Management & prevention of type 2 diabetes

DIABETES CARE

Glargine vs NPH in reducing HbA_{1c} levels

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓

1 The aim of this study was to compare the abilities and associated hypoglycaemia risks of insulin glargine and human NPH insulin added to oral treatment of type 2 diabetes to reach HbA_{1c} of 7%.

2 The randomised, open-label, parallel, 24-week multicentre trial investigated 756 overweight men and women who had inadequate glycaemic control on one or two oral agents.

3 The participants continued their prestudy treatment and received glargine or NPH subcutaneously at bedtime and a forced titration schedule was used seeking a target fasting plasma glucose (FPG) of ≤ 100mg.

4 Outcome measures were FPG, HbA_{1c}, hypoglycaemia and percentage of people reaching an HbA_{1c} ≤7% without documented nocturnal hypoglycaemia.

5 Mean FPG and HbA_{1c} were similar with glargine and NPH at the study endpoint.

6 Although most participants achieved an HbA_{1c} of ≤ 7% with each type of insulin, nearly 25% more participants achieved this without documented nocturnal hypoglycaemia with glargine, and other categories of symptomatic hypoglycaemia were lower with glargine.

7 Supplementing oral treatment with a bedtime injection of basal insulin can achieve the recommended HbA_{1c} of 7% in this population group and glargine is better suited than NPH to providing this supplement.

Riddle MC, Rosenstock J, Gerich J (2003) The treat-to-target trial: randomised addition of glargine or human NPH insulin to oral therapy of type 2 diabetic patients. *Diabetes Care* **26**(11): 3080–86

Don't hold your breath for inhaled insulin

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Two of the articles summarised in this issue of *Diabetes Digest* offer additional insight into the role of insulin as additive therapy in type 2 diabetes.

The article by Weiss et al offers an update on inhaled insulin. Although the study was a well-conducted piece of clinical research, it offers merely proof of concept and simply shows that insulin administered by inhalation is effective. The study did not compare inhaled insulin with other types of insulin, so we have no idea whether it is more or less effective or acceptable than insulin administered by the conventional route. The preliminary data were presented to the American Diabetes Association in 1999 and have taken 4 years to reach the light of day. This suggests that inhaled insulin is not about to trigger a therapeutic revolution.

In contrast, the study by Riddle et al was a large randomised controlled trial of insulin initiation in people with poorly controlled type 2 diabetes. The trial compared the efficacy of the addition of basal isophane insulin or glargine (with over 360 patients in each group). The oral hypoglycaemic medication was continued and long-acting insulin introduced by a once-daily injection at bedtime, with a rigorous, patient-initiated dose titration schedule against a tight glycaemic target (fasting blood glucose < 5.6 mmol/l).

Although the oral agents were not standardised, 70% of patients in both groups were taking both sulphonylurea and metformin. Both insulins successfully reduced HbA_{1c} from a mean of 8.6% to 7%. Nearly 60% of patients in both groups achieved an HbA_{1c} of ≤ 7%. Although glargine offered no difference in overall glycaemic control it was more predictable and stable. There was significantly less within-patient variation and much less hypoglycaemia in those treated with glargine (21% reduction in all symptomatic episodes, 29% reduction in biochemically confirmed episodes < 4.0 mmol/l and 44% reduction in episodes < 3.1 mmol/l). There was a corresponding reduction for night-time hypoglycaemic episodes in the same groups: 42%,44% and 48%.

We know that insulin initiation in type 2 diabetes is often inappropriately delayed and insufficiently powerful. The study by Riddle and colleagues suggests that simple forced dose-titration will deliver significant improvements in glycaemic control with a very low incidence of hypoglycaemia, particularly hypoglycaemia at night, which is a major concern for patients. The findings of this study are important, readily transferable to clinical practice and could be implemented today.

ARCHIVES OF INTERNAL MEDICINE

Preprandial inhaled insulin improves glycaemic control

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 This study aimed to determine if glycaemic control in people with with suboptimal control of their type 2 diabetes despite treatment with OHAs, can be improved by adding preprandial inhaled insulin (INH).

2 A total of 68 people with poorly controlled type 2 diabetes despite treatment with OHAs were randomised to receive INH in addition to their current OHA or to continue taking their OHA alone for 12 weeks.

3 The HbA_{1c} levels of the INH group were significantly more reduced than those in the OHA-only group.

4 Fasting plasma glucose improved more in the INH group compared with the OHA-only group, and the postprandial increase in glucose was significantly lower in participants receiving INH than OHA only.

5 One case of severe hypoglycaemia was reported in the INH group, and there was a greater increase in bodyweight in this group.

6 Adding preprandial INH to existing OHAs improves glycaemic control in people with type 2 diabetes who have poor glycaemic control with OHAs alone, without the need for injections.

Weiss SR, Cheng S-L, Kourides IA, Gelfand RA, Landschulz WH (2003) Inhaled insulin provides improved glycemic control in patients with type 2 diabetes mellitus inadequately controlled with oral agents. *Archives of Internal Medicine* **163**: 2277–82