

Formulary Factsheet: Insulin for Type 2 Diabetes



Cornwall and Isles of Scilly

Insulin therapy for people with type 2 diabetes should only be initiated and managed by healthcare professionals with the relevant expertise and training. The benefits and risks of insulin therapy should be discussed with the person so that they can make an informed choice.¹

Background

The purpose of this fact sheet is to emphasise the importance of following the NICE guidance with regard to the use of insulin in type 2 diabetes and to support the implementation of local insulin initiation guidelines.

What does NICE^{1,2} recommend?

Neutral Protamine Hagedorn (NPH) insulin, used once or twice-daily according to need, is the preferred first choice insulin.

It is preferred based on cost-effectiveness and its well-recognised safety profile.

Insulin analogues (glargine, detemir) should be considered only in specific circumstances, see below:

The Bottom Line

- For most people with type 2 diabetes, long-acting insulin analogues offer no significant advantage over human NPH (isophane) insulin and are much more expensive.
- In terms of HbA1c lowering, there is no difference between long-acting insulin analogues and human NPH insulin.

When are analogue insulins appropriate?

- The person needs assistance from a carer or health professional to inject insulin and use of a long-acting insulin analogue (such as insulin detemir or 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
- People who do not reach their target HbA1c because of significant hypoglycaemia when using NPH, 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 but who could administer their own insulin safely and accurately if one of the long-acting insulin analogues were used or
- For a person with significant renal/liver pathology due to increased risk of hypoglycaemia (eGFR<30 or established cirrhosis)

When is it appropriate to switch from analogue to NPH insulin?

By initiating new type-2 patients on NPH insulins first line rather than the analogues, and reviewing patients with sub-optimal (HbA1C>75mmol/mol 9%) control with a view to switching to NPH insulin, prescribers will regain experience with this type of insulin.

Mass switching to NPH insulin is not recommended at present and switching should only be considered on an individual patient basis.

Specialist input should be sought if required.

What are the safety issues? (inc. nocturnal hypoglycaemic attacks)

Compared with human NPH insulin, long-acting insulin analogues result in a statistically significantly lower incidence of any hypoglycaemia and a statistically significantly lower incidence of nocturnal hypoglycaemia. However, there is no statistically significant reduction in the incidence of severe hypoglycaemia.

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What NPH Isophane insulin could be prescribed?

Insulin	Prefilled devices	Cartridges	Syringes	
Insuman Basal (100units/ml)	5x3ml Insuman Basal Solostar £19.80 (1-80 units, 1 unit dial up)	5x3ml cartridges £17.50 <ul style="list-style-type: none"> Autopen 24 £16.71 (1-21 units, 1 unit dial-up OR 2-42 units, 2 unit dial-up) AllStar Pro Blue or Silver £25.00 (1-80 units, 1 unit dial-up) 	5ml vial £5.61	Insuman Basal, Insulatard, and Humulin I all have a similar duration of action (8-12 hours) When initiating a once-daily NPH insulin regimen it is advisable that it is administered in the morning due to the profile of the insulin. This should reduce the likelihood of hypoglycaemia
Insulatard (100units/ml)	5x3ml Insulatard Innolet device £20.40 (1-50 units, 1 unit dial up)	5x3ml Penfill cartridges £22.90 <ul style="list-style-type: none"> Novopen 5 Blue or Silver £26.86 (1-60 units, 1 unit dial-up) Novopen Echo Blue or Red £26.86 (0.5-30 units, 0.5 unit dial-up) 	10ml vial £7.48	
Humulin I (100units/ml)	5x3ml Humulin I Kwikpen £21.70 (1-60 units, 1 unit dial up)	5x3ml cartridges £19.08 <ul style="list-style-type: none"> Autopen Classic £16.96 (1-21 units, 1 unit dial-up or 2-42 units, 2 unit dial-up) HumaPen Savvio £27.01 1-30 units, 0.5 unit dial-up) 	10ml vial £15.68	

Switching to NPH insulin

When switching a patient from a long-acting analogue to an NPH insulin it would be advisable to reduce the number of daily units by 10% then adjust according to requirements. Although patient preference will guide the device of choice, Insuman Basal may be the most cost-effective option and is the first-line formulary choice within the NPH insulin group. The Solostar Prefilled device is the same as the Lantus pre-filled pen which may make the transition easier for some patients. The local diabetic specialist nurses have the greatest experience with Insuman Basal and endorse its use first line if an NPH insulin is required.

Biphasic insulins (Specialist input required)

NICE¹ recommend NPH plus a short-acting insulin should be considered (particularly if the person's HbA1c is 75 mmol/mol or higher). This may be administered either separately or as a pre-mixed (biphasic) human insulin preparation.

Bi-phasic Insulins (NPH)

Insulin	Prefilled devices	Cartridges	Syringes	
Insuman Comb 25 (100 units/ml)	SoloSTAR pen 5 X 3ML £19.80	5 x 3ml cartridges £17.50	5ml vial £5.61	Insuman Comb and Humulin M3 all have a similar duration of action
Humulin M3 (100 units/ml)	KwikPen 5 x 3ML pens £21.70	5 x 3ml cartridges £19.08	10ml vial £15.68	
Insuman Comb 15 and Insuman Comb 50 (100 units/ml)		5 x 3ml cartridges £17.50		Insuman Comb 50 is for specialist initial only

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Pre-mixed insulin preparations that include short-acting insulin analogues (rather than those that include short-acting human insulin preparations) should be considered if:

A person prefers injecting insulin immediately before a meal, or

Hypoglycaemia is a problem, or

Blood glucose levels rise markedly after meals.

What are the Costs of Bi-phasic NPH insulins in comparison to Bi-phasic analogue insulins?

Bi-phasic NPH pre-filled pens per box	Bi-phasic Analogue pre-filled pens per box
Insuman Comb 25 SoloSTAR £19.80	NovoMix 30 FlexPen £29.89
Humulin M3 KwikPen £21.70	Humalog Mix25 KwikPen £30.98
	*Humalog Mix50 KwikPen £30.98
Insuman Comb and Humulin M3 have a similar duration of action	NovoMix 30 and Humalog Mix 25 have a similar duration of action

References

¹ NICE guideline [NG28] Type 2 diabetes in adults: management (December 2015 updated May 2017)

² NICE Clinical Knowledge Summary Insulin therapy in type 2 diabetes (<https://cks.nice.org.uk/insulin-therapy-in-type-2-diabetes>) accessed 18/06/2018

³ C&D Data (<http://www.cddata.co.uk/>) accessed 02/07/2018