Introduction: Achieving optimal metabolic control can be extremely challenging in some children and adolescents with Type 1 diabetes mellitus (T1DM) due to a complex mix of lifestyle factors. Difficulties in adherence to basal-bolus regimen which requires minimum of 4-5 injections/day is among the leading causes of suboptimal control and frequent hypo-hyperglycemies in these group of patients. The ISPAD guidelines acknowledge that premixed analog insulins, may help reducing the number of injections when adherence is a problem. A Recently, insulin degludec/aspart co-formulation (70% IDeg and 30% IAsp: IDegAsp) has become available to use in pediatric patients. Because of the long-duration of insulin degludec, and retained individual pharmacokinetic characteristics of degludec and aspart, we wanted to test insulin degludec’s efficacy in our patients with poor glycemic control and frequent hypo-hyperglycemies.

Objective: We investigated the number of hypoglycemic episodes, diabetic ketoacidosis frequency, and HbA1c levels before and after changing from basal-bolus to insulin degludec.

Methods: Patients > 4 years of age who had diabetes duration of > 1 year and on poor control on basal-bolus insulin regimens (at least 4 injections/day) were included in the study. IDegAsp treatment were offered to the patients with HbA1c of >8.5%, or having DKA while on insulin treatment or having frequent hypoglycemia episodes, labile diabetes and those with history of omitting insulin injections. Their insulin regimen were changed to one IDeg/Asp injection and two IAsp injections (total of three injections/day) with dose titration.

Results: Forty-six patients (20 girls) were included in the study. The mean age and the age of onset of diabetes were 12.9±3.4 (4-18) and 5.2±3.1 years (1.0-13.7), respectively. The reasons for the transition to IDeg/Asp were requirement of two doses of basal insulin (thus 5 injections/day) and resultant non-adherence (18), frequent episodes of hypoglycemia (9), daily glucose variability (9), frequent DKA (6). Ten patients discontinued IDeg/Asp and returned to the previous regimen due to continuing hyperglycemies (n=5), difficulty in dosing (n=3), transition to pump (n=1) or development of DKA (n=1).

Conclusion: IDegAsp regimen could be useful in patients with frequent hypoglycemia and DKA attacks, who have poor compliance with basal-bolus regimen. Better adherence to treatment because of less injection number and longer duration of insulin degludec could prevent DKA in some cases.