

Anticoagulation Certificate

ACPE Activity Number(s):

- 0204-0000-21-714-H04-P
- 0204-0000-21-715-H01-P
- 0204-0000-21-716-H01-P
- 0204-0000-21-717-H01-P
- 0204-0000-21-718-H01-P
- 0204-0000-21-719-H01-P
- 0204-0000-21-720-H01-P
- 0204-0000-21-721-H01-P
- 0204-0000-21-722-H01-P
- 0204-0000-21-723-H01-P
- 0204-0000-21-724-H01-P
- 0204-0000-21-725-H04-P

Release Date: February 24, 2021

Expiration Date: February 24, 2024

Activity Type: Application-based

CE Credit Hour(s): 32 hours/12 activities (see below for details)

Activity Fee: \$445.00/\$545.00 member/non-member

Accreditation for Pharmacists



The American Society of Health-System Pharmacists is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.

Target Audience

This activity is intended for pharmacists seeking to expand their knowledge and skills in anticoagulation therapy management.

Activity Overview

This self-guided, online program will provide 32 hours of ACPE continuing education for pharmacists, incorporating recorded presentations, skill-focused activities, and supportive readings.

The 12 modules are designed to provide focused education on anticoagulation therapy management, beginning with regulatory drivers and the concept of anticoagulation stewardship; continuing through the medications that comprise anticoagulation therapy and their use in various acute care, ambulatory, and perioperative settings; the unique needs of specialty populations; adverse effect monitoring and management; interpretation of laboratory assays and application to care, and more. Throughout the program, the skills needed to be an effective anticoagulation practitioner are discussed. Case studies will be discussed in-depth, with practical, real-world situations explored, and treatment approaches explained. Upon completion of all the modules, learners should be proficient in anticoagulation therapy management.

Activity CE Information	Title, Description and Learning Objectives
<p>ACPE #: 0204-0000-21-714-H04-P</p> <p>CE Hours: 2.25</p> <p>Activity Type: Application-based</p>	<p>Title: Introduction to Anticoagulation</p> <p>Faculty:</p> <ul style="list-style-type: none"> • William E. Dager, Pharm.D., BCPS-AQ Cardiology, FASHP, FCCM, FCCP, FCSHP, MCCM • Anne E. Rose, Pharm.D. <p>This activity introduces the learner to the evolution of anticoagulation and antithrombotic stewardship.</p> <p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Describe milestones in the evolving use and management of anticoagulation therapy. 2. Name regulatory oversights for managing anticoagulation therapy. 3. Explain the importance of pharmacists adapting anticoagulation therapy to optimize the overall management plan. 4. Describe the core elements of an antithrombotic stewardship program. 5. Apply principles of antithrombotic stewardship within your current practice site.
<p>ACPE #: 0204-0000-21-715-H01-P</p> <p>CE Hours: 2.75</p> <p>Activity Type: Application-based</p>	<p>Title: Heparin, Low Molecular Weight Heparin, and Venous Thromboembolism Prophylaxis</p> <p>Faculty:</p> <ul style="list-style-type: none"> • Hahyoon Kim, Pharm.D., BCCP • Keri S. Kim, Pharm.D., M.S., BCPS, CTS <p>This activity explores commonly used medications in anticoagulation – heparin, low molecular weight heparin, and fondaparinux -- and concepts in venous thromboembolism prophylaxis.</p> <p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Identify the differences among unfractionated heparin, low molecular weight heparin (LMWH), and fondaparinux. 2. Describe how to initiate and monitor heparin, low molecular weight heparin, and fondaparinux for various indications. 3. Discuss how to adjust heparin, low molecular weight heparin, and fondaparinux based on patient specific considerations.

	<ol style="list-style-type: none"> 4. Apply a venous thromboembolism risk assessment model to determine risk for venous thrombosis in medical or surgical patients. 5. Compare the difference in safety and efficacy of venous thromboembolism prophylaxis regimens in medical or surgical patients. 6. Design an optimal venous thromboembolism prophylaxis regimen in medical or surgical patients.
<p>ACPE #: 0204-0000-21-716-H01-P</p> <p>CE Hours: 2.75</p> <p>Activity Type: Application-based</p>	<p>Title: Arterial Disease and Venous Thromboembolism Treatment</p> <p>Faculty:</p> <ul style="list-style-type: none"> • William E. Dager, Pharm.D., BCPS-AQ Cardiology, FASHP, FCCM, FCCP, FCSHP, MCCM • Toby C. Trujillo, Pharm.D., BCPS-AQ Cardiology, FAHA, FCCP <p>This activity discusses acute venous thromboembolism treatment, arterial disease and treatment, and use of antithrombotic agents.</p> <p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Describe how acute venous thromboembolism (VTE) is diagnosed. 2. List evidence-based anticoagulant options with recommended dosing for initial VTE treatment. 3. Design an individualized anticoagulant plan for a patient with an acute VTE case including risk-benefit assessment and determination of duration of anticoagulant therapy. 4. Compare and contrast the key characteristics and treatment considerations for arterial versus venous thromboembolism. 5. Design an appropriate antithrombotic treatment regimen for coronary artery disease patients who also have either atrial fibrillation or venous thromboembolism. 6. Design an appropriate antithrombotic treatment regimen for peripheral artery disease and cardiovascular disease patients.
<p>ACPE #: 0204-0000-21-717-H01-P</p> <p>CE Hours: 2.25</p> <p>Activity Type: Application-based</p>	<p>Title: Thrombolytic Therapy</p> <p>Faculty:</p> <ul style="list-style-type: none"> • Tyree H. Kiser, Pharm.D., BCPS, FCCM, FCCP

	<p>This activity includes discussion on thrombolytic therapies including pharmacology, risk vs. benefit, designing a treatment plan, monitoring, and transition after thrombolysis.</p> <p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Given a patient case, assess a patient’s potential benefits and risks, including contraindications, associated with thrombolytic therapy. 2. Design an appropriate thrombolytic treatment plan for a patient with a life- or limb threatening thrombosis. 3. Design a subsequent antithrombotic treatment plan for a patient with a life- or limb threatening thrombosis.
<p>ACPE #: 0204-0000-21-718-H01-P</p> <p>CE Hours: 2.75</p> <p>Activity Type: Application-based</p>	<p>Title: Warfarin and Focus on the Ambulatory Setting</p> <p>Faculty:</p> <ul style="list-style-type: none"> • Michael P. Gulseth, Pharm.D., BCPS, FASHP, FMSHP • Candice Garwood, Pharm.D., BCACP, BCPS, FCCP <p>This activity describes strategies for the management of warfarin and other anticoagulants in various settings and situations, including ambulatory care settings.</p> <p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Select an appropriate starting dose, INR follow-up plan, and key patient education points for a patient starting warfarin therapy. 2. Determine an appropriate dosing/management strategy based on the clinical situation when a patient on warfarin presents to the hospital. 3. Determine an appropriate dosing/management strategy based on the clinical situation when a hospitalized patient on warfarin transitions to a different level of care (critical care, sub-acute, home). 4. Develop an effective management strategy when a patient experiences a clinically significant drug-drug or dietary interaction. 5. Formulate an effective management strategy when presented with an ambulatory patient struggling with warfarin therapy. 6. Identify the key components, characteristics, and activities for management of patients in a high-performing outpatient anticoagulation service. 7. Modify a patient’s anticoagulation therapy in the management of warfarin, low molecular weight

	<p>heparin (LMWH) and direct oral anticoagulant (DOAC) medications in an outpatient anticoagulation service.</p> <p>8. Summarize how to document care in the management of medications in an outpatient anticoagulation service.</p>
<p>ACPE #: 0204-0000-21-719-H01-P</p> <p>CE Hours: 2.75</p> <p>Activity Type: Application-based</p>	<p>Title: Oral Direct Thrombin Inhibitors (DTI), Anti-Xa Agents, and Atrial Fibrillation</p> <p>Faculty:</p> <ul style="list-style-type: none"> • Ellen M. Uppuluri, Pharm.D., BCACP, CACP • Craig J. Beavers, Pharm.D., BCCP, BCPS-AQ Cardiology, CACP, FACC, FAHA, FCCP <p>This activity covers oral direct thrombin inhibitors and anti-Xa agents, and describes anticoagulation considerations in atrial fibrillation.</p> <p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Compare appropriate clinical and patient specific characteristics for DOAC and warfarin therapy. 2. Identify potential organ system and drug interactions with DOACs. 3. Design appropriate management strategies for a patient with organ system and drug interaction with DOACs. 4. Develop a plan to successfully convert a patient from warfarin to a DOAC. 5. Categorize an atrial fibrillation patient’s risk of stroke and bleeding in order to make treatment decisions. 6. Develop an individualized anticoagulation plan for a patient with atrial fibrillation. 7. Describe anticoagulation considerations related to ablations and anticoagulation alternatives in atrial fibrillation.
<p>ACPE #: 0204-0000-21-720-H01-P</p> <p>CE Hours: 3.5</p> <p>Activity Type: Application-based</p>	<p>Title: Anticoagulation in Special Populations</p> <p>Faculty:</p> <ul style="list-style-type: none"> • Tadd Hellwig, Pharm.D., BCPS, FASHP • Nancy L. Shapiro, Pharm.D., BCACP, CACP, FCCP <p>This activity discusses considerations for anticoagulation therapy management in special populations such as obesity, geriatrics, pediatrics, and pregnant women.</p>

	<p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Describe skills required by a pharmacist to assess if a patient requires special management considerations. 2. Design monitoring parameters for a patient within a special population receiving an anticoagulant. 3. Describe how factors for patients within special populations can alter risk for bleeding or thrombosis independent of direct effects on the anticoagulation regimen. 4. Compare outcomes in patients within a special population compared to 'average' patients. 5. Select appropriate anticoagulant therapy in a patient within a special population (obesity). 6. Select appropriate anticoagulant therapy in a patient within a special population (renal failure). 7. Select appropriate anticoagulant therapy in a patient within a special population (geriatric). 8. Discuss characteristics in pregnant women that put them at higher risk for VTE. 9. Apply key components for managing a pregnant patient with a VTE before, during, and after delivery. 10. Apply components and activities for managing a pediatric patient requiring anticoagulation therapy for a VTE.
<p>ACPE #: 0204-0000-21-721-H01-P</p> <p>CE Hours: 2.5</p> <p>Activity Type: Application-based</p>	<p>Title: Mechanical Devices and Focus on the Acute Care Setting</p> <p>Faculty:</p> <ul style="list-style-type: none"> • Aaron Josh Roberts, Pharm.D., AACC, BCCP, BCPS-AQ Cardiology • William E. Dager, Pharm.D., BCPS-AQ Cardiology, FASHP, FCCM, FCCP, FCSHP, MCCM <p>This activity explains anticoagulation use in patients with mechanical devices and explores effective management strategies for anticoagulation in acute care settings.</p> <p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Discuss common, current medical devices that require anticoagulation. 2. Analyze a patient's device-specific anticoagulation regimen. 3. Design a patient- and device-specific anticoagulation regimen. 4. Review common, current medical devices that require anticoagulation.

	<ol style="list-style-type: none"> 5. Explain challenges that can occur with anticoagulants in the acutely and critically ill patient. 6. Describe characteristics of effective anticoagulation management specific to acutely ill patient. 7. Summarize what a pharmacist needs to consider in adapting anticoagulant therapy to the acutely ill patient.
<p>ACPE #: 0204-0000-21-722-H01-P</p> <p>CE Hours: 2.75</p> <p>Activity Type: Application-based</p>	<p>Title: Heparin Induced Thrombocytopenia (HIT) Treatment and Hypercoagulable Conditions</p> <p>Faculty:</p> <ul style="list-style-type: none"> • William E. Dager, Pharm.D., BCPS-AQ Cardiology, FASHP, FCCM, FCCP, FCSHP, MCCM • Jessica Rimsans, Pharm.D., BCPS <p>This activity includes diagnosis and treatment of heparin induced thrombocytopenia and the management of anticoagulation in patients with hypercoagulable conditions.</p> <p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Describe the pathophysiology and approaches to recognize heparin-induced thrombocytopenia (HIT). 2. Discuss approaches to managing HIT. 3. Discuss how to initiate and manage anticoagulation therapy in HIT. 4. Discuss how to initiate and manage parenteral direct thrombin inhibitors. 5. Differentiate between the various hypercoagulable states considering appropriate laboratory testing and clinical presentation. 6. Develop a management plan to mitigate the risk of thrombosis for various hypercoagulable states. 7. Assess the role of cancer as a hypercoagulable state and the use of risk assessment scores to determine management strategies.
<p>ACPE #: 0204-0000-21-723-H01-P</p> <p>CE Hours: 2</p> <p>Activity Type: Application-based</p>	<p>Title: Laboratory Assessments</p> <p>Faculty:</p> <ul style="list-style-type: none"> • William E. Dager, Pharm.D., BCPS-AQ Cardiology, FASHP, FCCM, FCCP, FCSHP, MCCM <p>In this activity, analytical tests used in the assessment of anticoagulation are discussed; limitations and interpretation of assays in the overall management of patients on anticoagulant medications is also presented.</p>

	<p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Explain analytical tests utilized in the assessment and management of anticoagulant agents. 2. Summarize the limitations of anticoagulant assays. 3. Design an anticoagulation management plan that incorporates assays for decision support.
<p>ACPE #: 0204-0000-21-724-H01-P</p> <p>CE Hours: 3.5</p> <p>Activity Type: Application-based</p>	<p>Title: Reversing Anticoagulation and Peri-Operative Management</p> <p>Faculty:</p> <ul style="list-style-type: none"> • William E. Dager, Pharm.D., BCPS-AQ Cardiology, FASHP, FCCM, FCCP, FCSHP, MCCM <p>This activity details bleeding complications encountered while undergoing anticoagulation therapy, agents used to reverse bleeding, and techniques for effective monitoring strategies in such situations. Management of anticoagulation in the peri-operative setting is also covered.</p> <p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Describe potential bleeding challenges during anticoagulation therapy. 2. Design an anticoagulation agent-specific reversal plan. 3. Summarize available anticoagulant medications and ways to reverse their effects. 4. Describe the various agents used to reverse anticoagulant effects. 5. Summarize invasive procedures and related risks for bleeding and thrombotic complications. 6. Design an anticoagulation management approach when an invasive procedure is planned. 7. Analyze a patient's specific anticoagulation regimen and estimate when effects may be absent.
<p>ACPE #: 0204-0000-21-725-H04-P</p> <p>CE Hours: 2.25</p> <p>Activity Type: Application-based</p>	<p>Title: Skills for Managing Anticoagulation Therapy</p> <p>Faculty:</p> <ul style="list-style-type: none"> • William E. Dager, Pharm.D., BCPS-AQ Cardiology, FASHP, FCCM, FCCP, FCSHP, MCCM <p>This activity includes the advanced pharmacist skills required for comprehensive anticoagulation therapy management and establishes strategies for continued self-development to improve clinical skills for better patient care and outcomes.</p>

	<p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Discuss the skill set needed for initiating and developing anticoagulation therapy management plans. 2. Describe skills for assessing and adjusting anticoagulation management plans. 3. Re-define a pharmacist's role in managing anticoagulation therapy. 4. Name key concepts learned in managing anticoagulation therapy. 5. Prepare a plan for continued self-development to evolve as an anticoagulation therapy provider. 6. Summarize a pharmacist's role in managing anticoagulation therapy. 7. Apply concepts learned in managing anticoagulation therapy. 8. Prepare a plan for continued self-development to evolve as an anticoagulation therapy provider.
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Faculty Information

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Disclosures

In accordance with ACCME and ACPE Standards for Commercial Support, ASHP requires that all individuals in a position to control the content of this activity disclose financial relationships with ACCME-defined commercial entities. An individual has a relevant financial relationship if he or she (or spouse/domestic partner) has a financial relationship, in any amount, occurring in the past 12 months with a commercial entity whose products or services will be discussed in the activity.

In this activity, only the individual(s) below have a relevant financial relationship.

- Michael P. Gulseth, Pharm.D., BCPS, FASHP, FMSHP
 - Serves on the speaker's bureaus for Janssen Pharmaceuticals, Inc., Bristol Myers Squibb, Pfizer Inc., CSL Behring, Portola Pharmaceuticals, Inc., and Diagnostica Stago, Inc.

All other ASHP staff, planners, faculty, reviewers, and subject matter experts report no financial relationships relevant to this activity.

Methods and CE Requirements

This online activity consists of a combined total of 12 learning modules. Pharmacists are eligible to receive a total of 32 hours of continuing education credit by completing all 12 modules within this certificate program.

Participants must participate in the entire activity, complete the evaluation and all required components to claim continuing pharmacy education credit online at ASHP eLearning Portal <http://elearning.ashp.org>. Follow the prompts to claim credit and view your statement of credit within 60 days after completing the activity.

Important Note – ACPE 60 Day Deadline:

Per ACPE requirements, CPE credit must be claimed within 60 days of being earned – no exceptions! To verify that you have completed the required steps and to ensure your credits have been reported to CPE Monitor, we encourage you to check your NABP eProfile account to validate your credits were transferred successfully before the ACPE 60-day deadline. After the 60 day deadline, ASHP will no longer be able to award credit for this activity.

System Technical Requirements

Courses and learning activities are delivered via your Web browser and Acrobat PDF. Users should have a basic comfort level using a computer and navigating websites.

View the minimum [technical and system requirements](#) for learning activities.