South East London Integrated Medicines Optimisation Committee
Formulary recommendation

Reference	**122**
Intervention:	**Rivaroxaban and apixaban for the treatment of left ventricular thrombus (LVT) in adults (off-label use)** (Rivaroxaban and apixaban are anticoagulants)
Date of Decision:	**December 2020, March 2024 - category change approved from Red to Amber 2 following a request from the original formulary applicant. Apixaban incorporated into recommendation 122.**
Date of Issue:	**January 2021, re-issued May 2024**
Recommendation:	**Amber 2 – initiation and continued prescribing until initial review from the cardiology team, which is generally at 3 – 5 months**
Further Information	• Rivaroxaban and apixaban are accepted for use in South East London as **2nd line** anticoagulant treatment options for patients with left ventricular thrombus (LVT) in the following scenarios: (i) Post myocardial infarction + percutaneous intervention / in combination with dual antiplatelet therapy (DAPT – aspirin and clopidogrel). (ii) Secondary to dilated cardiomyopathy or left ventricular dysfunction • **Warfarin remains the 1st line anticoagulant** for the management of LVT. • Either rivaroxaban or apixaban may be considered as a **2nd line option** for patients who cannot tolerate warfarin or for those in whom warfarin is not felt to be safe (determined by the initiating clinician). • **The Trust thrombosis teams must be involved in any decision to use rivaroxaban or apixaban for LVT.** • The usual treatment duration is 3 to 6 months, although some patients may require longer term treatment, which if suitable can be transferred to primary care for prescribing (see point below). Cardiology will determine when it is suitable to stop treatment based on resolution of LVT on cardiac imaging. • The initiating specialist team will provide ongoing prescribing and supply of rivaroxaban or apixaban until the initial specialist review occurs. This is generally at 3 – 5 months. The review will enable the continued need for prescribing to be assessed. Those patients in whom longer term prescribing is clinically appropriate may be transferred to primary care at this point. • Treatment with rivaroxaban or apixaban would be stopped/switched if: - Treatment not tolerated - Thromboembolic event whilst on anticoagulation - Major bleeding risk or risk of bleed outweighs benefit of anticoagulation - Renal function declines to <30ml/min for rivaroxaban or <15ml/min for apixaban (would require discussion with the thrombosis team). • As part of the risk management plan, local acute Trusts are required to ensure that there is robust governance in place at individual Trust level for the use of rivaroxaban and apixaban in LVT. This includes the applicant developing agreed standardised criteria for use of rivaroxaban and apixaban in this setting across SEL acute Trusts (detailed criteria for starting/stopping rivaroxaban or apixaban and how outcomes will be monitored over time). The agreed standardised criteria should be approved through the individual Trust Drug and Therapeutics Committees. It should be noted that rivaroxaban and apixaban are **not licensed** for use in this setting. Informed consent should be gained from the patient before treatment is started. • **March 2024:** This recommendation was originally approved by the IMOC in December 2020 and only covered the use of rivaroxaban in this setting following a formulary application. Apixaban in this setting was originally discussed and approved through the hospital only Joint Formulary Committee (JFC) in November 2021 as the original formulary application for apixaban requested a hospital only status. In March 2024 further evidence to support the recategorisation from Red to Amber 2 for both rivaroxaban and apixaban in this setting was presented to the IMOC and a recategorisation to Amber 2 was approved. The criteria for use of rivaroxaban and apixaban in this setting are identical and, with approval from the JFC Chair, apixaban has been incorporated into this recommendation.
Shared Care/ Transfer of care required:	N/A

Cost Impact for agreed patient group	• The applicant estimates that 70 patients per annum for SEL, which equates to ~4 patients per 100,000 population, might be suitable for treatment. • Based on prevalence data, there are around 80,000 people in England admitted with MI per annum. Around 70% of these patients survive (56,000), and approximately 40% (22,000) go on to develop LVT. The majority of these will have warfarin, but approximately 20% (4,400) will require a DOAC. This equates to 8 patients per 100,000 population. • Assuming between 4 – 8 patients per 100,000 population are treated for 6 months, this could result in a cost impact of between £1,080 to £2,176 per 100,000 population (or between £20K to 40K across SEL). Local audit data presented in March 2024 indicate that around 75% of patients may require longer term treatment (3 - 6 patients per 100,000 population). In year 1, this equates to ~£2,520 per 100,000 population (or £50K across SEL). It is assumed that the overall cost impact for subsequent years will be approximately 60% less (£920 per 100,00 population or 18.5K across SEL) by year 3 (steady state) due to generic implementation.
Usage Monitoring & Impact Assessment	**Acute Trusts:** Monitor and audit usage and outcomes from use of rivaroxaban and apixaban in this setting (against this recommendation) and report back to the Committee if requested
	SEL Borough Medicines Optimisation Teams: Monitor ePACT2 data and exception reports from GPs if inappropriate prescribing requests are made to primary care.
Evidence reviewed	**References (from evidence evaluation of rivaroxaban. References for apixaban are available upon request** 1. G YH Lip (2019), Left ventricular thrombus after acute myocardial infarction, UpToDate,. Available at: https://www.uptodate.com/contents/left-ventricular-thrombus-after-acutemyocardial-infarction [last accessed 03/08/2020] 2. F Habash et al (2017), Challenges in management of left ventricular thrombus, Therapeutic Advances in Cardiovascular Disease. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5933579/ [last accessed 05/08/2020] 3. R Delewi et al (2012), Left ventricular thrombus formation after acute myocardial infarction,BMJ. Available at: https://heart.bmj.com/content/98/23/1743 [last accessed 05/08/2020] 4. PT Vaitkus et al (1993), Embolic potential, prevention and management of mural thrombus complicating anterior myocardial infarction: a meta-analysis, Journal of the American College of Cardiology. Available at: https://pubmed.ncbi.nlm.nih.gov/8409034/ [last accessed 05/08/2020] 5. NICE NG106 (2018) Chronic heart failure in adults: diagnosis and management. Available here. [last accessed 05/08/2020] 6. NICE Pathways (2020) Preventing stroke in people with atrial fibrillation. Available at: http://pathways.nice.org.uk/pathways/atrial-fibrillation [last accessed 26/08/2020] 7. NICE Pathways (2020) Anticoagulation treatment for venous thromboembolism. Available here. [last accessed 26/08/2020] 8. WN Kernan (2014), Guidelines for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack, American Heart Association/American Stroke Association. Available here: [last accessed 05/08/2020] 9. R Sedhom et al (2020), Use of Direct Oral Anticoagulants in the Treatment of Left Ventricular Thrombi, a Systematic Review. The American Journal of Medicine. 10. AR Robinson et al (2020), Off-label Use of Direct Oral Anticoagulants Compared With Warfarin for Left Ventricular Thrombi. JAMA Cardiology. 11. M Alizadeh et al (2019), The use of direct oral anti-coagulations (DOACs) compared to vitamin k antagonist in patients with left ventricular thrombus after acute myocardial infarction. European Heart Journal. 12. A Yunis et al (2020), Direct Oral Anticoagulants are Effective Therapy in Treating Left Ventricular Thrombi. Journal of The American College of Cardiology 13. H Iqbal et al (2020), Direct oral anticoagulants compared to vitamin K antagonist for the management of left ventricular thrombus. ESC Heart failure. 14. British Heart Foundation (2020), England statistical factsheet. Available at: https://www.bhf.org.uk/what-we-do/our-research/heart-statistics [last accessed 23/09/2020] 15. CP McCarthy et al (2018), Left Ventricular Thrombus after acute MI. JAMA Cardiology. Available here. [last accessed 23/09/2020] 16. UKMI (2012) Prescribing outlook, National Developments. Available here (with sign in). [last accessed 23/09/2020] 17.2023 European Society of Cardiology Guidelines for the management of acute coronary syndromes- Clinical Practice Guidelines. Available here (with sign in). [last accessed 16/04/2024] 18. M Abdelnabi et al (2021) Comparative Study of Oral Anticoagulation in Left Ventricular Thrombi (No-LVT Trial). Journal of The American College of Cardiology

NOTES:

a) SEL IMOC recommendations and minutes are available publicly via the website.

b) This SEL IMOC recommendation has been made on the cost effectiveness, patient outcome and safety data available at the time. The recommendation will be subject to review if new data becomes available, costs are higher than expected or new NICE guidelines or technology appraisals are issued.

c) Not to be used for commercial or marketing purposes. Strictly for use within the NHS.