Real-world effectiveness and safety of insulin glargine 300 U/mL: The ToUPGRADE study

Insulin glargine 300 U/mL is a second-generation basal insulin analogue that in randomized controlled trials has proven to be highly effective in controlling HbA1c while minimizing the risk of hypoglycemia. But randomized trials aren't always representative of routine clinical practice.

Now, a real-world study reports that glargine-300 with or without prandial insulin is both safe and effective in patients with type 2 diabetes previously uncontrolled on NPH or premixed insulin treatments.

The ToUPGRADE study was conducted over 24 weeks and looked at 286 patients with type 2 diabetes in Bulgaria. Patients showed poor metabolic control and a high risk of hypoglycemia on their previous insulin regimen. Before being switched onto glargine-300, patients on average showed an HbA1c level of 9.6% and a fasting plasma glucose level of 13.1 mmol/L .

By the end of the 24-week study, patients had achieved considerable reductions in both measures. Similar efficacy results were observed in separate analyses of the subgroups of patients pretreated with NPH or premixed insulin . However, only 19% of patients had achieved HbA1c levels below the widely recommended value of 7%. That figure rose to 39.1% when considering personalized HbA1c goals defined by treating physicians. A similar proportion of patients achieved their personalized FPG target.

Additionally, patients showed a statistically significant decrease in body weight overall, and rates of hypoglycemia were low. The weight decrease was greater in patients pretreated with premixed insulin than in those pretreated with NPH.

Overall patient satisfaction with insulin treatment and scores on separate questionnaire domains improved significantly 24 weeks after initiating Gla-300.

Despite the notable and clinically meaningful decrease in average HbA1c, only a small proportion of patients achieved their glycemic targets, and the mean daily increase in basal insulin was only 4 units at week 24. These findings indicate that most patients still needed to continue insulin titration beyond 24 weeks, or should have been titrated more aggressively after switching to glargine-300.

In conclusion, in real-life settings, Gla-300 significantly improved glycemic control and insulin treatment satisfaction in people with type 2 diabetes inadequately controlled on NPH with or without prandial insulin or premixed insulin analogues. This improvement was associated with a very low risk of hypoglycemia and with significant weight loss, irrespective of the previous insulin regimen. In addition, the results confirm other real-world observations indicating that clinical inertia and suboptimal basal insulin titration may help explain why the majority of patients with type 2 diabetes remain uncontrolled.