South East London Integrated Medicines Optimisation Committee
Formulary recommendation

Reference	**059**
Intervention:	**Insulin degludec 100 units/ml and 200 units per ml (Tresiba™ FlexTouch and penfill cartridges) for Type 1 and Type 2 diabetes in adults and Type 1 diabetes in children aged 1 – 11 years old** (Insulin degludec is a high strength, long acting insulin analogue)
Date of Decision:	**December 2016, updated July 2017. Updated January 2023 with criteria for use in adults with Type 1 diabetes and use in adults with Type 2 diabetes**
Date of Issue:	**January 2017, re-issued July 2017and February 2023**
Recommendation:	**Amber 2 – initiation and first prescription by the specialist diabetes team**
Further Information	• **February 2023:** Following a successful formulary submission in **January 2023**, this recommendation has been updated with (i) revised criteria for the use of insulin degludec in adults with Type 1 diabetes (T1DM) and (ii) addition of use in adults with Type 2 diabetes (T2DM) • **Please refer to formulary recommendation 136** for the use of insulin degludec in children and young people over 12 years old with Type 1 diabetes. • Insulin choice in people with T1DM and T2DM should be in line with NICE guideline NG17 (T1DM), NG28 (T2DM) and NG18 (children and young people). • Insulins must be prescribed **BY BRAND** to ensure brand continuity in people with diabetes and to minimise the risk of substitution/medication errors/patient harm. **Adults with Type 1 Diabetes** • Insulin degludec may be considered as a third line treatment option for use in adults with T1DM if the following criteria are met: - Both insulin detemir and insulin glargine have been tried and the patient still has poorly controlled diabetes **AND** - The next step would otherwise be an insulin pump **OR** - Psychosocial or other factors indicate the need for longer duration insulin to facilitate continued treatment and avoid decompensation due to the mismanagement of insulin **OR** - Recurrent episodes of problematic hypoglycaemia (including frequent and unpredictable hypoglycaemia as well as recurrent severe hypoglycaemia requiring third party assistance/ambulance callout/hospital admission) and insulin pump (as per NICE TA 151) is not suitable/declined **OR** - Some flexibility in administration time is needed where third party administration is required **Adults with Type 2 Diabetes:** • Insulin degludec may be considered as a third line treatment option for use in adults with T2DM in line with SEL IMOC guidance if the following criteria are met: - Both isophane insulin and insulin glargine 100 units/ml Lantus™/Abasaglar™) have been tried and the patient still has suboptimal diabetes control **AND** - Some flexibility in administration time is needed where third party administration is required **OR** - Frequent and symptomatic episodes or severe episodes of hypoglycaemia **OR** - There have been frequent emergency admissions **Children aged 1 – 11 years old with Type 1 Diabetes:** • Insulin degludec may be considered as a third line treatment option for use in children aged 1 – 11 years old with T1DM if the following criteria are met: - Both insulin detemir and insulin glargine have been tried and the patient still has poorly controlled diabetes **AND**

	- The next step would otherwise be an insulin pump **AND** - Psychosocial or other factors indicate the need for longer duration insulin to facilitate continued treatment and avoid decompensation due to the mismanagement of insulin **AND** - There have been frequent emergency admissions • The formulary submission to the IMOC for the use of insulin degludec in paediatrics also included use in children with **Type 2 diabetes**. This cohort of patients may be considered for therapy in line with the criteria above, but **prescribing must remain under specialist care** in view of the lack of current experience of use in this patient cohort. This will enable experience to be gained in a specialist setting and allow outcomes to be evaluated. • A report summarising outcomes in relation to the use of insulin degludec in the patients outlined within this formulary recommendation in the **new Type 2 diabetes cohort and revised Type 1 diabetes cohort** will be presented back to the Committee in 1 year. This report will be co-ordinated across SEL by the original formulary applicant across all Trusts using insulin degludec in this setting and will include: - The number of patients treated and the indication (T1DM and T2DM) - Whether use is in line with this recommendation - Impact on patient related outcomes, such as (i) diabetes control [including HbA1c] (ii) adverse effects (iii) compliance (iv) hospital admissions - The number of patients discontinuing treatment and reasons for stopping
Shared Care/ Transfer of care required:	N/A
Cost Impact for agreed patient group	• The previous submission for children and young people in July 2017 plus the original submission for adults with T1DM estimated the use of insulin degludec in 130 patients across SEL. The submission in February 2023 for the extended T1DM cohort and T2DM cohort predicts that 3% of patients currently on Levemir™ might be suitable for insulin degludec under the new criteria. • The cost of insulin degludec is 34.1%, 30.5% and 11.1% more expensive than Lantus™, Toujeo™ and Levemir™ respectively at dose equivalence. If 5% of patients currently on Levemir™ or insulin glargine are suitable for switching to insulin degludec, the approximate increased costs would be ~£40K per annum for SEL (or ~£2,1000 per 100,000 population). If 10% of patients were suitable for switching costs for SEL would be ~£80K per annum (or ~£4,200 per 100,000 population) • This does not include savings from reduced emergency admissions.
Usage Monitoring & Impact Assessment	**Acute Trusts:** • Collate data at a SEL level as outlined in “Further Information” section and present report to IMOC no later than March 2023.
	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) Diabetes (type 1 and type 2) in children and young people: diagnosis and management. NICE guideline [NG18] August 2015. Available here 2) Type 1 diabetes in adults diagnosis and management. NICE guideline [NG17] August 2015. Last updated: 17 August 2022 Available here 3) Type 1 diabetes: Insulin Degludec. NICE evidence summary. Available here 4) National Institute for Health and Care Excellence, Nov 2012. Available here 5) National Institute for Health and Care Excellence, September 2013. Available here 6) Heller, S. et al. (2012) Insulin degludec, an ultra-long acting basal insulin versus Glargine in basal-bolus treatment with mealtime insulin aspart in type 1 Diabetes (BEGINBasal-bolus Type 1). Lancet 379: 1489-97 7) Garber AJ, King AB, Del Prato S et al. (2012) Insulin degludec, an ultra-long acting basal Insulin, versus insulin glargine in basal-bolus treatment with mealtime insulin aspart in Type 2 diabetes (BEGIN Basal-Bolus Type 2): a phase 3, randomised, open-label, treat-to target Non-inferiority trial. Lancet 379: 1498–507 8)Thalange N et al. Insulin degludec in combination with bolus insulin aspart is safe and effective in children and adolescents with type 1 diabetes. Pediatric Diabetes 2015: 16:164-176 9) Rewers M, Pihoker C, Donaghue K, Hanas R,Swift P, Klingensmith GJ. ISPAD Clinical Practice Consensus

	Guidelines 2014 Compendium. Assessment and monitoring of glycemic control in children and adolescents with diabetes. Pediatr Diabetes 2014: 15 (Suppl. 20): 102–114. 10) Insulin degludec (Tresiba), Summary of Product Characteristics. Available here [Accessed 28 December 2022]. 11) Davies, M J, Gross, J L, Ono, Y et al. (2014) Efficacy and safety of insulin degludec given as part of basal-bolus treatment with mealtime insulin aspart in type 1 diabetes: a 26-week randomized, open-label, treat-to-target non-inferiority trial. Diabetes, obesity & metabolism 16(10): 922-30. 12) Mathieu, Chantal, Hollander, Priscilla, Miranda-Palma, Bresta et al. (2013) Efficacy and safety of insulin degludec in a flexible dosing regimen vs insulin glargine in patients with type 1 diabetes (BEGIN: Flex T1): a 26-week randomized, treat-to-target trial with a 26-week extension. The Journal of clinical endocrinology and metabolism 98(3): 1154-62. 13) Lane W, Bailey TS, Gerety G, Gumprecht J, Philis-Tsimikas A et al. Effect of Insulin Degludec vs Insulin Glargine U100 on Hypoglycemia in Patients With Type 1 Diabetes: The SWITCH 1 Randomized Clinical Trial. JAMA 2017; 318(1):33-44 14) Pedersen-Bjergaard U, Agesen RM, Brosen JMB, Alibegovic AC, Andersen HU et al. Comparison of treatment with insulin degludec and glargine U100 in patients with type 1 diabetes prone to nocturnal severe hypoglycaemia: The HypoDeg randomized, controlled, open-label, crossover trial. Diabetes, Obesity and Metabolism 2022; 24(2):257-267 15) Martin YZ, Takagi T, Tian Yu-Shi. Safety, efficacy, and cost-effectiveness of insulin degludec U100 versus insulin glargine U300 in adults with type 1 diabetes: a systematic review and indirect treatment comparison. International Journal of Clinical Pharmacy 2022; 44:587-598 16) Wysham C, Bhargava A, Chaykin L, de la Rosa R, Handelsman Y, Troelsen LN, et al. Effect of Insulin Degludec vs Insulin Glargine U100 on Hypoglycemia in Patients With Type 2 Diabetes: The SWITCH 2 Randomized Clinical Trial. JAMA. 2017;318(1):45-56. 17) Pan C, Gross J, Yang W et al. A Multinational, Randomized, Open-label, Treat-to-Target Trial Comparing Insulin Degludec and Insulin Glargine in Insulin-Naive Patients with Type 2 Diabetes Mellitus. Drugs R D (2016) 16:239–249. 18) Philis-Tsimikas A, Klonoff D, Khunti K et al. Risk of hypoglycaemia with insulin degludec versus insulin glargine U300 in insulin-treated patients with type 2 diabetes: the randomised, head-to-head CONCLUDE trial. Diabetologia (2020) 63:698–710 19) Rosenstock J, Cheng A, Ritzel R et al. More Similarities Than Differences Testing Insulin Glargine 300 Units/mL Versus Insulin Degludec 100 Units/mL in Insulin-Naive Type 2 Diabetes: The Randomized Head-to-Head BRIGHT Trial. Diabetes Care Volume 41, October 2018 p2147-2154 20) Marso SP, Mcguire DK, Zinman B, Poulter NR, Emerson SS et al. Efficacy and safety of degludec versus glargine in type 2 diabetes. NEJM 2017; 377(8):723-732 21) Zhang X-W, Zhang X-L, Xu B et al. Comparative safety and efficacy of insulin degludec with insulin glargine in type 2 and type 1 diabetes: a meta-analysis of randomised controlled trials. Acta Diabetologica 2018 55 p429-411 22) Ratner R, Gough S, Mathieu C et al. Hypoglycaemia risk with insulin degludec compared with insulin glargine in type 2 and type 1 diabetes: a pre-planned meta-analysis of phase 3 trials. Diabetes, Obesity and Metabolism 15: 175–184, 2013. 23) Insulin degludec (Tresiba). Scottish Medicines Consortium 2016. Available here [Accessed 28 December 2022]

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