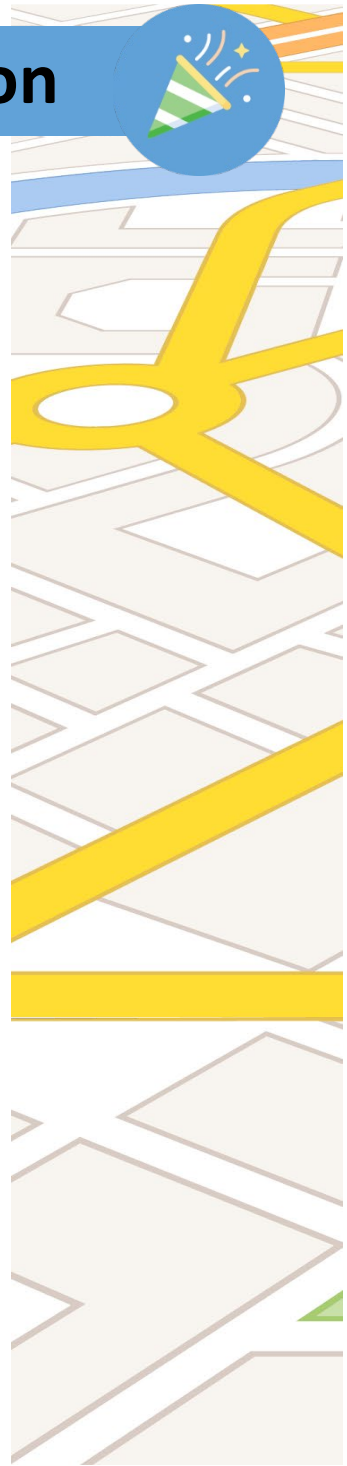
Use Smart Technology—Step 7



Rationale:
Technology can drive improvement.

	Strategies to Implement	Tools and Resources
☐	Link order set to recent laboratory values. • Implement automatic daily INRs for patients on warfarin. • Set up alerts to notify physicians and pharmacists when INRs are out of range. • Develop a policy that allows pharmacists to alter an anticoagulant dose if a specific laboratory test result is outside of the accepted range.	• Partnership for Patients. US Department of Health and Human Services (HHS)'s Implementation Guide to Prevention of Venous Thromboembolism: https://www.qualityhealthnd.org/wp-content/uploads/vte_change-package_508.pdf • Health Research and Educational Trust (HRET). Venous Thromboembolism (VTE) Change Package: https://www.hqinstitute.org/post/updated-change-packages-ahahret-website
☐	Use weight-based dosing for heparin. • Capture accurate weights for all patients on prophylaxis for use by the ordering clinician. • Provide patient weights to the pharmacist along with the VTE prophylaxis orders.	
☐	Monitor medication administration and mitigate failures in real-time. • Monitor delays in anticoagulant administration by medication.	
☐	Use smart pumps to minimize dosing errors. • Consider automatic hold or discontinuation if the anticoagulant order if laboratory values exceed desired limits and include alerts to the physician and pharmacist.	

Your Final Destination



Now that you've reached your destination, it is important that your efforts are not futile. One of the most challenging aspects of quality improvement and change is sustaining the gains. These key tactics will help you ensure ongoing success.

Ensuring Your Process Is Stable

Most projects involve monitoring of both process and outcome measures. These data play an important role in identifying when you've achieved change. It is important to review your data to identify and address special cause variation; recognize positive trend changes (six to eight data points at or above goal); and achieve predictable, consistent results.
Remember: *"Every system is perfectly designed to get the results it gets."*—W.E. Deming

For more information on data, variation, and change, access the following resource at www.hsag.com/hqic-quality-series:

- Quality and Safety Series Video on Data

Control Plan/Sustainability Plan

A control or sustainability plan is a method for documenting the key elements of quality control that are necessary to assure that process changes and desired outcomes will be maintained. At a minimum, this plan should include ongoing monitoring of process steps that are critical to quality, frequency of monitoring, sampling methodology, and corrective actions if there is noted variation.

For more information on control and sustainability plans, access the following resource at www.hsag.com/hqic-quality-series:

- Quality and Safety Series Video on Sustainability and Control Plan

Project Hand-Off

Depending on the size of your facility and resources that are available, it may be necessary to hand off your project to a "process owner." A process owner is a person or department responsible for monitoring a process and sustaining the changes according to the control or sustainability plan. The person or department should be the entity that will most significantly experience the gains of the improved process or project.

Tools and Resources

- Prandoni P, Noventa F, Ghirarduzzi A, et al. The risk of recurrent venous thromboembolism after discontinuing anticoagulation in patients with acute proximal deep vein thrombosis or pulmonary embolism. A prospective cohort study in 1,626 patients. *Haematologica* 2007 Feb;92(2):199-205. Available at: https://pubmed.ncbi.nlm.nih.gov/17296569/. Accessed on: February 2, 2021.
- Kahn SR. How I treat postthrombotic syndrome. *Blood* 2009 Nov 19;114(21):4624-31. Available at: https://pubmed.ncbi.nlm.nih.gov/19741190/. Accessed on: February 2, 2021.
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- Grosse S, et al. The economic burden of incident venous thromboembolism in the United States: A review of estimated attributable healthcare costs. *Elsevier*. January 2016 Volume 137, Pages 3–10. Available at: https://www.thrombosisresearch.com/article/S0049-3848(15)30209-7/fulltext. Accessed on: February 2, 2021.
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- Tcheng J, et al. Optimizing Strategies for Clinical Decision Support—Summary of a Meeting Series. Available at: https://www.healthit.gov/sites/default/files/page/2018-04/Optimizing_Strategies_508.pdf. Accessed on: February 2, 2021.
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