South East London Integrated Medicines Optimisation Committee
Formulary recommendation

Reference	**033**
Intervention:	**Ivabradine (5mg and 7.5mg film coated tablets) for the treatment of Postural Orthostatic Tachycardia Syndrome (POTS)/Inappropriate Sinus Tachycardia (IST)** (Ivabradine is a pure heart rate lowering agent that acts by selective and specific inhibition of the cardiac pacemaker I_f current that controls the spontaneous diastolic depolarisation in the sinus node and regulates heart rate).
Date of Decision	**May 2015 reviewed November 2017 – re-categorisation from Red to Amber 3. July 2025: updated to reflect development of local POTS guidance**
Date of Issue:	**June 2015, January 2018, October 2025**
Recommendation:	**AMBER 3 – initiation and first 3 months supplied by the specialist cardiology clinic**

Further Information	• Postural Orthostatic Tachycardia Syndrome (POTS) is an abnormal increase in heart rate on becoming upright due to an abnormality of functioning of the autonomic (involuntary) nervous system.
	• Inappropriate Sinus Tachycardia (IST) is a condition in which an individual's resting heart rate is abnormally high – greater than 100 beats per minute or rapidly accelerates to over 100 beats per minute without an identifiable cause; although small amounts of exercise, emotional or physical stress are triggering factors.
	• Ivabradine is accepted for use in the treatment of POTS and IST and must be initiated by the specialist cardiology at either KCHfT or GSTfT.
	• Ivabradine should be prescribed in accordance with the local treatment guidance for the management of POTS.
	• In line with the transfer of prescribing responsibility guidance the specialist clinic will supply and titrate treatment over the first 3 months. Specific details on consultant and GP responsibilities can be found in the transfer of prescribing responsibility guidance. Ivabradine is not licensed* for the treatment of POTS or IST. As the use of ivabradine in this setting is off-label, the off-label nature should be explained to the patient/carer and informed consent gained.
	• Ivabradine may be considered for POTS where:
	  ○ the predominant presenting symptom is tachycardia **AND**
	  ○ the patient has failed simple measures such as fluids, exercise and compression clothing **AND**
	  ○ Fludrocortisone/propranolol or pyridostigmine has failed to control the heart rate or is not appropriate for the patient e.g. due to a contraindication or poor tolerability.
	• Ivabradine may considered for IST where:
	  ○ the predominant presenting symptom is tachycardia **AND**
	  ○ the patient has failed simple measures such as fluids, exercise and compression clothing **AND**
	  ○ a beta blocker has failed to control the heart rate or is not appropriate for the patient e.g. due to a contraindication or poor tolerability
	• The dose of ivabradine used to treat POTS/IST will not exceed 15mg daily.
	• In some cases where low blood pressure is also present as part of the condition's symptomology, ivabradine may be co-prescribed with midodrine (see IMOC Recommendation 032).
	• SEL wide guidance and a transfer of prescribing process have been developed to support this recommendation for the management of POTS.

Shared Care/ Transfer of care required:	Yes, guidance and transfer of prescribing process to be followed.
Cost Impact for agreed patient group	• It is estimated that there could be approximately 50 patients eligible for treatment with ivabradine per year in SEL. • If it is assumed that treatment will be at a dose of 7.5mg twice daily and a cost of £523 (exc. VAT) per patient per year, this will have a total cost implication of approximately £26,150 (exc. VAT) per year.
Usage Monitoring & Impact Assessment	**Acute Trusts:** • Monitor and audit usage and outcomes from use of midodrine 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)** 1. http://www.stars.org.uk/patient-info/conditions/pots accessed on 05/05/2015 2. http://www.potsuk.org/medication_overview accessed on 05/05/2015 3. Ptaszynski P et al. Metoprolol vs Ivabradine in the treatment of Inapproporiate sinus tachycardia in patients unresponsive to previous pharmacological therapy. Europace 2013; 15; 116-21 4. Ptaszynski P et al. Ivabradine in the treatment of inappropriate sinus tachycardia in patients after successful catheter ablation of atrioventricular node slow pathway. PACE 2013: 36: 42-49 5. Ptaszynski P et al. Ivabradine in combination with metoprolol succinate in the treatment of Inappropriate Sinus tachycardia. J Cardiovasc Pharmacol Therapeutics 2013 18(4): 338-344 6. De la Cruz E et al. Long term outcomes in a case series of patients diagnosed of inappropriate sinus tachycardia treated with ivabradine. J Interv Card Electrophysiol. 2013: 36 Suppl 1. S91 (n=21) 7. Benezet-Mazuccos J et al. Long term outcomes of ivabradine in inappropriate sinus tachycardia patients. appropriate efficacy or inappropriate patients. PACE 2013 Jul;36(7):830-6 8. Adler A et al. Ivabradine for the prevention of inappropriate shocks due to inappropriate sinus tachycardia in patients with an implanted cardioverter defibrillator. Europace 2013: 15: 362-365 9. Cappato R et al. Clinical Efficacy of Ivabradine in patients with inappropriate sinus tachycardia: a prospective, randomised, placebo-controlled, double-blind, crossover evaluation. J Am Coll Cardiol. 2012: 60: 1323-9 10. Zellerhoff S et al. Ivabradine in patients with inappropriate sinus tachycardia. Naunyn-Schmied Arch Pharmacol. 2010: 382: 483-486 11. Calo L et al. Efficacy of ivabradine administration in patients affected by inappropriate sinus tachycardia. Heart Rhythm 2010: 7: 1318-1323 12. Kaplinsky E. Efficacy of Ivabradine in four patients with inappropriate sinus tachycardia: a three month long experience based on electrocardiographic, Holter monitoring, exercise tolerance and quality of life assessments. Cardiology J 2010:17: 166-171 13. Rakovec P. Treatment of inappropriate sinus tachycardia with ivabradine. Wien Klin Wochenschr 2009: 121(21-22):715-8 14. Summary of Product Characteristics (SPC) ivabradine 5mg tablets accessed via www.medicines.org.uk/ on 05/05/2015

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.**