# Simplifying complex insulin regimens with preserving good glycemic control in type 2 diabetes

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## Background and aims

Type 2 diabetic patients presenting with severe hyperglycemia are often put on multiple daily insulin injections (MDI). If glucose toxicity resolves, the regimen may potentially be simplified, but there are no guidelines regarding this and a lot of patients are left on MDI for years. [1,2]

We aimed to examine prospectively the safety and efficacy of switching from MDI to once daily IDegLira, a fixed-ratio combination of a long acting basal insulin (insulin degludec, 100 units/mL) and a glucagone-like peptid-1 receptor agonist (liraglutid, 3.6mg/dL), in relatively well controlled ($HbA_{1c} \leq 7.5\%$) subjects with type 2 diabetes using low total daily insulin dose (TDD). [3]

## Materials and methods

30 adults with type 2 diabetes (mean±SD: age 62.9±7.8 years, $HbA_{1c}$ 6.34±0.71%, BMI 32.90±7.35 kg/m$^2$, bodyweight 92.57±18.9 kg, TDD 40±10.7 units, average insulin need 0.44±0.13 units/kg of body weight, duration of diabetes 10.8±6.5 years) treated with MDI ± metformin were enrolled in our study at the Diabetes Center of the Békés County Central Hospital - Dr. Réthy Pál Member Hospital from 2016 january.

At baseline 24 patients were on a basal-bolus regimen using one dose of basal and 3 doses of prandial insulin (19 on human and 5 on analogue insulins), while 6 patients were using 2 or 3 doses of premix insulins (Figure 1).

Previous insulins were stopped and once daily IDegLira was started. IDegLira was titrated every 3 days with 2 dose steps (each dose step contains 1 unit of insulin degludec and 0.036 mg of liraglutide) by the patients to achieve a self-measured pre-breakfast plasma glucose concentration of ≤6mmol/L. Metformin was continued and titrated up with 500 mg weekly to the maximal tolerated dose.

2 weeks after switching therapy patients returned to the Diabetes Center and the titration strategies were rechecked. Clinical characteristics were assesed at baseline and 3 month after initiating IDegLira. Statistical analyses for significance were done by performing two-tailed paired t test in GraphPad Prism 6.

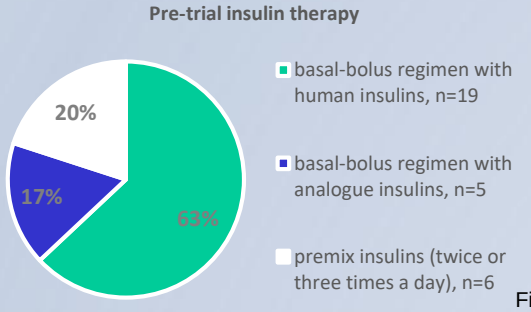


Figure 1.

| Characteristics | Baseline visit | 3 month visit |
|---|---|---|
| **$HbA_{1c}$,** % (SD) | **6.34** (0.71) | **6.22** (0.67) |
| **Body weight,** kg (SD) | **92.5** (18.9) | **88.1** (18.0) |
| **BMI,** kg/m$^2$ (SD) | **32.9** (7.35) | **32.01** (7.02) |
| **Total daily insulin dose,** units (SD) | **40.0** (10.7) | **20.5** (6.2) |
| **Insulin need,** units/kg of body weight (SD) | **0.44** (0.13) | **0.23** (0.07) |

Table 1.

## Results

After 94.4 days of average follow-up good glycemic control was maintained, BMI and bodyweight decreased significantly (Table 1). Mean $HbA_{1c}$ changed by -0.12% to 6.22±0.67% (p=0.067), bodyweight changed by -4.38 kg to 88.19+18 kg (p=0.0002) and BMI changed to 32.01+7.02 kg/m$^2$ (p=0.0001). At the end of the follow-up mean dose of IDegLira was 20.5 ± 6.2 dose steps, mean dose of meformin was 1801±716 mg, and average insulin need decreased to 0.23 ± 0.07 units/kg of body weight (Figure 1, 2).

IDegLira+metformin combination therapy was safe and generally well tolerated. Transient gastrointestinal adverse events (nausea, lack of appetite) were reported by 4 patients (13.3%). During the month before baseline visit 14 patients (46.6%) had at least one documented (self-measured plasma glucose≤3.9mmol/L) or symptomatic hypoglycemia. During the follow-up neither documented or symptomatic hypoglycemia nor serious adverse events occurred.

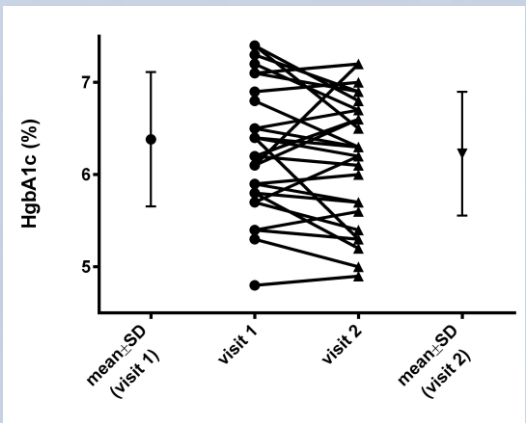


Figure 2.

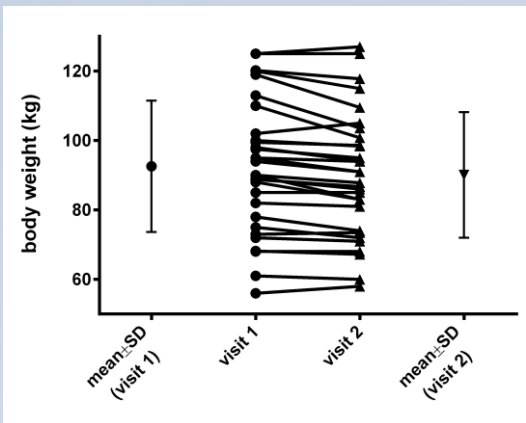


Figure 3.

## Conclusions

Our preliminary data suggests that in everyday clinical practice switching from low dose MDI to IDegLira in patients with well-controlled type 2 diabetes is safe, induces weight loss, results in similar glycemic control and substantially reduces insulin requirement.

Simplifying complex treatment regimens may improve adherence and quality of life. [1]

Enrollment is still ongoing at our site in order to confirm our results in larger group of patients with longer follow-up data.

## References

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3. Gough et al, Expert Rev Endocrinol Metab. 2016; 11(1): 7–19.

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