<table>
<thead>
<tr>
<th>Body System: <strong>Cardiovascular</strong></th>
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<tbody>
<tr>
<td>Session Topic: <strong>Venous Thromboembolism Management</strong></td>
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## Educational Format | Faculty Expertise Required

<table>
<thead>
<tr>
<th>REQUIRED</th>
<th>Interactive Lecture</th>
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<tr>
<td>Expertise in the field of study. Experience teaching in the field of study is desired. Preferred experience with audience response systems (ARS). Utilizing polling questions and engaging the learners in Q&amp;A during the final 15 minutes of the session are required.</td>
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<tr>
<th>OPTIONAL</th>
<th>Problem-Based Learning (PBL)</th>
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<tr>
<td>Expertise teaching highly interactive, small group learning environments. Case-based, with experience developing and teaching case scenarios for simulation labs preferred. Other workshop-oriented designs may be accommodated. A typical PBL room is set for 50-100 participants, with 7-8 each per round table. Please describe your interest and plan for teaching a PBL on your proposal form.</td>
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## Professional Practice Gap

- Physician knowledge, attitudes, and beliefs are partially responsible for the gap between actual practice and international guidelines.
- Patients are frequently non-adherent to prescribed anticoagulants.
- Underdosing often occurs in VTE patients who are prescribed DOACs.
- Physicians have knowledge gaps with regard to risk stratification and use of a risk calculator; effective and appropriate treatment therapies; being aware of new treatments; appropriate use of imaging; and use of D dimer test in initial assessment and follow-up and monitoring.
- The American College of Chest Physicians (ACCP) has published new guidelines on antithrombotic therapy for venous thromboembolic

### Learning Objective(s) that will close the gap and meet the need

1. Establish protocols to identify patients at risk for a thromboembolic event, and provide counseling to reduce risks and recognize signs and symptoms.
2. Use an evidence-based algorithm to diagnose DVT/PE, taking into account the stability of the patient.
3. Prescribe appropriate anticoagulant agents, according to the most recent clinical guidelines, to treat and help prevent recurrence of thrombotic events in patients.
4. Develop collaborative care plans with patients; emphasizing adherence to prescribed therapies, and monitoring with follow-up.

### Outcome Being Measured

Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.
### ACGME Core Competencies Addressed (select all that apply)

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<tr>
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<th>Medical Knowledge</th>
<th>Patient Care</th>
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<tr>
<td>X</td>
<td>Interpersonal and Communication Skills</td>
<td>Practice-Based Learning and Improvement</td>
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<td>Professionalism</td>
<td>Systems-Based Practice</td>
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### Faculty Instructional Goals

Faculty play a vital role in assisting the AAFP to achieve its mission by providing high-quality, innovative education for physicians, residents and medical students that will encompass the art, science, evidence and socio-economics of family medicine and to support the pursuit of lifelong learning. By achieving the instructional goals provided, faculty will facilitate the application of new knowledge and skills gained by learners to practice, so that they may optimize care provided to their patients.

- Provide up to 3 evidence-based recommended practice changes that can be immediately implemented, at the conclusion of the session; including SORT taxonomy & reference citations
- Facilitate learner engagement during the session
- Address related practice barriers to foster optimal patient management
- Provide recommended journal resources and tools, during the session, from the American Family Physician (AFP), Family Practice Management (FPM), and Familydoctor.org patient resources; those listed in the References section below are a good place to start
  - Visit [http://www.aafp.org/journals](http://www.aafp.org/journals) for additional resources
  - Visit [http://familydoctor.org](http://familydoctor.org) for patient education and resources
- Provide recommendations for establishing protocols to identify patients at risk for a thromboembolic event, and provide counseling to reduce risks and recognize signs and symptoms.
- Provide recommendations for using an evidence-based algorithm to diagnose DVT/PE, taking into account the stability of the patient.
- Provide recommendations for prescribing appropriate anticoagulant agents, according to the most recent clinical guidelines, to treat and help prevent recurrence of thrombotic events in patients.
- Provide strategies and resources for developing collaborative care plans with patients; emphasizing adherence to prescribed therapies, and monitoring with follow-up.
- Provide an overview of current clinical guidelines, and strategies for implementing key elements into practice.
- Provide an overview of current and new therapies, including recommendations for their use.
- Provide recommendations regarding guidelines for Medicare reimbursement.
- Provide recommendations to maximize office efficiency and guideline adherence to the diagnosis and management of thromboembolic disease.
- Provide an overview of newly available treatments, including efficacy, safety, contraindications, and cost/benefit relative to existing treatments.
- Provide instructions regarding the incorporation and use of the PCMH/ACO/Primary Care Core Measure Set into practice.
Needs Assessment

Abnormal blood clotting (thrombosis) is a major cause of death in the United States. While venous thromboembolism is the most common preventable cause of hospital death, an estimated 60,000 to 100,000 Americans die of deep vein thrombosis (DVT)/pulmonary embolism (PE), or DVT/PE each year.¹,² Some epidemiologic studies suggest that between 25%-50% of all clinically recognized symptomatic venous thromboembolisms (VTEs) occur in individuals who are neither hospitalized nor recovering from a major illness; therefore, physicians need to be able to identify any patient at risk for developing VTE.³ Bleeding and clotting disorders affect both men and women, however current data suggest that as many as 1% of women in the United States may have a bleeding disorder and many are unaware of their condition.⁴

Nearly half of all patients presenting with VTE are identified with thrombophilia.⁵ However, thrombophilia screening is expensive and time consuming. In fact, current Choosing Wisely recommendations for vascular medicine:⁶
- Don’t do work up for clotting disorder (order hypercoagulable testing) for patients who develop first episode of deep vein thrombosis (DVT) in the setting of a known cause.
- Don’t reimaging DVT in the absence of a clinical change.

Testing for hereditary thrombophilia has not been shown to positively affect clinical management of most patients with VTE, it is therefore it is important for physicians to follow evidence-based guideline recommendations to identify those individuals most at risk.⁵,⁷

Data from a recent American Academy of Family Physicians (AAFP) CME Needs Assessment survey indicate that family physicians have knowledge gaps with regard to treating and managing thromboembolic diseases, specifically DVT and PE.⁸ More specifically, CME outcomes data from 2012, 2013 and 2015 AAFP FMX (formerly Assembly): Pulmonary Embolism, Deep Vein Thrombosis, and Thrombophlebitis, and Thrombolytics sessions suggest that physicians have knowledge and practice gaps with regard to risk stratification and use of a risk calculator; effective and appropriate treatment therapies; being aware of new treatments; appropriate use of imaging; and use of D dimer test in initial assessment and follow-up and monitoring.⁹⁻¹¹

While there are published recommendations on screening and chemoprophylaxis; however, there are documented gaps in care because of concern with bleeding risk and perceived lack of evidence and lack of awareness of these published recommendations.¹²⁻¹⁵ Studies indicate a lower than anticipated use of low-molecular-weight heparin (LMWH), insufficient bridging from unfractionated heparin (UFH) or LMWH to warfarin, and continuation of anticoagulation after hospitalization were all problems discovered with the treatment of VTE.¹⁶ Instituting quality improvement programs for VTE prevention, using computer-based clinical decision support systems, and continuing medical education aimed at adherence to VTE guidelines have shown improvements in patient safety and outcomes.¹⁷⁻¹⁹ Despite data supporting the use of long-term anticoagulation in a number of patients and increases in physician prescription of appropriate anticoagulant therapy, maintaining patient adherence on long-term warfarin therapy remains a significant challenge due to the risks of anticoagulant-associated bleeding complications and the burdens of frequent monitoring and dose-adjustment.²⁰ Direct oral anticoagulants have demonstrated equal or superior protection and reduced bleeding risks compared to warfarin and are easier to use because of fixed dosing without monitoring of anticoagulation.²¹,²² Physicians
should be aware of new anticoagulants, and be prepared to evaluate the safety and efficacy of these new agents compared to one currently being used in practice. In fact, some studies suggest patients with venous thromboembolism (VTE) who were treated with a DOAC found that dosing differed from the recommended product dosing in 20 to 50 percent of cases, depending on the agent (mostly underdosing); thereby correlating with an increased frequency of VTE recurrence.23

Additionally, physicians can improve their care of patients with thromboembolic disease by engaging in continuing medical education that provides practical integration of evidence-based recommendations from the following guidelines:24-28

- The AAFP recommends against routine testing for Factor V Leiden and/or prothrombin 2012G> (PT) in asymptomatic adult family members of patients with venous thromboembolism, for the purpose of considering primary prophylactic anticoagulation. This recommendation does not extend to patients with other risk factors for thrombosis such as contraception use.
- Direct-acting oral anticoagulants are an alternative to vitamin K antagonist therapy (warfarin [Coumadin]) for VTE.
- Most patients with deep venous thrombosis and selected patients with pulmonary embolism can be safely treated as outpatients.
- Inferior vena cava filters should be avoided in patients with VTE treated with anticoagulation.
- If there are no contraindications, patients diagnosed with acute VTE should receive anticoagulation for a minimum of three months.
- In patients with a low pretest probability of DVT or pulmonary embolism, a negative result from a high-sensitivity d-dimer assay is sufficient to exclude venous thromboembolism.
- Validated clinical prediction rules can be used to estimate pretest probability of DVT and pulmonary embolism, and guide further evaluation.
- Compression ultrasonography should be the initial test for patients with intermediate to high pretest probability of DVT in the lower extremities.
- In patients with intermediate to high pretest probability of DVT, negative ultrasonography alone is insufficient to exclude the diagnosis of DVT. Further assessment is recommended, including checking the d-dimer level and repeating ultrasonography in one week if the d-dimer level is elevated.
- For patients with contraindications to computed tomography, including contrast allergy, renal disease, and pregnancy, ventilation-perfusion scanning is the preferred imaging modality for evaluation of possible pulmonary embolism.
- Patients should be assessed for the risk of thromboembolism and bleeding before the initiation of VTE prophylaxis.
- Patients with a transient provoking risk factor, but no persistent risk factors, for VTE do not require further testing.
- Routine testing for hereditary thrombophilias in patients with a first VTE is not helpful in predicting risk of recurrence or altering initial therapy.
- Extensive screening for occult malignancy in patients with VTE has not been proven to be cost-effective, to reduce mortality, or to improve survival.
• Clinical factors, such as whether the deep venous thrombosis was confined to a distal or proximal vein, whether the thrombotic episode was an initial or recurrent event, or whether transient risk factors were present, should determine duration of anticoagulant therapy in patients with VTE.

• Patients with a VTE and cancer should be treated with low-molecular-weight heparin for at least the first three to six months of long-term anticoagulation therapy. Subsequent treatment with low-molecular-weight heparin or vitamin K antagonist should be continued for as long as the cancer is active.

Physicians also need continuing medical education to help them how best to integrate the 2016 American College of Chest Physicians (ACCP) guidelines on antithrombotic therapy for venous thromboembolic (VTE) disease that include guidance on choice of anticoagulant, indications for extended anticoagulation, and indications for thrombolytic therapy in patients with acute pulmonary embolism (PE). These guidelines, compared with earlier versions of the guidelines, the direct oral anticoagulants (DOACs) apixaban, edoxaban, rivaroxaban, or dabigatran are now the preferred agents for long-term anticoagulation in patients who are not pregnant and do not have active cancer or severe renal insufficiency. Faculty should explain the research and the implications to practice.

The American Academy of Family Physicians (AAFP) is committed to supporting the Choosing Wisely® campaign with the goal of ensuring high-quality, cost-effective care for patients. Best practices hematology recommendations from the Choosing Wisely® campaign are as follows:

• Do not recommend bed rest following diagnosis of acute deep venous thromboembolism after the initiation of anticoagulation therapy, unless significant medical concerns are present. (American Physical Therapy Association)

• Do not treat with an anticoagulant for more than three months in a patient with a first venous thromboembolism occurring in the setting of a major transient risk factor. (American Society of Hematology)

These recommendations are provided only as assistance for physicians making clinical decisions regarding the care of their patients. As such, they cannot substitute for the individual judgment brought to each clinical situation by the patient's family physician. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication, but they should be used with the clear understanding that continued research may result in new knowledge and recommendations. These recommendations are only one element in the complex process of improving the health of America. To be effective, the recommendations must be implemented. As such, physicians require continuing medical education to assist them with making decisions about specific clinical considerations.

Physicians should also be kept up to date on new treatment therapies, changes to therapies, or warnings associated with existing therapies. Provide recommendations regarding new FDA approved medications for the treatment of thromboembolic disease; including safety, efficacy, tolerance, and cost considerations relative to currently available options. Some examples include, but are not limited to:

• Bevyxxa (betrixaban); Portola Pharmaceuticals; For the prophylaxis of venous thromboembolism, Approved June 2017
- Savaysa (edoxaban); Daiichi Sankyo; For the treatment of deep vein thrombosis, pulmonary embolism and risk of stroke and embolism due to atrial fibrillation, Approved January 2015.
- Eliquis (apixaban); Bristol-Myers Squibb; For the prevention of stroke and systemic embolism resulting from nonvalvular atrial fibrillation, Approved December 2012.
- Xarelto (rivaroxaban); Bayer; For the prophylaxis of deep vein thrombosis during knee or hip replacement surgery, Approved July 2011.

In addition to known heritable and acquired risk factors for VTE, physicians should be aware of recent studies outlining newly identified risk factors, such as:
- Athletes using androgens and tamoxifen, inadvertent use of additional tamoxifen from dietary supplements could add to the already elevated VTE risk.32
- The FDA now requires a more general warning about the risk of thrombosis in the labeling of all approved testosterone products.33

Physicians should be provided updates regarding data from a recent randomized trial, suggesting that rivaroxaban may be superior to aspirin for long-term treatment of patients who had completed a 6- to 12-month course of therapeutic anticoagulation.34

Physicians can improve patient satisfaction with the referral process by using readily available strategies and tools such as, improving internal office communication, engaging patients in scheduling, facilitating the appointment, tracking referral results, analyzing data for improvement opportunities, and gathering patient feedback.35,36

The American Academy of Family Physicians Academy has participated in the Core Measures Collaborative (the Collaborative) convened by America’s Health Insurance Plans (AHIP) since August 2014. The Collaborative is a multi-stakeholder effort working to define core measure sets of various specialties promoting alignment and harmonization of measure use and collection across both public and private payers.

Participants in the Collaborative included Centers for Medicare and Medicaid Services (CMS), the National Quality Forum (NQF), private payers, provider organizations, employers, and patient and consumer groups. This effort exists to decrease physician burden by reducing variability in measure selection, specifications and implementation– making quality measurement more useful and meaningful for consumers, employers, as well as public and private clinicians.

With significant AAFP input, a PCMH/ACO/Primary Care Core Measure Set has been developed for primary care. The goal of this set is to decrease burden and allow for more congruence between payer reporting programs.37

Resources: Evidence-Based Practice Recommendations/Guidelines/Performance Measures
- Deep Venous Thrombosis and Pulmonary Embolism: Current Therapy24
• Prevention of VTE in nonsurgical patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines

• American College of Chest Physicians (ACCP) guidelines on antithrombotic therapy for venous thromboembolic (VTE) disease

• AAFP Venous Thromboembolism Clinical Preventive Service Recommendation

• AHRQ: Preventing Hospital-Acquired Venous Thromboembolism

• American College of Chest Physicians guidelines on antithrombotic therapy for venous thromboembolic (VTE) disease

• Diagnosis of deep venous thrombosis and pulmonary embolism

• Venous Thromboembolism Prophylaxis in Hospitalized Patients: A Clinical Practice Guideline From the American College of Physicians

• Recurrent venous thromboembolism

• Adding health education specialists to your practice

• Envisioning new roles for medical assistants: strategies from patient-centered medical homes

• The benefits of using care coordinators in primary care: a case study

• Engaging Patients in Collaborative Care Plans

• The Use of Symptom Diaries in Outpatient Care

• Health Coaching: Teaching Patients to Fish

• Medication adherence: we didn't ask and they didn't tell

• Encouraging patients to change unhealthy behaviors with motivational interviewing

• Integrating a behavioral health specialist into your practice

• Simple tools to increase patient satisfaction with the referral process

• FamilyDoctor.org. Deep Vein Thrombosis | Overview (patient education)

• FamilyDoctor.org. Hypercoagulation | Overview (patient education)

References


31. CenterWatch. FDA Approved Drugs by Medical Condition. 2017;
33. U.S. Food and Drug Adminstration. FDA adding general warning to testosterone products about potential for venous blood clots. *Drug Safety & Availability* 2014;
37. American Academy of Family Physicians (AAFP). PCMH/ACO/Primary Care Core Measure Set. 2016;