TYPE 2 DIABETES – COMPETENCIES FOR INJECTABLE ADMINISTRATION

The North West London health and care partnership

For the safe administration and use of insulin and GLP-1 receptor agonists you should be able to:

1. UNREGISTERED PRACTITIONER

Describe the effect of insulin on blood glucose levels.
Be aware of local sharps disposal policy.
Show an understanding of the ongoing nature of the therapy.
Administer insulin competently where supported by local policy.
Report identified problems appropriately.

2. COMPETENT NURSE AS 1, AND:

Actively seek and participate in peer review of one's own practice.
Demonstrate a basic knowledge of insulin and GLP-1 receptor agonists (e.g. drug type, action, side-effects) and administration devices used locally.
Demonstrate a high level of competency in the safe administration of insulin or GLP-1 receptor agonists.
Demonstrate and be able to teach the correct method of insulin or GLP-1 receptor agonist self-administration, including:

- Correct choice of needle type and length for the individual.
- Appropriate use of lifted skin fold, where necessary.
- Site rotation.
- Storage of insulin.
- Single use of needles.

Examine injection sites at least annually for detection of lipohypertrophy.
Identify correct reporting system for injectable therapy errors.
Complete the "Safe use of insulin" e-learning module . https://www.e-lfh.org.uk/programmes/safe-use-of-insulin
Describe circumstances in which insulin use might be initiated or altered and make appropriate referral.
Report concerns related to blood glucose or HbA1c results in a timely and appropriate fashion.

3. EXPERIENCED OR PROFICIENT NURSE

As 2, and:
Demonstrate a broad knowledge of different insulin types (i.e. action, use in regimens).
Demonstrate a broad knowledge of GLP-1 receptor agonists (e.g. drug type, action, side-effects).
Assess individual people' self-management and educational needs and meet these needs or make appropriate referral.
Support and encourage self-management wherever appropriate.
Initiate insulin or GLP-1 receptor agonist therapy where clinically appropriate.
Recognise when injection therapy needs to be adjusted.
Recognise the potential psychological impact of insulin or GLP-1 receptor agonist therapies and offer support to the person with diabetes or their carer.
Recognise signs of needle fear/needle phobia and offer strategies to help manage this.

TYPE 2 DIABETES – GLP-1 RECEPTOR AGONISTS

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WHAT ARE GLP-1s AND HOW DO THEY WORK?

- GLP-1s are injected to increase insulin secretion, suppress glucagon secretion, and slow gastric emptying.
- The incretin effect is described by the fact that an oral load of glucose induces a greater insulin response than when glucose is administered by IV. This is due to the effect on gut hormones, particularly glucagon-like peptide-1 (GLP-1s).
- Their effect includes stimulating glucose dependent insulin secretions, increasing satiety and slowing gastric emptying. These actions can lead to reduction in HbA1c with a low risk of hypoglycaemia (unless used with sulfonylureas). This action is often accompanied by weight loss.
- GLP-1 injections can be used to improve glucose control in adults with Type 2 Diabetes by reducing fasting and post prandial glucose levels. They can be used with metformin, a sulfonylurea or in combination with other antidiabetic drugs.
- Administered by subcutaneous injection.

INDICATIONS FOR CONTINUED USE

NICE recommends that treatment with GLP-1s is continued only if HbA1c has reduced by 1% AND a weight loss of 3% is achieved within 6 months of commencing treatment.

WHO SHOULD USE GLP-1s?

Treatment with GLP-1s is associated with the prevention of weight gain and possible promotion of weight loss

- GLP-1s should be considered as part of second intensification in people with a BMI of 35 kg/m^2 or higher (adjusted to 30 kg/m^2 for people from black, Asian and other minority ethnic groups) and specific psychological or other medical problems associated with obesity or
- have a BMI lower than 35 kg/m^2 and:
    - for whom insulin therapy would have significant occupational implications or
    - weight loss would benefit other significant obesity-related comorbidities
- **See NW London's algorithm for recommendations as to where GLP-1s fit with other glycaemic treatments.**

CONTRAINDICATIONS & CAUTIONS

- GLP-1s are not substitutes for insulin in insulin-dependent people and are not licensed for use in Type 1 Diabetes.
- **Persistent and severe abdominal pain with or without vomiting may be a sign of acute pancreatitis. If this is suspected, the GLP-1 should be stopped, and if confirmed, not be resumed.**
- See individual monographs for dose adjustments in renal impairments and/or hepatic impairment, and missed dose information.
- Not recommended for use in people with severe gastro-intestinal disease
- People receiving a GLP-1 in combination with a sulfonylurea or insulin may have an increased risk of hypoglycaemia. The risk of hypoglycaemia can be lowered by a reduction in the dose of sulfonylurea or insulin.
- Not recommended during pregnancy or where pregnancy is planned, or for nursing mothers.
- GLP-1 agonists require some oral medications to be taken at least 1 hours before, or 4 hours after. See individual monographs.

ADVICE TO PRESCRIBERS

Drug	Dosing interval	Supply length of **a single pen** at maintenance dose
Ozempic (Semaglutide)	Once weekly	28 days
Trulicity (Dulaglutide)	Once weekly	7 days
Victoza (Liraglutide)	Once daily	15 days (1.2mg OD) 10 days (1.8mg OD)
Byetta (Exenatide)	Twice daily	30 days
Bydureon BCise (Exenatide)	Once weekly	7 days
Lyxumia (Lixisenatide)	Once daily	15 days

ADVICE TO PEOPLE

- Provide them with patient information leaflet. **people will need to understand the following:**
- Discuss the risk of hypoglycaemia and symptoms, treatment and prevention.
- Drivers holding a Group 1 (cars and motorcycles) license may drive and need not notify the DVLA, provided the requirements set out are met and is under regular medical review (See DVLA guidance for requirements) when being treated with a GLP-1. Normal precautions to avoid low blood glucose when driving apply. Drivers holding Group 2 (Bus and lorry) licences need to inform the DVLA if they are being treated with a GLP-1.
- Discuss common side effects such as nausea, vomiting diarrhoea, dizziness, headache and dyspepsia.
- GLP-1s may reduce appetite.
- Injection techniques- Subcutaneous injection upper arm, thigh, abdomen.
- Pen needles use/supply - a variety of pen needles are available, HCP should discuss which needle is best for them. A new one should be used for each injection.
- If they experience severe and persistent symptoms they must contact their health care provider as a matter of urgency.
- Please note, some GLP1 agonists are supplied with a pen needle.

STORAGE OF GLP-1 PEN DEVICES

- Unopened GLP-1 pre-filled pens should be stored in the refrigerator 2-8˚C (36-46˚F). Do not freeze.
- The GLP-1 pen in use can be kept at room temperature but away from direct light.
- See individual monograph for shelf-life/expiry. Once in use refer to individual drug information overleaf.

TYPE 2 DIABETES – GLP-1 MEDICINES INFORMATION (1)

The North West London health and care partnership

NB: All information presented is in line with the Summaries of Product Characteristics (SPC) of each drug or the BNF.

LIXISENATIDE (LYXUMIA)

Indicated in combination with oral glucose-lowering medicinal products and/or basal insulin when these together do not provide adequate glycaemic control.

Dose	Dose Adjustments	Time to be taken	Storage and Shelf-life
Initially 10 micrograms **once daily** for 14 days, then increased to 20 micrograms **once daily**	Use with caution for people with an eGFR 30–50 mL/min/1.73 m^2 Not recommended for people with eGFR <30 mL/min/1.73 m^2 Dose of concomitant sulfonylurea or insulin may need to be reduced.	Within 1 hour before the first meal of the day or the evening meal	Unopened - Store in a refrigerator (2°C - 8°C). Do not freeze. After first use - Store below 30°C. Shelf-life: 14 days

- **Missed dose:** Should be injected within the hour prior to the next meal. Do not administer after a meal.
- Some orally administered drugs should be taken at least 1 hour before, or 4 hours after, lixisenatide injection.
- people receiving Lyxumia with a sulfonylurea or with a basal insulin may have an increased risk of hypoglycaemia. Reduction of the dose of the sulfonylurea or the basal insulin may be considered to reduce the risk of hypoglycaemia. Lixisenatide should not be given in combination with basal insulin **and** a sulfonylurea due to increased risk of hypoglycaemia**.**
- Its use does not require specific blood glucose monitoring. However, when used in combination with a sulfonylurea or a basal insulin, blood glucose monitoring or blood glucose self- monitoring may become necessary to adjust the doses of the sulfonylurea or the basal insulin.

LIRAGLUTIDE (VICTOZA)

Indicated for monotherapy when metformin is considered inappropriate due to intolerance or contraindications OR in addition to other medicinal products for the treatment of diabetes.

Dose	Dose Adjustment	Storage and Shelf-life
Initially 0.6 mg **once daily** for at least 1 week, then increased to 1.2 mg **once daily.** Max daily dose: 1.8mg	eGFR <15mL/min/1.73 m^2: No therapeutic experience in people with end-stage renal disease, and Victoza is therefore not recommended for use in these people . Not recommended for use in people with severe hepatic impairment.	Unopened - Store in a refrigerator (2°C - 8°C). Do not freeze. After first use - Store below 30°C. Shelf-life: 1 month

- **Missed dose:** if a dose is more than 12 hours late, the missed dose should not be taken and the next dose should be taken at the normal time.
- Pen adjusted to give either 0.6mg, 1.2mg or 1.8mg. Comes in a pre-filled pen - 6mg per ml.
- Victoza can be added to existing sulfonylurea or to a combination of metformin and sulfonylurea therapy or insulin.
- Self-monitoring of blood glucose is not needed in order to adjust the dose of liraglutide. However, when initiating treatment with liraglutide in combination with a sulfonylurea or insulin, blood glucose self-monitoring may become necessary to adjust the dose of the sulfonylurea/insulin.

SEMAGLUTIDE (OZEMPIC)

Indicated for monotherapy when metformin is considered inappropriate due to intolerance or contraindications OR in addition to other medicinal products for the treatment of diabetes.

Dose	Dose Adjustment	Storage and Shelf-life
Initially 0.25 mg **once weekly** for 4 weeks, then increased to 0.5 mg **once weekly** for at least 4 weeks, then increased if necessary to 1 mg **once weekly**	No dose adjustment is required for renal impairment. Experience in people with severe renal impairment is limited. Not recommended for use in people with end-stage renal disease Dose of concomitant sulfonylurea or insulin may need to be reduced.	Unopened - Store in a refrigerator (2°C - 8°C). Do not freeze. After first use - Store below 30°C. Shelf-life: 6 weeks

- **Missed dose:** it should be administered as soon as possible and within 5 days after. If more than 5 days have passed, the missed dose should be skipped, and the next dose should be administered on the regularly scheduled day. In each case, patients can then resume their regular once weekly dosing schedule.
- Comes in 1.34 mg per ml in 1.5 and 3ml pre-filled pens.
- When adding to existing therapy of sulfonylurea or insulin, a reduction in the dose of sulfonylurea or insulin should be considered to reduce the risk of hypoglycaemia.
- Self-monitoring of blood glucose is not needed when adjusting the dose. When initiating treatment in combination with a sulfonylurea or an insulin, blood glucose self-monitoring may become necessary to reduce the risk of hypoglycaemia.
- Caution should be exercised when using semaglutide in patients with diabetic retinopathy treated with insulin.

TYPE 2 DIABETES – GLP-1 MEDICINES INFORMATION (2)

The North West London health and care partnership

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EXENATIDE (NOTE: IMMEDIATE-RELEASE AND MODIFIED-RELEASE AVAILABLE)

Preparation	Licensed to be used in combination with:	Dose	Dose Adjustment	Time to be taken	Storage and Shelf-life
Standard-Release (BYETTA)	• Metformin • Sulfonylurea (+/-Metformin) • Pioglitazone(+/-Metformin) • Basal Insulin (+/-Metformin/Pioglitazone)	Initially 5 micrograms **twice daily** for at least 1 month, then increased if necessary up to 10 micrograms **twice daily**	eGFR 30-50 mL/min/1.73 m^2: Use with caution eGFR <30 mL/min/1.73 m^2: Avoid	Within 60-minute period before the morning and evening meal (6 hours or more apart). Should not be administered after a meal.	Unopened - Store in a refrigerator (2°C - 8°C). After first use - Store below 25 °C. Do not freeze. Shelf-life: 30 days
Modified-Release (BYDUREON/ BYDUREON BCISE)	• Other glucose-lowering medicinal products including basal insulin, when the therapy in use, together with diet and exercise, does not provide adequate glycaemic control.	2 mg **once a week** on the same day each week.	Avoid if eGFR less than 50 mL/minute/1.73 m^2	N/A	Unopened - Store in a refrigerator (2°C - 8°C). Do not freeze. Pens may be kept for up to 4 weeks below 30°C prior to use. After first use - suspension must be injected immediately after mixing Store in the original package in order to protect from light.

- Dose of concomitant sulfonylurea may need to be reduced to reduce the risk of hypoglycaemia.
- Blood glucose self-monitoring may be necessary to adjust the dose of sulfonylurea.

Standard-Release (BYETTA)

- With standard-release exenatide: some orally administered drugs should be taken at least 1 hour before, or 4 hours after, exenatide injection.
- **Missed dose:** If an injection is missed, the treatment should be continued with the next scheduled dose.

Modified-Release (BYDUREON)

- Comes as a 2 mg powder and solvent for modified-release suspension for injection in pre-filled pen.
- People switching from standard-release (Byetta) to modified-release exenatide may experience transient elevations in blood glucose concentrations, which generally improve within the first two weeks after initiation of therapy.
- **Missed dose:** it should be administered as soon as practical. For the next injection people can return to their chosen injection day. However, only one injection should be taken in a 24-hour period.
- **Women of child-bearing age** should use effective contraception during treatment with modified-release exenatide and for 12 weeks after discontinuation.

DULAGLUTIDE (TRULICITY)

Indicated as :

- **Monotherapy in people for whom the use of metformin is not tolerated or contraindicated.**
- **Add-on therapy In combination with other glucose-lowering medicinal products including insulin, when these together do not provide adequate glycaemic control**

Dose	Dose adjustments	Storage and Shelf-life
Monotherapy - 0.75 mg **once weekly** Add-on therapy - 1.5 mg **once weekly.**	eGFR < 15 mL/min/1.73 m^2: Not recommended	Unopened - Store in a refrigerator (2°C - 8°C). Do not freeze. After first use - Store below 30°C. Do not freeze. Shelf-life: 14 days

- Long-acting GLP-1
- Dose of concomitant insulin or drugs that stimulate insulin secretion may need to be reduced.
- **Missed Dose**: If a dose is missed, it should be administered as soon as possible if there are at least 3 days (72 hours) until the next scheduled dose. If less than 3 days (72 hours) remain before the next scheduled dose, the missed dose should be skipped and the next dose should be administered on the regularly scheduled day. In each case, people can then resume their regular once weekly dosing schedule