TYPE 2 DIABETES – CRITERIA FOR REFERRAL TO LEVEL 2 OOHS

Endorsed by CWHHE Diabetes Strategy Group

The aim of the Diabetes level 2 service is to provide a high quality service for safe initiation and optimization of injectable therapy within GP networks.

INCLUSIONS

Initiation or optimisation of injectable therapy will be provided to patients with Type 2 Diabetes who satisfy the following criteria:

1. Type 2 patients that are registered with a GP in the CCG over the age of 18

2. Are not achieving HbA1c targets with maximum-tolerated oral combination hypoglycaemic therapy and/or insulin/GLP-1, compliant with combination therapy without any significant improvement in HbA1c:
    - Triple therapy (three different oral agents)
    - Dual therapy (two different oral agents)

3. In patients who have significantly poor glycaemic control that is unlikely to respond to triple therapy OR in patients who express a desire to start injectable therapy OR need to do so for occupational reasons (e.g. GLP-1 in taxi drivers)

4. The patient or carer is deemed capable of safely managing their injectable, including being able to undertake home blood glucose monitoring, inject insulin and adjust their own dose

5. Express an intention to start injectable, having been advised of what this involves and the risks associated with the treatment

EXCLUSIONS (REFERRAL TO ACUTE SPECIALIST CLINIC REQUIRED)

1. Pregnancy

2. Patients aged under 18

TYPE 2 DIABETES – COMPETENCIES FOR GLP-1 / INSULIN ADMINISTRATION

Endorsed by CWHHE Diabetes Strategy Group

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 (NHS Diabetes, 2010).
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 patients' 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

Endorsed by CWHHE Diabetes Strategy Group

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

- GLP-1s are injected to stimulate the insulin response to glucose and prevent glucagon release after meals.
- 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 sulphonylureas). 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 sulphonylurea or both.
- In very obese patients and those intolerant of metformin and SUs, GLP-1s can be used in combination with a single oral agent.
- NICE recommend patients on a combination of a GLP-1 mimetic and insulin should have specialist care advice and ongoing support from a consultant-led multidisciplinary team.

See glycaemic management algorithm for recommendations as to where GLP-1s fit with other glycaemic treatments.

QUESTIONS FREQUENTLY ASKED BY PATIENTS

- What happens if a dose is missed?
- If a dose is missed, the next dose should be injected at the usual time. An extra dose should not be taken to make up for the missed dose
- How long should there be between injections?
- At least 6 hours
- What happens if they forget to inject before a meal?
- They should not inject after a meal. If they forget to inject before wait until the next scheduled dose

PRECAUTIONS

- GLP-1s are not substitutes for insulin in insulin-dependent patients and are not licensed for use with 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.
- Not recommended for use in patients with severe renal failure.
- Not recommended for patients with severe gastro-intestinal problems. Patients receiving a GLP-1 in combination with sulphonylurea may be at increased risk of hypoglycaemia, therefore consider a reduction in the dose of sulphonylurea.
- There are no specific restrictions for drivers with class 1 licences (cars and motorcycles) when being treated with a GLP-1. Normal precautions to avoid low blood glucose when driving apply. Drivers holding Class 2 (LGV or PCV) licences need to inform the DVLA if they are being treated with a GLP-1 and a sulphonylurea and individual assessments will be made.
- Not recommended during pregnancy or where pregnancy is planned, or for nursing mothers.

ADVICE TO PATIENTS

- Provide them with patient information pack.
- Discuss the risk of hypoglycaemia and symptoms, treatment and prevention.
- Discuss common side effects such as nausea, vomiting diarrhoea, dizziness, headache and acid stomach.
- Advise that nausea is most common when first starting a GLP-1 but decreases over time in most patients.
- If they experience severe and persistent symptoms they must contact their health care provider as a matter of urgency.
- Warn that GLP-1s may reduce their appetite, the amount of food they eat and their weight.
- Medication such as contraceptives and antibiotics should be taken at least 1 hour before a GLP-1 injection.
- **Patients receiving GLP-1s in combination with a sulphonylurea or insulin may be at increased risk of hypoglycaemia, therefore consider 50% reduction in dose of sulphonylurea/insulin if HbA1c <64mmol/mol (8%).**
- **Stop use if planning to be, or are pregnant, or when lactating**

PATIENT INFORMATION

- Patients will need to understand the following:
- That GLP-1s are injectable treatments but not insulin
- Storage of GLP-1s – see below
- Injection techniques- Subcutaneous injection arm, thigh, abdomen
- Timing of dose - 60 minute before morning and evening meal.
- Glucose monitoring - regular daily monitoring required to identify any risk of hypoglycaemia
- 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.

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 in people:

- with a body mass index of 35 kg/m 2 or higher OR
- with a body mass index of less than 35 kg/m 2 AND
  - where insulin treatment would be unacceptable for occupational reasons OR
  - where weight loss would benefit other significant obesity related comorbidities.

INDICATIONS FOR CONTINUED USE

NICE recommends that treatment with GLP-1s is continued only if HbA1c has reduced by 11mmol/mol (or 1%) and a weight loss of 3% is achieved within 6 months of commencing treatment.

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
- It should be discarded after 30 days from first use even if there is still some liquid in the pen

See next sheet for specific GLP-1 drug information

TYPE 2 DIABETES – GLP-1 MEDICINES INFORMATION

Endorsed by CWHHE Diabetes Strategy Group

LIXISENATIDE (LYXUMIA)

Can be used in combination with Metformin, a sulphonylurea or insulin.

Dosage

- Starting dose: dosing is initiated at 10 mcg Lyxumia once daily for 14 days.
- Maintenance dose: a fixed maintenance dose of 20 mcg Lyxumia once daily is started on Day 15.
- It is administered once daily, within the hour prior to the first meal of the day or the evening meal. If a dose of Lyxumia is missed, it should be injected within the hour prior to the next meal.
- When Lyxumia is added to existing metformin therapy, the current metformin dose can be continued unchanged.
- **When added to existing therapy of a sulphonylurea or a basal insulin, an initial 50% reduction in the dose of the sulphonylurea or the basal insulin should be considered to reduce the risk of hypoglycaemia. Lyxumia should not be given in combination with basal insulin and sulphonylurea due to increased risk of hypoglycaemia.**
- Its use does not require specific blood glucose monitoring. However, when used in combination with a sulphonylurea or a basal insulin, blood glucose monitoring or blood glucose self-monitoring may become necessary to adjust the doses of the sulphonylurea or the basal insulin.

LIRAGLUTIDE (VICTOZA)

Comes in a pre-filled pen - 6mgs per ml. The pen can be adjusted to give either 0.6mgs, 1.2mgs or 1.8mg. NICE does not recommend the higher dose on cost grounds as they did not see any additional benefit over the 1.2mg dose.

Dosage

- Starting dose is 0.6mg daily to improve gastrointestinal tolerability. Increase to 1.2mg after at least 1 week. Some patients may benefit from an increase to 1.8mg daily. Doses higher than 1.8mg are not recommended.
- Dose adjustment is not required based on age. No dosage adjustment is required for mild renal impairment.
- Liraglutide is administered once daily, at any time, independent of meals, as a subcutaneous injection into the abdomen, thigh or upper arm.
- **Liraglutide is now licensed for use in combination with basal 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 sulphonylurea or a basal insulin, blood glucose self-monitoring may become necessary to adjust the dose of the sulphonylurea or basal insulin.

EXENATIDE (BYETTA)

Byetta can be used in combination with:

Metformin	Basal Insulin*
Metformin and sulphonylurea	Sulphonylurea
Metformin and pioglitazone	Pioglitazone

Dosage:

- There are 2 strengths, 5 microgram and 10 microgram pre- filled pens with 60 doses in each (30 days supply).
- The pen gives same dose each time it is used.
- A separate prescription is needed for pen needles.
- Initiate with the 5-microgram dose.
- Inject subcutaneously into either the thigh, abdomen or arm.
- Inject within a 60-minute period before the morning and evening meal.
- Injections should be given more than 6 hours apart.
- After one month the dose can be increased to 10 micrograms twice daily.

EXENATIDE SUSTAINED RELEASE (BYDUREON)

Comes in a powder and solvent for prolonged-release suspension for injection - 2mgs per dose in packs of 4.

The Bydureon vial and syringe is being replaced by a pen

Bydureon can be used in combination with:

- Metformin (+/- suphonylurea)
- Sulphonylurea
- Pioglitazone
- Metformin and pioglitazone

In adults who have not achieved adequate glycaemic control on maximally tolerated doses of these oral therapies.

Dosage

- The recommended dose is 2 mg once weekly.
- Patients switching from exenatide twice daily (Byetta) to Bydureon may experience transient elevations in blood glucose concentrations, which generally improve within the first two weeks after initiation of therapy.
- When Bydureon is added to existing metformin and/or thiazolidinedione therapy, the current dose of metformin and/or thiazolidinedione can be continued.
- When bydureon is added to sulphonylurea therapy, a reduction in the dose of sulphonylurea should be considered to reduce the risk of hypoglycaemia
- Bydureon should be administered once a week on the same day each week.
- The day of weekly administration can be changed if necessary as long as the next dose is administered at least one day (24 hours) later. Bydureon can be administered at any time of day, with or without meals.
- If a dose is missed, it should be administered as soon as practical. Thereafter, patients can resume their once weekly dosing schedule.
- Two injections should not be given on the same day (24 hour period).
- Blood glucose self-monitoring may be necessary to adjust the dose of sulphonylurea.
- If a different antidiabetic treatment is started after the discontinuation of Bydureon consideration should be given to the prolonged release of Bydureon.

DIABETES – INDICATIONS FOR INSULIN

Endorsed by CWHHE Diabetes Strategy Group

Introduce the likely need for insulin in the future early on as part of patient education

Emphasise that it is the pancreas that fails not the patient

Assess if greater compliance with oral agents and lifestyle changes could negate the need for insulin

ALWAYS	USUALLY	CONSIDER
Type 1 Diabetes	Type 2 Diabetes Failure to reach glycaemic targets using diet and non insulin therapies	Symptomatic e.g. rapid weight loss, polyuria, nocturia
Not sure of whether the diagnosis is Type 1 Diabetes or Type 2	Type 2 Diabetes Pre- and post- surgery	Women with Type 2 DM on oral agents hoping to conceive
Pregnant women with Type 2 DM	Type 2 Diabetes Following a MI	Acute neuropathies i.e. femoral amytrophy
Gestational Diabetes Not controlled on diet or metformin	Type 2 Diabetes requiring enteral feeding	Ketosis prone Type 2 Diabetes
Post surgical pancreatectomy	Chronic pancreatitis	Steroid induced Diabetes

DIABETES – INSULIN INITIATION

Endorsed by CWHHE Diabetes Strategy Group

WHICH INSULIN SHOULD BE USED INITIALLY FOR T2DM DIABETES (T2DM)

Animal insulin is no longer used for insulin starts

Begin with human NPH insulin injected at bed-time or twice daily according to need such as Insuman Basal, Humulin I or Insulatard

Consider, as an alternative, using a long-acting insulin analogue such as Insulin Detemir, Insulin Glargine if:

- The person needs assistance from a carer or healthcare professional to inject insulin, and use of a long-acting insulin analogue (Insulin Detemir, Insulin Glargine) would reduce the frequency of injections from twice to once daily, or
- The person's lifestyle is restricted by recurrent symptomatic hypoglycaemic episodes, or
- The person would otherwise need twice-daily NPH insulin injections in combination with oral glucose-lowering drugs, or
- The person cannot use the device to inject NPH insulin
- Monitor patients on a basal insulin regimen for the need for short-acting insulin before meals

Consider twice daily pre - mixed (biphasic) human insulin (particularly if HbA1c ≥ **75 mmol/mol or 9%**)
Consider pre-mixed preparations that include short-acting insulin analogues, rather than pre-mixed preparations that include shortacting human insulin preparations, if:

- A person prefers injecting insulin immediately before a meal, or
- Hypoglycaemia is a problem, or
- Blood glucose levels rise markedly after meals
- Consider initiation of **pre - mixed insulin** if the **HbA1c** is high particularly above **75 mmol/mol** or **9%**
- Monitor the need for a further injection of short-acting insulin before meals or for a change to a basal bolus regimen with NPH insulin or insulin detemir or insulin glargine , if blood glucose control remains inadequate.

This would however depend on the individual patients preference and convenience.

Other factors to consider:

Lifestyle

- Meal times
- Employment

Potential risk of hypoglycaemia

- High alcohol intake
- Malnutrition
- Low BMI

Physical barriers

- Dexterity
- Vision

Emotional barriers

- Needle phobia

PEOPLE WITH TYPE 1 DIABETES (T1DM)

In Type 1 Diabetes Insulin needs to be started within 24 hours of diagnosis

If the patient is severely ketotic and or vomiting, pregnant, or a child, urgent referral / telephone contact to the specialist team or acute on call medical team is required

T: Hospital switchboard and ask to speak to a diabetologist or paediatrician or acute on call medical team

Out of hours may well be the on call medical team who deal with this

DIABETES – CHOICE OF INSULIN

Endorsed by CWHHE Diabetes Strategy Group

THERE ARE MANY TYPES OF INSULIN TO CHOOSE FROM: ALL OF TODAY'S INSULINS ARE MANUFACTURED USING RECOMBINANT DNA TECHNOLOGY

HUMAN INSULINS	ANALOGUE INSULINS
e.g. Insuman Rapid, Humulin S, Insulatard Have a similar 51 amino acid structure to native insulin, their time of action can be modified by the addition of protamine	**e.g. Novorapid, Glargine** Have changes in the amino acid structure to modify their time of action They are a lot more expensive, although many of their licenses have or will expire soon, when bioequivalent insulins may become available that are cheaper

Human Insulins should be the initial choice of insulin for most patients with Type 2 Diabetes as they are safe and considerably cheaper than the analogue insulins
Exceptions are:
- **Those at high risk of hypoglycaemia**
- **Low BMI, malnourished, frail and elderly, erratic eating patterns**

	RAPID ACTING	SHORT ACTING	INTERMEDIATE ACTING	LONG ACTING	MIXTURES RAPID + INTERMEDIATE ACTING	MIXTURES SHORT + INTERMEDIATE ACTING	ULTRA-LONG ACTING
Type	**Analogue**	**Human**	**Human**	**Analogue**	**Analogue**	**Human**	**Analogue**
Onset of action	5-15 mins	30 mins	1-2 hours	2-3 hours	5-15 mins	30 mins	30–90 mins
Duration*	3-5 hours	6-8 hours	14-16 hours	Up to 24 hours	Up to 24 hours	Up to 24 hours	Up to 42 hours
Examples	Novorapid Humalog Glulisine	Humulin S Insuman Rapid	Insulatard Humulin I Insuman Basal	Determir Glargine	NovoMix 30 Humalog Mix 25 Humalog Mix 50	Humulin M3 Insuman Comb 15, 25, 50	Degludec
Peak effect	0.5-1.5 hours	2-4 hours	4-8 hours	Varies based on the dose	1-4 hours	2-8 hours	

TYPE 2 DIABETES – HYPOGLYCAEMIC AGENTS IN ADDITION TO INSULIN

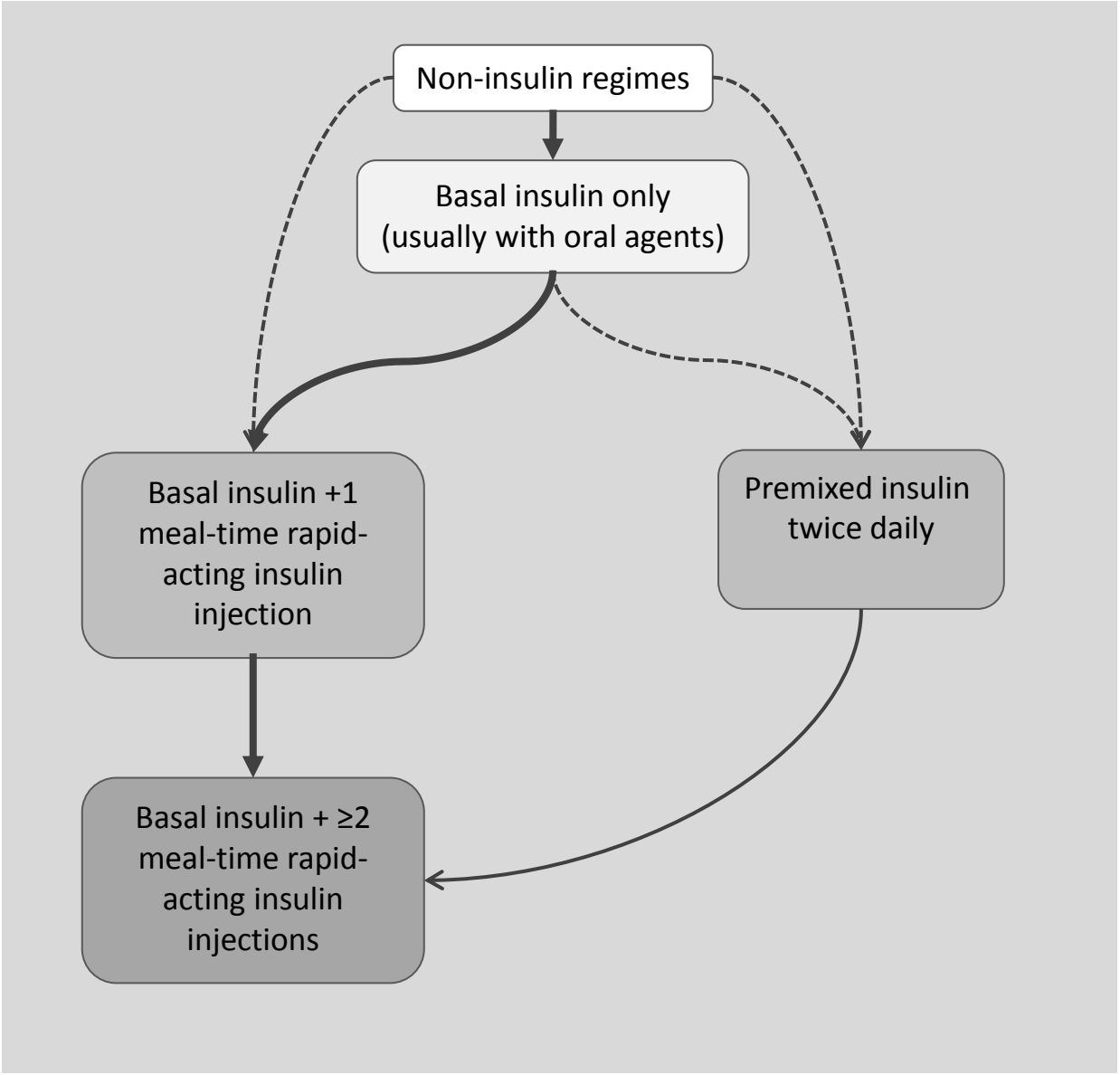
Endorsed by CWHHE Diabetes Strategy Group

ORAL AND NON – INSULIN THERAPY	USE WITH INSULIN	CONTRAINDICATIONS
Metformin	Normal and overweight people with Type 2 Diabetes can be continued on Metformin as there is evidence that this combination is insulin sparing and has other benefits including weight management glycaemic control and cardiovascular disease (CVD)	Do not use Metformin if the individual is: • Intolerant of Metformin • In heart failure • Do not start if eGFR is less than 45 mls/min • Discontinue if eGFR is < 30 mls/ min
Sulphonylureas (SU)	Continue with regular dose reviews if the individual is on a daily isophane or analogue insulin. **Otherwise the dose is usually halved or discontinued**	Use with caution / do not use in vulnerable people that are at risk of hypoglycaemia, e.g. elderly, dementia, those with deteriorating renal function and those who live alone.
DPP-4 Inhibitors (DPP-4Is)	DPP-4Is licensed for use with Insulin are: Sitagliptin (Januvia), Linagliptin (Trajenta) and Saxagliptin (Onglyza).	DPP-4Is are contraindicated in women of child bearing age considering pregnancy*
Acarbose	Not recommended in combination with insulin	
Glucagon-like peptide-1 receptor agonists. **(GLP-1 Agonists)** **Exenatide extended release** **Exenatide twice daily,** **Liraglutide once daily** **Lixisenatide**	Requires careful monitoring particularly if GLP-1 agonists are commenced after insulin initiation, in these cases the insulin dosage is normally halved when the GLP-1 is commenced. Lixisenatide and Exenatide are short acting GLP-1s and affect post prandial blood glucose. Liraglutide and Bydureon are long acting and predominately affect fasting glucose. Refer to manufacturers instructions for each individual product for use with insulin	Do not use if there is a history of acute pancreatitis Use in CKD patients varies according to specific GLP-1. (e.g. Lixisenatide can be used in patients whose eGFR > 30 mls/min) Type 1 Diabetes Severe gastrointestinal disease Pregnancy.
Sodium glucose co-transporter 2 (SGLT-2)	NICE has recommended that Dapagliflozin, (Forxiga) can only be used as mono therapy or as part of combination therapy alongside Metformin or insulin. (Ref: NICE TA288)	Do not use if eGFR is less than 60mls/min If used with insulin and an SU the dose of the SU should be lowered to reduce the risk of hypoglycaemia.* It is not recommended for use in combination with **Pioglitazone** or **DPP-4s** and **GLP-1s**
Pioglitazone	Caution as there is a risk of fluid retention and weight gain	Do not use if there is a history of heart failure / bladder cancer / bone fractures or if the patient has uninvestigated macroscopic haematuria.*

* See individual manufacturer's guidelines on use in pregnancy

TYPE 2 DIABETES – SEQUENTIAL INSULIN STRATEGIES

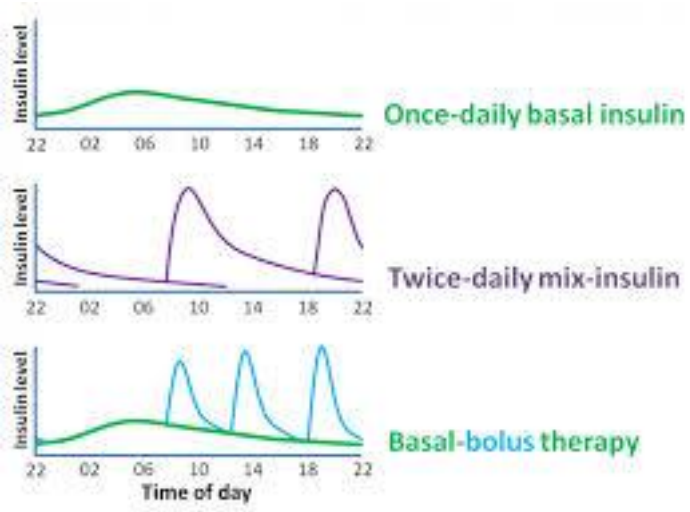
Endorsed by CWHHE Diabetes Strategy Group



***Diabetes Care, Diabetologia.* 19 April 2012 [Epub ahead of print]**

TYPE 2 DIABETES – BENEFITS OF INITIATING BASAL INSULIN

PROS
Just one injection a day
Easy for the patient to adjust the dose
Can stay on current oral agents to start with
Buys time and confidence until a twice or three or 4 times a day insulin regime is required



DIABETES – STARTING A BASAL INSULIN

Endorsed by CWHHE Diabetes Strategy Group

Tell the patient they are likely to need between 20-50 units of insulin and it is safe for them to increase the insulin.

Start with 10 units before bed of insulin if <100kg (or 20 units of insulin if >100kg)

For elderly frail patients where there is no requirement for tight control, morning NPH (human basal) insulin is safe as the peak will cover breakfast and a bit of lunch, and can be given by a morning carer who can ensure the patient has eaten. In the elderly it is quite likely that NPH will have a much longer duration of action as when the eGFR falls the half life of the insulin increases.

Increase by 2 units every 3rd day until before breakfast blood glucose is 8-10 mmol/l

Half the Sulphonylurea dose. Continue to increase by 2 units every 3rd day aiming for before breakfast blood glucoses of 6-8 mmol/l

STOP INCREASING if :

symptoms of hypoglycaemia at night - **go back to previous dose**

some readings are <5mmol/l

when insulin dose reaches 50 units - review with Diabetes team

DIABETES –PROS/CONS OF TWICE DAILY HUMAN INSULIN MIXTURE

PROS

Provides both background and prandial cover with two injections a day

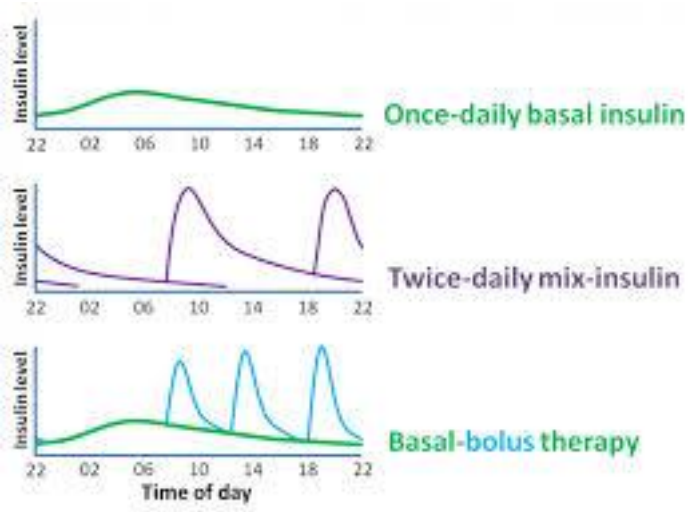
Unlike the analogue insulin mixtures provides sufficient background insulin to cover a light lunch

CONS

More difficult to titrate evening insulin M3 against pre-breakfast glucose due to risk of nocturnal hypoglycaemia

Requires patients to have a regular meal pattern including breakfast and a main meal in the evening, rather than lunch time

Increased risk of hypoglycaemia if eat dinner very late at night or tendency to skip breakfast or lunch



DIABETES – STARTING A TWICE DAILY HUMAN INSULIN MIXTURE

Endorsed by CWHHE Diabetes Strategy Group

Tell the patient the insulin needs to be given 20-30 minutes before breakfast and dinner and stress the need to eat on time. Stop all sulphonylureas

Start with 10 units BD if <100kg (or 20 units BD of insulin if >100kg M3) 20-30 minutes before breakfast and dinner

Start with the pre-dinner M3. Increase by 2 units every 3rd day until the 2 hour post dinner glucose is <10 mmol/l and before breakfast blood glucose is 6-8 mmol/l

Then increase the pre-breakfast M3 by 2 units every 3rd day until the 2 hour post breakfast glucose is <10 mmol/l and before dinner glucose is 6-8 mmol/l

STOP INCREASING if:

symptoms of hypoglycaemia

pre-breakfast or dinner glucose <5mmol/l

when total insulin dose reaches 100 units and review with diabetic team

DIABETES – REVIEWING A BASAL INSULIN REGIME

Endorsed by CWHHE Diabetes Strategy Group

Is the before breakfast blood glucose 5-8 mmol/l ? If no:

Continue to increase Insulatard by 2 units every 3rd day providing there is no nocturnal hypoglycaemia:

If HbA1c above agreed individual target at 3-4 months? –and the before breakfast blood glucose 5-8 mmol/l; examine post prandial blood glucose readings

If > 10mmol/l:

Switch to twice daily Insulin M3

DIABETES – REVIEWING A TWICE DAILY HUMAN INSULIN MIXTURE

Endorsed by CWHHE Diabetes Strategy Group

Is the pre breakfast blood glucose 5-8 mmol/l and 2 hour post meals blood glucoses if > 10mmol/l?
If no:

Continue to increase the evening M3 by 2 units every 3rd day to target post dinner and pre-breakfast values if no nocturnal hypoglycaemia:

Continue to increase the morning M3 by 2 units every 3rd day to target post breakfast and pre-dinner values if no day time hypoglycaemia:

If HbA1c above agreed individual target at 3-4 months and pre-meal glucose values in target and post prandial blood glucoses > 10mmol/l:

Review diet and consider switch to an Analogue Insulin Humalog Mix 50 BD or NovoMix 30 TDS

DIABETES –REUSABLE INSULIN PEN DEVICES

Endorsed by CWHHE Diabetes Strategy Group

DEVICE	AUTOPEN CLASSIC	AUTOPEN 24	NOVOPEN 4	NOVOPEN 5	NOVOPEN 3 DEMI	HUMAPEN SAVVIO	HUMAPEN LUXURA HD	HUMAPEN MEMOIR
Dosing	1 unit (1-21) 2 units (2-42)	1 unit (1-21) 2 units (2-42)	1 unit (1-60)	1 unit (1-60)	½ unit (0.5-35)	1 unit (1-60)	½ unit (0.5-30)	1 unit (1-60)
General features	Plastic		Metal Blue or chrome	Metal Blue or chrome	Plastic	Metal Audible click	Metal Green Audible click	Metal Maroon Audible click
Special uses	Release button on side makes it easier for some to handle Spring loaded release button ensures that force required to push the insulin is significantly less than for other insulin pens.			Memory function on pen end indicates timing and units of last dose	Half unit doses so suitable for children or those with low insulin requirements		Half unit doses so suitable for children or those with low insulin requirements	Records the date, time, and amount of last 16 doses (including priming doses)
Insulin compatability	**Lilly** Humulin Humalog **Wockhardt** Bovine Porcine	**Sanofi Aventis** Insuman Lantus	**Novo Nordisk** Insulatard Novorapid Novomix Levemir Tresiba	**Novo Nordisk** Insulatard Novorapid Novomix Levemir Tresiba	**Novo Nordisk** Insulatard Novorapid Novomix Levemir Tresiba	**Lilly** Humulin Humalog	**Lilly** Humulin Humalog	**Lilly** Humalog
Device								

DIABETES –DISPOSABLE INSULIN PEN DEVICES

Endorsed by CWHHE Diabetes Strategy Group

DEVICE	SOLOSTAR	FLEXPEN	FLEXTOUCH	NOVOPEN JUNIOR	INNOLET	KWIKPEN
Dosing	1 unit (1-80)	1 unit (1-60)	1 unit (1-80)	½ unit (0.5-35)	1 unit (1-50)	1 unit (1-60)
General features	Apidra and Lantus versions of this pen have different colours (blue for Apidra, grey for Lantus) and textures to help users distinguish between the types of insulin.	Pen is blue, with labels of different colours for various types of insulin.		Can dispense half units of insulin (suitable for children). Pen is blue with colourful detailing.	An easy-to-use doser with a large, ergonomic dial	Buff colour for human insulin, blue for analogue
Special uses			Reduced manual dexterity (due to push button not having to extend)		Poor eyesight Reduced manual dexterity (usually due to different joint related conditions)	
Insulin compatability	**Sanofi** Apidra Lantus (glargine)	**Novo Nordisk** Insulatard Novorapid Novomix Levemir (detemir) Tresiba (degludec)	**Novo Nordisk** Insulatard Novorapid Novomix Levemir (detemir) Tresiba (degludec)	**Novo Nordisk** Insulatard Novorapid Novomix Levemir (detemir) Tresiba (degludec)	**Novo Nordisk** Insulatard Levemir (detemir)	**Lilly** Humulin Humalog
Device