Switching from Levemir (insulin detemir) in type 2 diabetes: case examples

Fictional cases for illustrative purposes only

Case Study 1: Simple once-daily switch

Patient profile	
Age	70 years
Diabetes type	
HbA1c	74 mmol/mol (stable over 2 years)
BMI	28.6
Complications	Background retinopathy both eyes
Fasting blood glucose	9–12.5 mmol/l
Injection sites	
Eating pattern	2–3 meals/day; sometimes misses lunch; grazes in the evening; 4 milky coffees daily
Monitoring	

Current diabetes medication:

- Metformin 500 mg twice daily (morning and evening)
- Dapagliflozin 10 mg once daily
- Levemir 22 units before bed (FlexPen, since 2023)

Clinical review before switching

Use the switch as an opportunity to review the full regimen and agree glucose targets.

Factor	Finding	Action
HbA1c	74 mmol/mol, stable	Set interim target: 64 mmol/mol
Fasting glucose	9–12.5 mmol/l; no target agreed	Agree fasting target range: 6.5–8.5 mmol/l
Injection sites	No problems	Continue current rotation; recheck at follow-up
Device	FlexPen (disposable)	Discuss preferred option; provide manufacturer's leaflet for new device
Eating pattern	Irregular meals, grazes in evening	Discuss impact on fasting glucose; no bolus insulin required
Retinopathy	Background, both eyes	Confirm screening up to date

Dose calculation

Switching from once-daily Levemir to once-daily alternative basal insulin

Current Levemir dose: **22 units (u) once daily**

Apply 10% reduction for once-daily to once-daily switch: 22u × 10% = 2.2u → round to 2u reduction → **starting dose: 20 units once daily**

> *The ABCD/PCDO guidance recommends considering a 10–20% dose reduction when switching between insulins to reduce the initial risk of hypoglycaemia, due to differences in absorption, potency and action profile.*[1]

Agreed plan

- **New insulin:** Preferred once-daily basal insulin per local guidelines and SPS availability, such as Lantus (insulin glargine U100)
- **Starting dose:** 20 units once daily (before bed)
- **Monitoring:** Fasting capillary blood glucose; self-adjust doses based on readings
- **Titration advice:** Written instructions provided; fasting target range 6.5–8.5 mmol/l
- **Device:** Discuss preference; provide manufacturer's leaflet
- **Review:** 2–3 weeks post-switch

Side effects

Hypoglycaemia is a very common side effect of Lantus. Prolonged or severe hypoglycaemia may be life-threatening. Overdose may lead to severe and sometimes long-term and life-threatening hypoglycaemia.

Common side effects include lipohypertrophy, injection site reactions.

Adverse events should be reported.
Reporting forms and information can be found at www.mhra.gov.uk/yellowcard or search for MHRA Yellow Card in the Google Play or Apple App Store.
Adverse events should also be reported to Sanofi Tel: 0800 090 2314 or UK-drugsafety@sanofi.com

Prescribing Information: Lantus® (insulin glargine) 100 units/ml solution for injection

Please refer to Summary of Product Characteristics (SmPC) before prescribing.

Presentations: Lantus 100 units/ml solution for injection in a vial or in a cartridge. Lantus SoloStar 100 units/ml solution for injection in a pre-filled pen. Lantus cartridges and Solostar pre-filled pens each contain 3 ml of solution for injection, equivalent to 300 units insulin glargine. Each vial contains 10 ml of solution for injection, equivalent to 1000 units.

Indications: Treatment of diabetes mellitus in adults, adolescents and children of 2 years or above.

Dosage and administration: Lantus is administered subcutaneously once daily, at any time but at the same time each day. Injection sites must be rotated within a given injection area from one injection to the next in order to reduce the risk of lipodystrophy and cutaneous amyloidosis. Do not administer intravenously. Lantus dosage should be individually adjusted. In type 2 diabetes mellitus, Lantus can also be used in combination with orally active antidiabetic medicinal products. Lantus must not be mixed with other insulins or diluted. Switch from twice daily NPH insulin to Lantus: To reduce the risk of nocturnal and early morning hypoglycaemia, patients who are changing their basal insulin regimen from a twice daily NPH insulin to a once daily regimen with Lantus should reduce their daily dose of basal insulin by 20 – 30% during the first weeks of treatment. Switch from Toujeo (insulin glargine) 300 units/ml to Lantus: Lantus and Toujeo are not bioequivalent and are not directly interchangeable. To reduce the risk of hypoglycemia, patients who are changing their basal insulin regimen from an insulin regimen with once daily Toujeo to a once daily regimen with Lantus should reduce their dose by approximately 20%. Switching from other insulins to Lantus: When switching from a treatment regimen with an intermediate or long-acting insulin to a regimen with Lantus, a change of the dose of the basal insulin may be required and the concomitant antidiabetic treatment may need to be adjusted (dose and timing of additional regular insulins or fast-acting insulin analogues or the dose of oral antidiabetic medicinal products). Close metabolic monitoring is recommended during, and for a period after, transition from other insulins to Lantus. Dose adjustments may also be required if the patient's weight or lifestyle changes, the timing of insulin dose is changed or other circumstances arise that increase susceptibility to hypo- or hyperglycaemia.

Special populations: Elderly, renal or hepatic impairment: Insulin requirements may be diminished. Paediatric population (<2 years of age): No data are available.

Contraindications: Hypersensitivity to insulin glargine or any excipients.

Precautions and warnings: Lantus is not the insulin of choice for treatment of diabetic ketoacidosis. In case of insufficient glucose control or a tendency to hypo/hyperglycaemic episodes all relevant factors must be reviewed before dose adjustment is considered. Transferring a patient to another type or brand of insulin should be done under strict medical supervision. Traceability: In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded. Injection technique: Patients must be instructed to perform continuous rotation of the injection site to reduce the risk of developing lipodystrophy and cutaneous amyloidosis. There is a potential risk of delayed insulin absorption and worsened glycaemic control following insulin injections at sites with these reactions. A sudden change in the injection site to an unaffected area has been reported to result in hypoglycaemia. Blood glucose monitoring is recommended after the change in the injection site, and dose adjustment of antidiabetic medications may be considered. Intercurrent illness also requires intensified metabolic monitoring. Hypoglycaemia: Particular caution should be exercised, and intensified blood monitoring is advisable for patients in whom hypoglycaemic episodes might be of clinical relevance and in those where dose adjustments may be required. Warning signs of hypoglycaemia may be changed, less pronounced or absent in certain risk groups. The prolonged effect of subcutaneous Lantus may delay recovery from hypoglycaemia. Due to more sustained basal insulin supply with Lantus, less nocturnal but earlier morning hypoglycaemia can be expected. Insulin antibodies: administration may cause insulin antibodies to form. Rarely, this may necessitate dose adjustment. Pioglitazone: Cases of cardiac failure have been reported, especially in patients with risk factors for development of cardiac heart failure. Patients on this combination should be observed and pioglitazone should be discontinued if any deterioration in cardiac symptoms occurs. Medication errors: Insulin labels must always be checked before each injection to avoid errors between Lantus and other insulins. Lantus Solostar is only suitable for subcutaneous injections from its pre-filled pen. Lantus cartridges are only suitable for subcutaneous injections from specific reusable pens (please refer to SmPC for further details). If administration by syringe is necessary, a vial should be used.

Interactions: A number of substances affect glucose metabolism and may require dose adjustment of Lantus.

Pregnancy and lactation: No clinical data on exposed pregnancies from controlled clinical trials are available. A large amount of post-marketing data indicates no specific adverse effects of Lantus in pregnancy. Use of Lantus in pregnancy can be considered if clinically needed. Insulin requirements may decrease during the first trimester and generally increase during the second and third trimesters. Immediately after delivery, insulin requirements decline rapidly (increased risk of hypoglycaemia). Careful monitoring of glucose control is essential. It is unknown if Lantus is excreted in breast milk.

Adverse reactions: Very common: Hypoglycaemia. Prolonged or severe hypoglycaemia may be life-threatening. Overdose may lead to severe and sometimes long-term and life-threatening hypoglycaemia. Common: Lipohypertrophy, injection site reactions. Uncommon: Lipoatrophy. Rare: Allergic reactions, visual impairment, retinopathy and oedema. Very rare: Dysgeusia, myalgia. Frequency not known: Cutaneous amyloidosis. *Prescribers should consult the SmPC in relation to other adverse reactions.*

Legal category: POM.

List price and Marketing Authorisation Number(s): 1 x 10ml Lantus vial (PLGB 04425/0814): £25.69; 5 x 3ml Lantus cartridge (PLGB 04425/0815): £34.75; 5 x 3ml Lantus SoloStar (PLGB 04425/0816): £34.75.

Marketing Authorisation Holder: Sanofi, 410 Thames Valley Park Drive, Reading, Berkshire, RG6 1PT, UK.

For more information please contact: Medical Information, Sanofi, 410 Thames Valley Park Drive, Reading, Berkshire, RG6 1PT, UK. uk-medicalinformation@sanofi.com.

Date of preparation: September 2025

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Case Study 2: Complex twice-daily switch (frailty + CKD)

Patient profile

Name	Mrs S
Age	73 years
Diabetes type	Type 2 (18 years)
HbA1c	57 mmol/mol
eGFR	39 mL/min/1.73m²
BMI	31.2
Frailty	Mild frailty
Complications	Proliferative retinopathy left eye (active)
Monitoring	Capillary glucose monitoring; minimal hypoglycaemia issues
Injection sites	Some clustering and bruising on abdomen; no lipohypertrophy felt
Regimen burden	Struggling with 3 daily insulin injections

Current diabetes medication:

- Metformin MR 1 g once daily
- Dulaglutide 4.5 mg once weekly
- Levemir 24 units at 8am + 26 units at 9pm (NovoPen 5)
- Rapid-acting insulin 10–16 units before evening meal

Clinical review before switching

Factor	Finding	Action
HbA1c	57 mmol/mol	Agreed target: 58 mmol/mol (avoid over-tightening given frailty)
Fasting glucose	No target agreed	Agree fasting target range: 5.5–7.5 mmol/l
Injection sites	Clustering and bruising; no lipos	Address rotation technique; recheck at follow-up
Device	NovoPen 5 (cartridge-loading)	Discuss options; provide manufacturer's leaflet for new device
Regimen burden	3 daily injections; struggling	Opportunity to simplify to once-daily basal
Frailty	Mild	Review within 1–2 weeks post-switch; consider specialist input
Renal function	eGFR 39	Monitor; eGFR >30 so primary care switch appropriate with close review
Retinopathy	Proliferative, left eye (active)	Ensure under ophthalmology follow-up

Dose calculation

Switching from twice-daily Levemir to once-daily ultra-long-acting insulin

Total daily Levemir dose: 24u + 26u = **50 units**

Apply 20% reduction for twice-daily to once-daily switch: 50u × 20% = 10u reduction → **starting dose: 40 units once daily**

> *The 10-20% reduction applies to ALL basal insulins when switching from a twice-daily regimen to a once-daily regimen.[1]*

Preferred options for twice-daily Levemir: ultra-long-acting insulins (refer to local Levemir switch guidelines and SPS supply tool)

Agreed plan

- **New insulin:** Once-daily ultra-long-acting basal insulin per local guidelines and SPS availability, such as Toujeo (insulin glargine U300)[1]
- **Starting dose:** 40 units once daily
- **Injection time:** Agreed with patient; consistent daily timing
- **Monitoring:** Fasting capillary blood glucose; self-adjust doses based on readings
- **Titration advice:** Written instructions provided; fasting target range 5.5–7.5 mmol/l
- **Device:** Discuss cartridge vs pre-filled pen options; provide manufacturer's leaflet
- **Injection sites:** Address clustering; reinforce rotation technique
- **Review:** 1–2 weeks post-switch (frailty, active retinopathy)

Side effects

Hypoglycaemia is a very common side effect of Toujeo. Prolonged or severe hypoglycaemia may be life-threatening.
Common side effects are lipohypertrophy and injection site reactions, including redness, pain, itching, hives, swelling, or inflammation.

References:
1. ABCD and PCDO Society, Discontinuation of Levemir clinical guideline, August 2025. Available at:https://pcdosociety.org/guidance/levemir-discontinuation [Accessed May 2026]

Prescribing Information: Toujeo® (insulin glargine 300 units/ml)

Please refer to Summary of Product Characteristics (SmPC) before prescribing.

Presentation: Toujeo pre-filled pens each ml contains 300 units of insulin glargine. SoloStar pen contains 1.5ml (450 units) of solution for injection. DoubleStar pen contains 3ml (900 units) of solution for injection.

Indication: Treatment of diabetes mellitus in adults, adolescents and children from the age of 6 years.

Dosage and Administration: Toujeo is administered subcutaneously, by injection into the abdominal wall, the deltoid or the thigh, once daily, at any time of the day, preferably at the same time every day. The dose regimen (dose and timing) should be adjusted according to individual response. Injection sites must be rotated within a given injection area from one injection to the next in order to reduce the risk of lipodystrophy and cutaneous amyloidosis. Do not administer intravenously. In type 1 diabetes mellitus, Toujeo must be combined with short-/rapid-acting insulin to cover mealtime insulin requirements. In patients with type 2 diabetes mellitus, recommended daily starting dose is 0.2 units/kg followed by individual dose adjustments. Toujeo can also be given together with other anti-hyperglycaemic medicinal products. Switch between insulin glargine 100 units/ml and Toujeo: Insulin glargine 100 units/ml and Toujeo are not bioequivalent and are not directly interchangeable. When switching from insulin glargine 100 units/ml to Toujeo, this can be done on a unit-to-unit basis, but a higher Toujeo dose (approximately 10-18%) may be needed to achieve target ranges for plasma glucose levels. When switching from Toujeo to insulin glargine 100 units/ml, the dose should be reduced (approximately by 20%). Switching from other basal insulins to Toujeo: A change of dose and/or timing of the basal insulin and concomitant anti-hyperglycaemic treatment may be required. Dose adjustments may also be required if the patient's weight or lifestyle changes, the timing of insulin dose is changed or other circumstances arise that increase susceptibility to hypo- or hyperglycaemia. Toujeo must not be mixed or diluted with any other insulin or other medicinal products. Close metabolic monitoring is recommended during a switch and in the initial weeks thereafter. SoloStar 1-80 units per single injection in steps of 1 unit and DoubleStar 2-160 units in steps of 2 units. When changing from Toujeo SoloStar to Toujeo DoubleStar, if the patient's previous dose was an odd number then the dose must be increased or decreased by 1 unit. Toujeo DoubleStar prefilled pen is recommended for patients requiring at least 20 units per day.

Special Populations: Elderly, renal and hepatic impairment: Insulin requirements may be diminished in the elderly or patients with renal or hepatic impairment. Paediatric population: When switching basal insulin to Toujeo, dose reduction of basal and bolus insulin needs to be considered on an individual basis, in order to minimise the risk of hypoglycaemia.

Contraindications: Hypersensitivity to insulin glargine or any excipients.

Precautions and Warnings: Traceability: In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded. Toujeo is not the insulin of choice for treatment of diabetic ketoacidosis. Patients must be instructed to perform continuous rotation of the injection site to reduce the risk of developing lipodystrophy and cutaneous amyloidosis. There is a potential risk of delayed insulin absorption and worsened glycaemic control following insulin injections at sites with these reactions. A sudden change in the injection site to an unaffected area has been reported to result in hypoglycaemia. Blood glucose monitoring is recommended after the change in the injection site, and dose adjustment of antidiabetic medications may be considered. Hypoglycaemia: In case of insufficient glucose control or a tendency to hyper/hypoglycaemic episodes, the patient's adherence to the prescribed treatment regimen, injection sites and proper injection technique and all other relevant factors must be reviewed before dose adjustment is considered. Particular caution should be exercised, and intensified blood glucose monitoring is advisable for patients in whom hypoglycaemic episodes might be of clinical relevance and in those where dose adjustments may be required. Warning signs of hypoglycaemia may be changed, less pronounced or absent in certain risk groups, potentially resulting in severe hypoglycaemia and loss of consciousness. Risk groups include patients in whom glycaemic control is markedly improved, hypoglycaemia develops gradually, an autonomic neuropathy is present, or who are elderly. The prolonged effect of subcutaneous insulin glargine may delay recovery from hypoglycaemia. Intercurrent illness: Requires intensified metabolic monitoring and often it is necessary to adjust the insulin dose. Insulin antibodies: administration may cause insulin antibodies to form. Use with pioglitazone: Cases of cardiac failure have been reported when pioglitazone was used in combination with insulin, especially in patients with risk factors for development of cardiac heart failure. If the combination is used, patients should be observed for signs and symptoms of heart failure, weight gain and oedema. Pioglitazone should be discontinued if any deterioration in cardiac symptoms occurs. Medication errors: Insulin labels must always be checked before each injection to avoid errors between Toujeo and other insulins. Patients must be instructed to never use a syringe to remove Toujeo from the SoloStar or DoubleStar pre-filled pen, A new sterile needle must be attached before each injection. Needles must not be re-used. ***Pregnancy and breast-feeding:*** There is no data from exposed pregnancies in controlled clinical trials. However, there is a large amount of data on use of insulin glargine 100 units/ml in pregnant women indicating no specific adverse effects on pregnancy and no specific malformative nor feto/neonatal toxicity. The use of Toujeo may be considered during pregnancy, if clinically needed. Careful monitoring of glucose control is essential. It is unknown if insulin glargine is excreted in breast milk. ***Interactions:*** Substances that affect glucose metabolism may require adjustment of insulin glargine.

Adverse Reactions: Very common: Hypoglycaemia. Prolonged or severe hypoglycaemia may be life-threatening. Common: Lipohypertrophy, injection site reactions, including redness, pain, itching, hives, swelling, or inflammation. Frequency not known: Cutaneous amyloidosis. *Prescribers should consult the SmPC in relation to other adverse reactions.*

Legal Category: POM

List Price and Marketing Authorisation Number(s): SoloStar 3 x 1.5ml pens (PLGB 04425/0817): £32.14
DoubleStar 3 x 3ml pens (PLGB 04425/0818): £64.27

Marketing Authorisation Holder: Sanofi, 410 Thames Valley Park Drive, Reading, Berkshire, RG6 1PT, UK

Further information is available from: Medical Information, Sanofi, 410 Thames Valley Park Drive, Reading, Berkshire, RG6 1PT, UK. uk-medicalinformation@sanofi.com.

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