**Insulin initiation in Type 2 Diabetes**

**Consider insulin therapy** if other measures do not keep HbA1c ≤ 59 mmol/mol (≤ 7.5%) OR individualised target agreed with patient

- See points to check before initiating insulin
- Discuss benefits and risks of insulin treatment
- Start insulin in preference to additional oral medication in symptomatic hyperglycaemia on dual therapy, unless there is strong justification not to

**Aim** for target HbA1c while minimising risk of hypoglycaemia & weight gain

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**Usual first line therapy:**

**Isophane insulin (NPH insulin) once daily before bed**
(Humulin I, Insulatard or Insuman Basal)

**OR Long-acting Insulin analogue (see advice on when to use):**

**Insulin glargine** (Lantus) or **Insulin detemir** (Levemir) **once daily**

- Usual starting dose is 10 units (start low and go slow)
- Less insulin may be required in elderly, active, thin patients and more in the overweight and underactive
- If overnight hypoglycaemia occurs, review dose of insulin and/or change the time of injection to the morning
- Continue on other hypoglycaemic therapy, but review use of sulphonylurea if hypoglycaemia occurs with insulin plus sulphonylurea

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**Dose titration**

- Titrate dose against morning fasting glucose
- Change doses in increments of 10–20% (eg: 2–4 units) at intervals of 3 to 5 days
- If necessary give isophane insulin twice daily

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**When to use a long-acting analogue**

For most people with type 2 diabetes, analogue insulin offers no significant clinical advantage and is much more expensive. Analogue insulin should be considered if:

- The person can not use the delivery device to inject isophane insulin
- The person’s lifestyle is restricted by recurrent symptomatic hypoglycaemic episodes
- The person needs help to inject insulin & could reduce the number of injections with a long-acting analogue insulin.

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**Before initiating insulin CHECK:**

- If diet, and exercise are optimised
- Adherence to all medication
- Therapy for co-morbidities is optimised
- Patient preferences and lifestyle
- Would patient benefit from attending a structured education course (DESMOND)
- If HbA1c target is too low
  
  **AND**
  
  - Review patient’s blood glucose profile

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**Insulin is not a substitute for healthy eating, activity and weight control**

Initiate with an educational programme encompassing:

- Dietary management
- How to self monitor blood glucose; & what action to take with different blood glucose levels
- Management of hypoglycaemia
- How to seek specialist help

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**Once daily basal insulin regimen may be appropriate in the following people:**

- Insulin-resistance due to obesity
- Those anxious about injections
- With high blood glucose overnight and in the morning, which falls with daily activities
- Reliant on someone else to administer their insulin
If significant hyperglycaemia after meals, or glycaemic control not achieved (particularly if HbA1c ≥ 75mmol/mol (≥ 9%) on basal insulin

**Biphasic insulin twice daily**  
(Humulin M3, Insuman Comb)

OR If short-acting insulin analogue more appropriate:  
**Biphasic insulin lispro twice daily** (Humalog Mix [25 or 50]) OR  
**Biphasic insulin aspart twice daily** (Novomix 30)

- Once daily administration is an option
- Continue on other hypoglycaemic therapy, but review use of sulphonylurea, particularly in patients on biphasic insulin aspart/lispro
- Less suitable for people with an erratic lifestyle

**ADD IN (to basal insulin)**  
**Short-acting soluble insulin before meals**  
Human soluble insulin (Humulin S or Insuman Rapid)

OR If insulin analogue appropriate:  
**ADD IN (to basal insulin) before meals**  
**Rapid-acting insulin lispro** (Humalog) OR  
**Rapid-acting insulin aspart** (NovoRapid)

- Sulphonylurea therapy should be stopped

Consider pre-mixed preparations that include short-acting insulin analogues, if:
- a person prefers injecting insulin immediately before a meal
- hypoglycaemia is a problem,
- blood glucose levels rise markedly after meals.

Pre-mixed insulin regimen

 Basal bolus insulin regimen may be appropriate in the following people:
- Those who need flexibility because of an erratic lifestyle, travel across time zones or sport
- Those who need to optimise glycaemic control because of complications, illness or a wound

Basal bolus insulin regimen

Over intensification of treatment with insulin to HbA1c below 59 mmol/mol (7.5%) may be associated with serious hypoglycaemia, reduced quality of life and increased mortality in older patients or those with long standing type 2 diabetes

Over intensified treatment with insulin to HbA1c below 59 mmol/mol (7.5%) may be associated with serious hypoglycaemia, reduced quality of life and increased mortality in older patients or those with long standing type 2 diabetes

Click here for release profile of insulins

References: Management of Type 2 diabetes NICE Clinical Guideline 87. May 2009  
Date produced: September 2014. Review date: October 2014