

Lower basal insulin dose requirements, reduction of nocturnal hypoglycemic episodes and improvement of blood glucose control with insulin glargine vs previous NPH treatment in subjects with type 1 Diabetes.

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Introduction

New therapies for treatment of type 1 diabetes should improve control without increasing the number of hypoglycemic episodes. Previous studies with insulin glargine demonstrated a reduction in the number of episodes of nocturnal hypoglycemia with inconsistent A1c changes.

Objective

To investigate the possibility of achieving A1c reduction without increasing the frequency of hypoglycemia in a population of type 1 patients with intensive treatment (basal T1D NPH insulin) after being changed to a single bedtime dose of insulin glargine for 1 year.

Material and Methods

30 patients with type 1 diabetes (17 M) mean age of 27.5 ± 14 years and diabetes duration of 10.3 ± 8.4 years, maintained the same treatment for at least one year. Previous treatment consisted in 3 doses of NPH insulin plus pre-prandial short acting insulin analogue (aspart or lispro). Insulin glargine replaced NPH insulin at 75 % of the NPH dose, quarterly visits were maintained

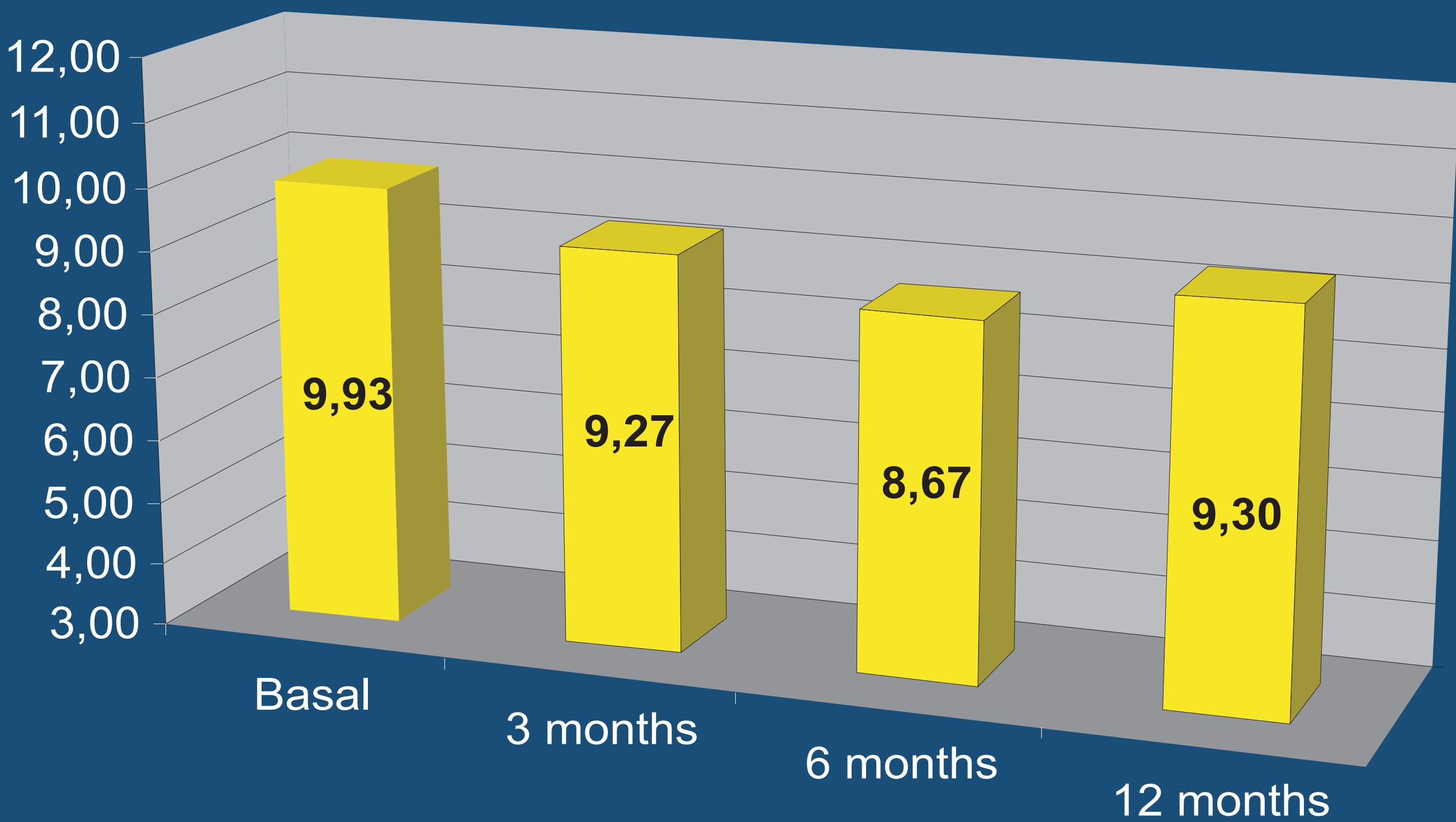
Results 1

A1c decreased progressively from 7.5 ± 1.2 % to 6.8 ± 0.7 % ($p < 0.01$) at one year of treatment (scheme 1). Mean daily blood glucose decreased from 162 ± 42 to 141 ± 21 mg/dl ($p < 0.05$). During the follow-up, the frequency of mild monthly hypoglycemia during the 1 year of follow-up did not vary (9.9 ± 7.8 vs 9.3 ± 7.2) (scheme 2).

A1c follow up scheme 1



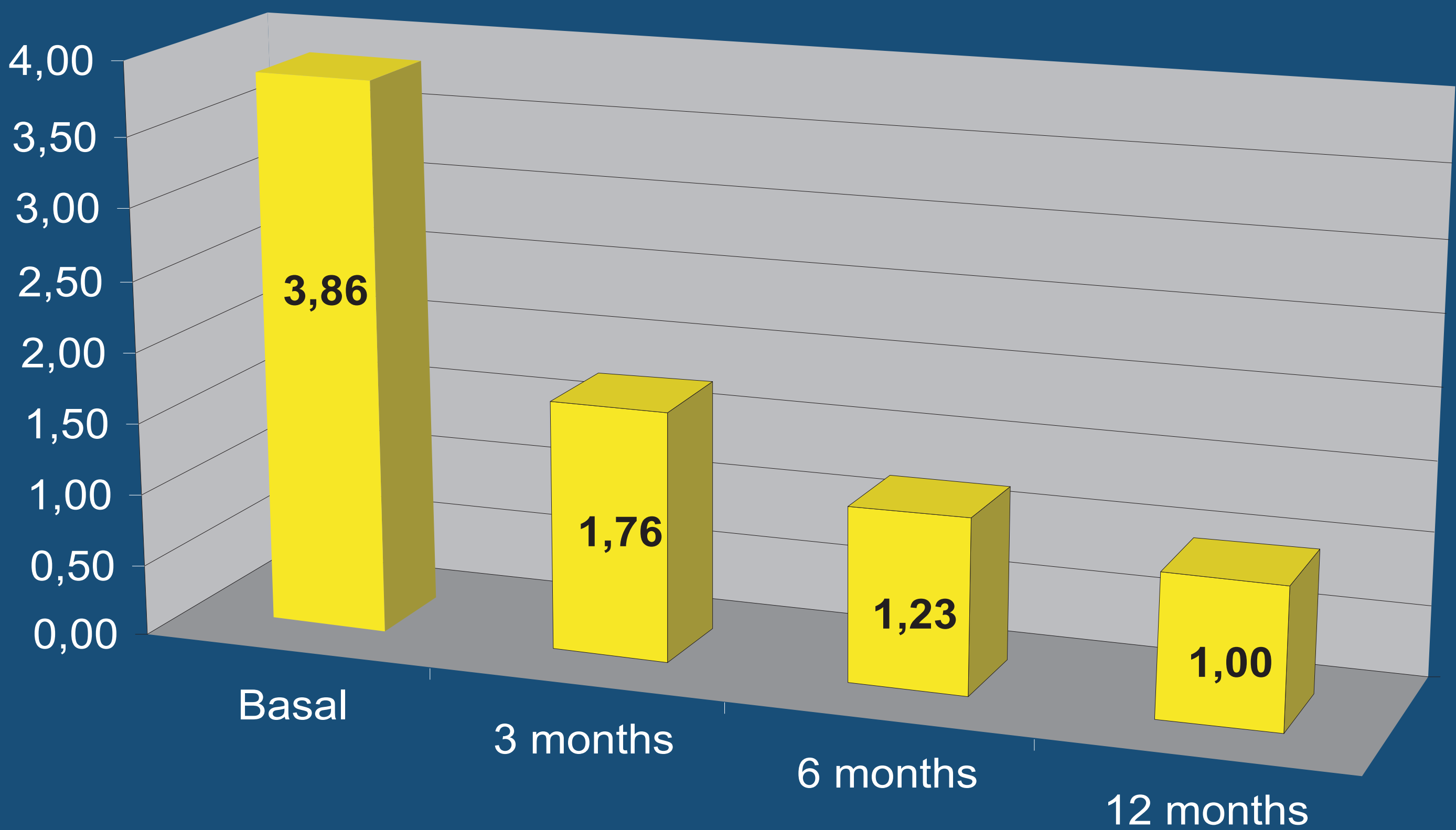
Mild Hypoglycemic episodes scheme 2



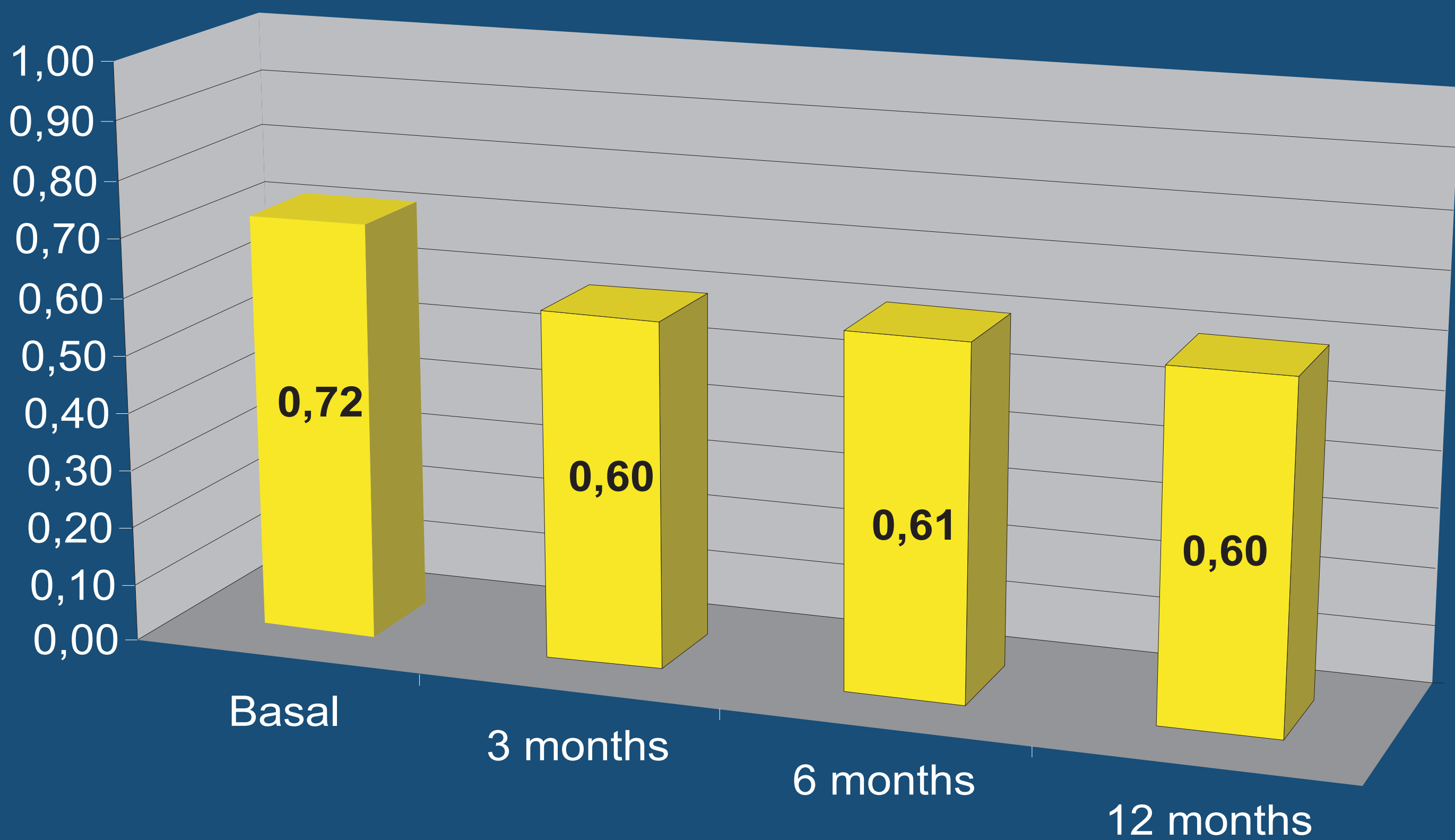
Results 2

However, nocturnal hypoglycemia decreased at one year of treatment from 3.8 ± 6.3 to 1.0 ± 1.6 ($p < 0.01$) episodes per month, decreasing at third month of treatment, already significant ($p < 0.01$) (scheme 3). Although BMI did not change at all, insulin dose (units/kg) was already decreased after 3 months, [$0.720.36$ vs. $0.600.28$ ($p < 0.05$)] and remained until the end of follow-up (scheme 4). Frequency of daily home glucose measurements increased from 3 ± 1.7 to 3.4 ± 1.6 ($p < 0.01$). Without severe hypoglycemia or DKA.

Nocturnal hypoglycemias scheme 3



Insulin units/kg scheme 4



Conclusions

After transition to insulin glargine, A1c levels improved and nocturnal hypoglycemia decreased after 1-year follow-up. In contrast to DCCT, BMI did not change and insulin dose was reduced suggesting insulin glargine is the superior basal insulin for type 1 diabetes.