**Activity Title:** Heart of the matter: Directing anticoagulation treatment for left ventricular thrombus

**Speaker:** Michelle Koverman, PharmD

**Objectives:**

1. **Identify events that increase risk for development of left ventricular thrombus (LVT)**
2. **Discuss different anticoagulation medications used for LVT prophylaxis and treatment**
3. **Recognize available evidence regarding the use of direct-acting oral anticoagulants (DOACs) versus vitamin K antagonist and how it applies to clinical practice**

**Presentation Abstract:**

Left ventricular thrombus (LVT) is a serious complication primarily occurring in patients with left ventricular (LV) dysfunction usually following a myocardial infarction (MI) or heart failure (HF) with reduced LV systolic function. In the United States roughly 1 million MIs occur each year. Of those 6.3% of patients with ST-segment elevation (STEMI) and 19.2% of patients with anterior wall STEMI are complicated by LV ejection fraction < 50% and may experience an LV thrombus. LVT development depends on series of cardiovascular factors that can be described by Virchow’s Triad. Virchow’s Triad describes different pathways that affects clotting and thrombus formation (blood stasis, hypercoagulable state, and vessel wall injury). The American College of Cardiology/American Heart Association (ACC/AHA) describes using direct vitamin K antagonist as first line therapy for prophylaxis and treatment of LVT. Currently, in clinical practice direct acting oral anticoagulants (DOACs) is being utilized for the treatment of LVT post MI. Recent literature, including a prospective trial (No-LVT Trial), demonstrated both safety and efficacy outcomes in the use of DOACs for the treatment of LVT. The issue of appropriate anticoagulation becomes more complex depending on the location of the thrombus in the heart. This presentation will introduce the pathophysiology of LVT, review available anticoagulants for treatment of LVT, evaluate literature relevant to management of anticoagulation therapy in treatment of LVT, and include clinical considerations when selecting appropriate anticoagulation therapy for patients.

**Format:**

[ ]  Live

[ ]  Home study

[x]  Live and Home study

[ ]  Webinar (Live)

**Date of Live Activity:** January 11th, 2023

**Activity length (hr. or CEU): 1 hour**

Topic Designators – activities are related to:

If a CPE activity’s target audience is exclusively for pharmacists, the designation “P” will be used as follows:

[x]  01-P Disease State Management/Drug therapy

Audience Questions:

1. Which of the following may increase a patient’s risk for developing an LVT?
	1. ST-segment elevation myocardial infarction (STEMI)
	2. Heart failure with left-ventricular ejection fraction (LVEF) < 30%
	3. Cardiomyopathy
	4. Atrial fibrillation
	5. All the above
2. Which of the following anticoagulants is recommended by the American College of Cardiology/American Heart Association (ACC/AHA) for treatment of LVT?
	1. Apixaban (Eliquis)
	2. Dabigatran (Pradaxa)
	3. Endoxaban (Savaysa, Lixiana)
	4. Rivaroxaban (Xarelto)
	5. Warfarin (Coumadin, Jantoven)
3. Which of the following is true regarding the No-LVT Trial?
	1. First randomized trial comparing warfarin with rivaroxaban for the treatment of LVT
	2. Rivaroxaban found no statistical significance in the resolution of LVT at 1-month follow-up
	3. Double-blind, prospective trial
	4. Rivaroxaban was found to have increased incidence of stroke than warfarin

References:

1. Abdelnabi M, Saleh Y, Fareed A, et al. Comparative study of oral anticoagulation in left ventricular thrombi (no-LVT trial). *Journal of the American College of Cardiology*. 2021;77(12):1590-1592. doi:10.1016/j.jacc.2021.01.049
2. Camaj A, Fuster V, Giustino G, et al. Left Ventricular Thrombus Following Acute Myocardial Infarction. *J Am Coll Cardiol.*2022 Mar, 79 (10) 1010–1022.<https://doi.org/10.1016/j.jacc.2022.01.011>
3. Guyatt GH, Akl EA, Crowther M, Gutterman DD, Schuunemann HJ. American College of Chest Physicians Antithrombotic Therapy and Prevention of Thrombosis Panel. Executive summary: antithrombotic therapy and prevention of thrombosis, 9th ed.: American College of Chest Physicians evidence-based clinical practice guidelines. Chest 2012; 141:7S–47S.
4. Ibanez B, James S, Agewall S, et al; ESC Scientific Document Group. 2017 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation: the task force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology (ESC). Eur Heart J. 2018;39(2):119-177.
5. Iqbal H, Straw S, Craven TP, Stirling K, Wheatcroft SB, Witte KK. Direct oral anticoagulants compared to vitamin K antagonist for the management of left ventricular thrombus. ESC Heart Fail. 2020 Oct;7(5):2032-2041. doi: 10.1002/ehf2.12718. Epub 2020 Jun 25. PMID: 32583975; PMCID: PMC7524136.
6. Kajy M, Shokr M, Ramappa P. Use of direct oral anticoagulants in the treatment of left ventricular thrombus: Systematic review of current literature. Am J Ther. 2019 doi: 10.1097/MJT.0000000000000937.
7. Kernan WN, Ovbiagele B, Black HR, et al; American Heart Association Stroke Council, Council on Cardiovascular and Stroke Nursing, Council on Clinical Cardiology, and Council on Peripheral Vascular Disease. Guidelines for the prevention of stroke in patients with stroke and transient ischemic attack: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. Stroke. 2014;45(7):2160-2236.
8. Kitano T, Nabeshima Y, Kataoka M, Takeuchi M. Therapeutic efficacy of direct oral anticoagulants and Vitamin K antagonists for left ventricular thrombus: Systematic review and meta-analysis. *PLOS ONE*. 2021;16(7). doi:10.1371/journal.pone.0255280
9. Lattuca B, Bouziri N, Kerneis M, et al. Antithrombotic Therapy for Patients With Left Ventricular Mural Thrombus. *J Am Coll Cardiol.*2020 Apr, 75 (14) 1676–1685.<https://doi.org/10.1016/j.jacc.2020.01.057>
10. Levine GN, McEvoy JW, Fang JC, et al. Management of patients at risk for and with left ventricular thrombus: A scientific statement from the American Heart Association. *Circulation*. 2022;146(15). doi:10.1161/cir.0000000000001092
11. McCarthy CP, Vaduganathan M, McCarthy KJ, Januzzi JL, Bhatt DL, McEvoy JW. Left Ventricular Thrombus After Acute Myocardial Infarction: Screening, Prevention, and Treatment. JAMA Cardiol. 2018;3(7):642–649. doi:10.1001/jamacardio.2018.1086
12. O’Gara PT, Kushner FG, Ascheim DD, et al. 2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction: a report of the American College of Cardiology Foundation/American Heart Association task force on practice guidelines. Circulation. 2013;127(4):362-425.