

Guidelines for initiation of insulin to previously insulin naïve Type 2 diabetes patients.

Recommendations

- NPH insulin¹ is the most cost-effective insulin and should be used first line in new Type 2 patients initiating insulin for the first time.
- The initial use of NPH should take into account the exceptions as discussed. Any doubt over whether the patient is suitable should be discussed with the Diabetes Specialist Nurse team.
- Patients with sub-optimal (HbA1C>9%) control who are currently on insulin analogues should have their diabetes regime reviewed and a consideration made to switch to a more effective regime. This should take into account the exceptions as discussed.
- Patients who are in at risk groups should be prescribed the insulin regime that is appropriate to the patient's situation and there should be no automatic prescribing of any single regime.

Background

NICE Clinical Guideline 87, (2009) made a number of recommendations with regard to the use of insulin analogues in type-2 diabetes.

- It noted that NPH insulin is the most cost-effective insulin for initiation of treatment in type 2 diabetes and recommended that it should be preferentially used first line.
- The recommendations suggested that insulin treatment begin with human NPH insulin injected at bed-time or twice daily according to need.
- However, the guidance was clear that in a number of exceptional circumstances using a long-acting insulin analogue as an alternative could be considered.

These exceptional circumstances are:

- Assistance with injection from a carer or Health Care Professional is needed and injection frequency can be reduced from twice a day to once a day, or

¹ NPH insulin or Neutral Protamine Hagedorn (also known as human isophane insulin) is an intermediate-acting insulin

- The person's lifestyle is restricted by recurrent severe hypoglycaemic episodes (severe being defined as an episode that requires third party intervention)
- 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.

Clinically these exceptions can be translated into a number of at risk groups:

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| <ul style="list-style-type: none"> • Patients with a history of severe recurrent hypoglycaemia • Elderly or frail patients with poor food and intake inability to administer insulin • Patient with a BMI of <28 (due to increased risk of hypoglycaemia) • Patient with significant renal/liver pathology due to increased risk of hypoglycaemia (eGFR<30 or established cirrhosis) |
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These exceptions were drawn up due to evidence that there are lower rates of any hypoglycaemia with analogue vs NPH² and there are lower rates of nocturnal hypoglycaemia with analogue vs NPH.³

The NICE Guideline Development Group noted that long-acting insulin analogues did not appear to be cost-effective options when compared with NPH insulin. However, they accepted that episodes of severe hypoglycaemia have the potential to be highly detrimental to a person's health-related quality of life (partly because of fear of symptomatic/severe hypoglycaemic episodes). Hence it is more cost effective to target use of long-acting insulin analogues to people who would be most likely to benefit.

Having taken into account the NICE guidance and the effect of insulin switching the Secondary Care Diabetes (Medical and Diabetes Specialist Nurse services) in discussion with the CAPC are recommending that:-

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| <ul style="list-style-type: none"> • NPH insulin is the most cost-effective insulin and should be used first line in new Type 2 patients initiating insulin for the first time • The initial use of NPH should take into account the exceptions as discussed. Any doubt over whether the patient is suitable should be discussed with the Diabetes Specialist Nurse team • Patients with sub-optimal (HbA1C>9%) control who are currently on insulin analogues should have their diabetes regime reviewed and a consideration made to switch to a more effective regime. This should take into account the exceptions as discussed. • Patients who are in at risk groups should be prescribed the insulin regime that is appropriate to the patient's situation and there should be no automatic prescribing of any single regime. |
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² For Glargine, RR=0.89 (95%CI 0.83-0.96) and for Detemir RR=0.68 (95%CI 0.54-0.86).

³ For Glargine RR=0.54 (95%CI 0.43-0.69) and for Detemir RR=0.54 (95%CI 0.42-0.68).

Currently, there is no guidance to recommend the switching of all Type 2 patients on insulin analogues to NPH. This is due to high associated costs of training healthcare professionals in the switching of insulin and the significant cost implications to both Primary Care practice teams and to the Diabetes Specialist nurse and Secondary Care Diabetes services. There would also be associated costs from increased use of glucose test strips because of the increase in monitoring that would be needed from using less predictable insulin. Some further data (not specifically from Cornwall & IoS) also suggests that patients on insulin with Type 2 diabetes have a significant level of severe hypoglycaemia that requires paramedic/secondary care intervention⁴. The potential use of an insulin that increases hypoglycaemia rates in at risk individuals may therefore impact on this and increase the associated costs.

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⁴ Leese et al *Diabetes Care* 26:1176–1180, 2003.