



Body System: Cardiovascular			
Session Topic: Thromboembolic Diseases			
Educational Format		Faculty Expertise Required	
REQUIRED	Interactive Lecture	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&A during the final 15 minutes of the session are required.	
OPTIONAL	Problem-Based Learning (PBL)	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. <u>Please describe your interest and plan for teaching a PBL on your proposal form.</u>	
Professional Practice Gap		Learning Objective(s) that will close the gap and meet the need	Outcome Being Measured
<ul style="list-style-type: none"> 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. 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 (VTE) disease (March 2016). 		<ol style="list-style-type: none"> Establish protocols to identify patients at risk for a thromboembolic event, and provide counseling to reduce risks and recognize signs and symptoms. Use an evidence-based algorithm to diagnose DVT/PE, taking into account the stability of the patient. Prescribe appropriate anticoagulant agents, according to the most recent clinical guidelines, to treat and help prevent recurrence of thrombotic events in patients. Develop collaborative care plans with patients; emphasizing adherence to prescribed therapies, and monitoring with follow-up. 	Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.
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> for additional resources
 - Visit <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 American 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.

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:²³⁻²⁶

- 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.

- 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).²⁷ 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.

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:²⁸

- 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 risk²⁹
- The FDA now requires a more general warning about the risk of thrombosis in the labeling of all approved testosterone products³⁰

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.^{31,32}

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.³³

Resources: Evidence-Based Practice Recommendations/Guidelines/Performance Measures

- Prevention of VTE in nonsurgical patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines⁷
- American College of Chest Physicians (ACCP) guidelines on antithrombotic therapy for venous thromboembolic (VTE) disease²⁷
- AAFP Venous Thromboembolism Clinical Preventive Service Recommendation²³
- AHRQ: Preventing Hospital-Acquired Venous Thromboembolism¹
- Diagnosis of deep venous thrombosis and pulmonary embolism²⁴
- Venous Thromboembolism Prophylaxis in Hospitalized Patients: A Clinical Practice Guideline From the American College of Physicians²⁵
- Recurrent venous thromboembolism²⁶
- Adding health education specialists to your practice³⁴
- Envisioning new roles for medical assistants: strategies from patient-centered medical homes³⁵
- The benefits of using care coordinators in primary care: a case study³⁶
- Engaging Patients in Collaborative Care Plans³⁷
- The Use of Symptom Diaries in Outpatient Care³⁸
- Health Coaching: Teaching Patients to Fish³⁹
- Medication adherence: we didn't ask and they didn't tell⁴⁰
- Encouraging patients to change unhealthy behaviors with motivational interviewing⁴¹
- Integrating a behavioral health specialist into your practice⁴²
- Simple tools to increase patient satisfaction with the referral process³¹
- FamilyDoctor.org. Deep Vein Thrombosis | Overview (patient education)⁴³
- FamilyDoctor.org. Hypercoagulation | Overview (patient education)⁴⁴

References

1. Agency for Healthcare Research and Quality (AHRQ). Preventing Hospital-Acquired Venous Thromboembolism: A Guide for Effective Quality Improvement. *Publication # 08-0075* 2008; <http://www.ahrq.gov/professionals/quality-patient-safety/patient-safety-resources/resources/vtguide/index.html>. Accessed May, 2014.
2. Centers for Disease Control and Prevention. DVT/PE Data & Statistics. 2012; <http://www.cdc.gov/ncbddd/dvt/data.html>. Accessed May, 2014.
3. Martinelli I, De Stefano V, Mannucci PM. Inherited risk factors for venous thromboembolism. *Nature reviews. Cardiology*. 2014;11(3):140-156.



4. Centers for Disease Control and Prevention. Blood Disorders in Women. 2013; <http://www.cdc.gov/ncbddd/blooddisorders/women/index.html>. Accessed May, 2014.
5. Middeldorp S. Evidence-based approach to thrombophilia testing. *Journal of thrombosis and thrombolysis*. Apr 2011;31(3):275-281.
6. American Board of Internal Medicine (ABIM). Choosing Wisely: Lists. 2013; <http://www.choosingwisely.org/doctor-patient-lists/>. Accessed July, 2013.
7. Kahn SR, Lim W, Dunn AS, et al. Prevention of VTE in nonsurgical patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. Feb 2012;141(2 Suppl):e195S-226S.
8. AAFP. 2012 CME Needs Assessment: Clinical Topics. American Academy of Family Physicians; 2012.
9. American Academy of Family Physicians (AAFP). 2012 AAFP Scientific Assembly: CME Outcomes Report. Leawood KS: AAFP; 2012.
10. American Academy of Family Physicians (AAFP). 2013 AAFP Scientific Assembly: CME Outcomes Report. Leawood KS: AAFP; 2013.
11. American Academy of Family Physicians (AAFP). AAFP FMX CME Outcomes Report. Leawood KS: AAFP; 2015.
12. Stratton MA, Anderson FA, Bussey HI, et al. Prevention of venous thromboembolism: Adherence to the 1995 american college of chest physicians consensus guidelines for surgical patients. *Archives of internal medicine*. 2000;160(3):334-340.
13. Merli GJ. Venous thromboembolism prophylaxis guidelines: use by primary care physicians. *Clinical cornerstone*. 2005;7(4):32-38.
14. Lenchus JD. Strategies for venous thromboembolism prophylaxis programs. *Postgraduate medicine*. Nov 2011;123(6):91-101.
15. Baser O, Sengupta N, Dysinger A, Wang L. Thromboembolism prophylaxis in medical inpatients: effect on outcomes and costs. *The American journal of managed care*. Jun 2012;18(6):294-302.
16. Caprini JA, Tapson VF, Hyers TM, et al. Treatment of venous thromboembolism: adherence to guidelines and impact of physician knowledge, attitudes, and beliefs. *Journal of vascular surgery*. Oct 2005;42(4):726-733.
17. Al-Hameed F, Al-Dorzi HM, Aboelnazer E. The effect of a continuing medical education program on Venous thromboembolism prophylaxis utilization and mortality in a tertiary-care hospital. *Thrombosis journal*. 2014;12:9.
18. Wilson KC, Merli GJ. Performance measures for improving the prevention of venous thromboembolism: achievement in clinical practice. *Journal of thrombosis and thrombolysis*. Oct 2011;32(3):293-302.
19. Adams P, Riggio JM, Thomson L, Brandell-Marino R, Merli G. Clinical decision support systems to improve utilization of thromboprophylaxis: a review of the literature and experience with implementation of a computerized physician order entry program. *Hospital practice (1995)*. Aug 2012;40(3):27-39.
20. Kneeland PP, Fang MC. Current issues in patient adherence and persistence: focus on anticoagulants for the treatment and prevention of thromboembolism. *Patient preference and adherence*. 2010;4:51-60.
21. Michota F. Transitions of care in anticoagulated patients. *Journal of multidisciplinary healthcare*. 2013;6:215-228.



22. Ewen S, Rettig-Ewen V, Mahfoud F, Bohm M, Laufs U. Drug adherence in patients taking oral anticoagulation therapy. *Clinical research in cardiology : official journal of the German Cardiac Society*. Mar 2014;103(3):173-182.
23. American Academy of Family Physicians (AAFP). Venous Thromboembolism *Clinical Preventive Service Recommendation* 2012; <http://www.aafp.org/patient-care/clinical-recommendations/all/venous-thromboembolism.html>. Accessed August, 2014.
24. Wilbur J, Shian B. Diagnosis of deep venous thrombosis and pulmonary embolism. *American family physician*. Nov 15 2012;86(10):913-919.
25. Qaseem A, Chou R, Humphrey LL, Starkey M, Shekelle P. Venous Thromboembolism Prophylaxis in Hospitalized Patients: A Clinical Practice Guideline From the American College of Physicians. *Annals of internal medicine*. 2011;155(9):625-632.
26. Galioto NJ, Danley DL, Van Maanen RJ. Recurrent venous thromboembolism. *American family physician*. Feb 1 2011;83(3):293-300.
27. Kearon C, Akl EA, Ornelas J, et al. Antithrombotic Therapy for VTE Disease: CHEST Guideline and Expert Panel Report. *Chest*. Feb 2016;149(2):315-352.
28. CenterWatch. FDA Approved Drugs by Medical Condition. 2016; <https://www.centerwatch.com/drug-information/fda-approved-drugs/medical-conditions/>. Accessed Apr, 2016.
29. Pemmaraju N, Munsell MF, Hortobagyi GN, Giordano SH. Retrospective review of male breast cancer patients: analysis of tamoxifen-related side-effects. *Annals of oncology : official journal of the European Society for Medical Oncology / ESMO*. Jun 2012;23(6):1471-1474.
30. U.S. Food and Drug Administration. FDA adding general warning to testosterone products about potential for venous blood clots. *Drug Safety & Availability* 2014; <http://www.fda.gov/Drugs/DrugSafety/ucm401746.htm>. Accessed August, 2014.
31. Jarve RK, Dool DW. Simple tools to increase patient satisfaction with the referral process. *Family practice management*. Nov-Dec 2011;18(6):9-14.
32. American Academy of Family Physicians (AAFP). FPM Toolbox: Referral Management. 2013; <http://www.aafp.org/fpm/toolBox/viewToolType.htm?toolTypeId=26>. Accessed July, 2014.
33. American Academy of Family Physicians (AAFP). PCMH/ACO/Primary Care Core Measure Set. 2016; <http://www.aafp.org/practice-management/improvement/measures.html>. Accessed May, 2016.
34. Chambliss ML, Lineberry S, Evans WM, Bibeau DL. Adding health education specialists to your practice. *Family practice management*. Mar-Apr 2014;21(2):10-15.
35. Naughton D, Adelman AM, Bricker P, Miller-Day M, Gabbay R. Envisioning new roles for medical assistants: strategies from patient-centered medical homes. *Family practice management*. Mar-Apr 2013;20(2):7-12.
36. Mullins A, Mooney J, Fowler R. The benefits of using care coordinators in primary care: a case study. *Family practice management*. Nov-Dec 2013;20(6):18-21.
37. Mauksch L, Safford B. Engaging Patients in Collaborative Care Plans. *Family practice management*. 2013;20(3):35-39.
38. Hodge B. The Use of Symptom Diaries in Outpatient Care. *Family practice management*. 2013;20(3):24-28.
39. Ghorob A. Health Coaching: Teaching Patients to Fish. *Family practice management*. 2013;20(3):40-42.



40. Brown M, Sinsky CA. Medication adherence: we didn't ask and they didn't tell. *Family practice management*. Mar-Apr 2013;20(2):25-30.
41. Stewart EE, Fox CH. Encouraging patients to change unhealthy behaviors with motivational interviewing. *Family practice management*. May-Jun 2011;18(3):21-25.
42. Reitz R, Fifield P, Whistler P. Integrating a behavioral health specialist into your practice. *Family practice management*. Jan-Feb 2011;18(1):18-21.
43. FamilyDoctor.org. Deep Vein Thrombosis | Overview. 2004;
<http://familydoctor.org/familydoctor/en/diseases-conditions/deep-vein-thrombosis.html>.
Accessed August, 2014.
44. FamilyDoctor.org. Hypercoagulation | Overview. 2000;
<http://familydoctor.org/familydoctor/en/diseases-conditions/hypercoagulation.html>.
Accessed September, 2013.