

Basal insulin therapy in type 2 diabetes: 28-week comparison of insulin glargine (HOE901) and NPH insulin.

Rosenstock J, Schwartz SL, Clark CM, Park GD, Donley DW, Edwards MB. *Diabetes Care* 2001; 24:631-636.

STUDY DESCRIPTION

This phase III, randomized, open-label comparison of insulin glargine and NPH insulin was undertaken in 518 persons with T2DM at 59 centers in North America by the 3006 Study Group. A key feature of this study is that all subjects had received prior insulin treatment for more than three months without concomitant OHA prior to enrollment.

The prior insulin treatment was either once (n=100) or twice (n=409) daily, or more than twice daily (n=9) NPH insulin for basal supplementation. In addition, 328 patients had received concomitant regular insulin for post-prandial glycemic control. Patients who had received prior NPH insulin as once-daily treatment (n=100) were the subject of an additional analysis (Fonseca et al., 2001, see page 109).

OBJECTIVES

To compare the efficacy and safety of insulin glargine and NPH insulin for basal insulin requirements in persons with T2DM on pre-existing basal (NPH insulin) alone or in combination with regular insulin regimens.

STUDY DESIGN

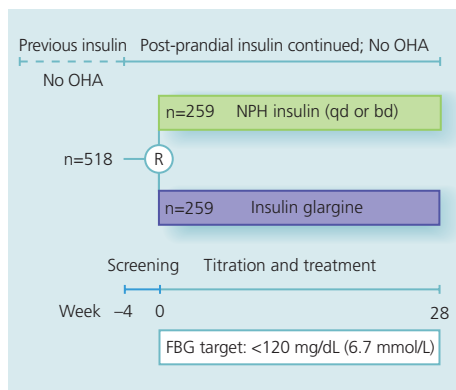


Figure 59. Design of phase III randomized study.

OUTCOME VARIABLES

Primary variables

- Baseline to endpoint change in HbA_{1c}

Secondary variables

- Baseline to endpoint changes in FBG.

BASELINE CHARACTERISTICS		
	NPH insulin	Insulin glargine
Men (%)	62.2	57.9
Age (years)	59.2 ± 9.9	59.5 ± 9.7
BMI (kg/m ²)	30.4 ± 5.1	30.7 ± 5.0
Duration of DM (years)	14.1 ± 9.0	13.4 ± 8.3
Duration of insulin treatment (years)	8.3 ± 7.6	8.4 ± 6.9
FPG (mg/dL)	200 ± 77	191 ± 70
HbA _{1c} (%)	8.5 ± 1.2	8.6 ± 1.2

Data are means ± SD

- Frequency of symptomatic (BG < 50 mg/dL (2.8 mmol/L)) and severe (BG < 36 mg/dL (2.0 mmol/L) and needing assistance by a third person to receive oral carbohydrate or intravenous glucose or glucagon) hypoglycemia
- Frequency of nocturnal hypoglycemia
- Baseline to endpoint changes in:
 - Body weight
 - Insulin dose
- Adverse events

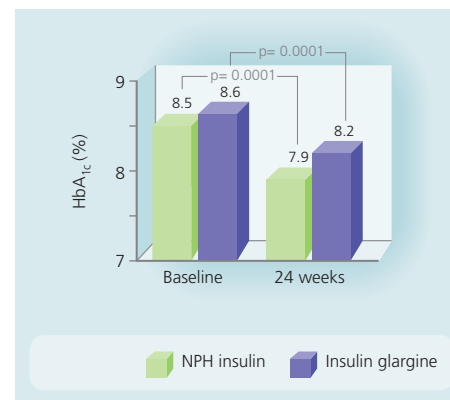


Figure 60. Comparison of mean HbA_{1c} levels at baseline and study endpoint.

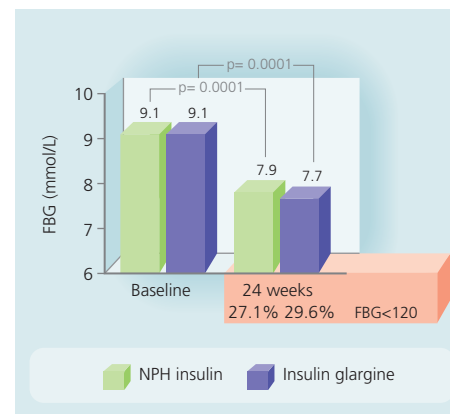


Figure 61. Mean fasting blood glucose concentration at baseline and study endpoint; the proportion of patients reaching target is shown in the shaded box.

KEY FINDINGS

- Comparing NPH insulin to insulin glargine, similar significant baseline to endpoint reductions in HbA_{1c} occurred in both treatment groups (mean reductions: 0.6 ± 0.1% (p=0.0001) vs. 0.4 ± 0.1% (p=0.0001) (Figure 60).
- FBG levels were similar at baseline in both NPH insulin and insulin glargine treatment groups and were reduced significantly in both treatment groups (Figure 61). Similar proportions of patients achieved the FBG target of 120 mg/dL (6.7 mmol/L) (27.1% vs. 29.6%, respectively).
- The occurrence of any symptomatic hypoglycemic event was similar in the two groups (66.8% vs. 61.4%). Severe hypoglycemia was more common with NPH insulin (10.4% vs. 6.6%; p=0.0553). Nocturnal hypoglycemia was 25% less frequent with insulin glargine after the initial titration phase of one month (35.5% vs. 26.5% p=0.0136) (Figure 62).
- Patients treated with insulin glargine experienced significantly less weight gain compared to NPH insulin treatment (1.4kg vs. 0.4kg; p<0.0007) (Figure 63).

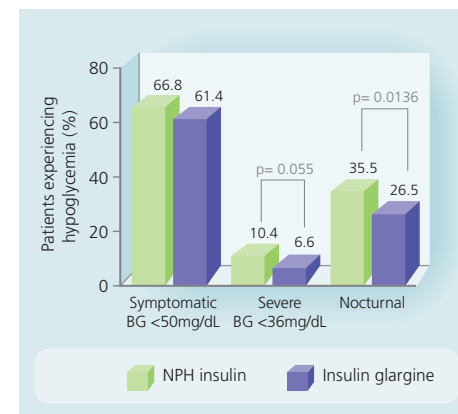


Figure 62. Frequency of hypoglycemia defined as symptomatic, severe and nocturnal during study.