# REDUCING HOSPITAL STAY IN CHILDREN WITH DIABETIC KETOACIDOSIS

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**ABSTRACT**

Diabetic ketoacidosis is a major cause of morbidity and mortality in patients with type 1 diabetes mellitus. The cost of its treatment in ICU is significant. Low-dose continuous insulin infusion is the standard regimen for correction of hyperglycemia and acidosis. We used subcutaneous insulin glargine along with intravenous regular insulin in our stable DKA patients. The results were encouraging, our patients had a smooth glycemic control and required less hospital stay. This intervention resulted in better outcome and less economic burden to our patient's family.

**KEYWORDS**

TIDM, DKA, Diabetic Ketoacidosis, Insulin.

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## INTRODUCTION

Diabetic ketoacidosis is a major cause of morbidity and mortality in patients with type 1 diabetes mellitus. The cost of its treatment in ICU is significant. Patients are usually kept in ICU till resolution of acidosis and change in insulin regimen from intravenous to subcutaneous injection. Low-dose continuous insulin infusion is the standard regimen for correction of hyperglycemia and acidosis. From past few years daily subcutaneous long acting insulin analogue glargine has been used along with short acting subcutaneous insulin to achieve a smooth glycemic control in type 1 diabetics.[1] by providing long acting and smooth effect glargine acts like a constant infusion. This quality of the drug may help in smooth transition from intravenous to subcutaneous insulin in diabetic ketoacidosis patient, resulting in early transfer from ICU.[2,3]

At our centre we hypothesized that initiation of glargine in initial stable phase of DKA along with intravenous insulin infusion would decrease the requirement of infusion and a speedy recovery. The patients were divided into 2 groups: subcutaneous insulin glargine + IV regular insulin (group 1) or only IV regular insulin (group 2). Patients with critical illness, pregnancy were excluded. All the patients admitted in ICU were managed as per our standard treatment algorithm (IV fluids/potassium supplementation along with continuous insulin infusion, antibiotics if required etc.).

A total of 20 children were admitted in ICU over 24 months from June 2013 to May 2015. The cause of DKA in most of our patients was skipping or deleting insulin dose. Most of the patients were from poor socioeconomic background. Ten children each were divided in group 1 and group 2.

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The details of patient at admission are (group1/group2): age of children (years) 11.5 (+2.7)/ 11.2(+2.1), female: male 12:8, initial blood glucose 450 (+152) /490 (+118), venous pH: 7.14 (+0.09)/7.06 (+0.11), serum sodium 134 (+2.0)/135 (+1.6). As per DKA management protocol of our ICU, fluid and electrolytes management was done.

## RESULTS

At the end of treatment the outcome measures were (group1/group2), total IV insulin dose (IU/day): 46 (+15)/70 (+22), insulin infusion time (hours): 24 (+2.2)/34 (+1.8) and mean hospital stay (days): 4 (+0.9)/6 (+1.5). Fluid requirement were similar in both groups and no hypos were seen with use of glargine. Most of our patients in glargine group had a smooth control of blood sugars with less variability.

## CONCLUSION

This small cohort of patients shows that children receiving insulin glargine along with regular insulin infusion for control of hyperglycemia in DKA required less dose of insulin infusion and less glycemic variability. Therapy with glargine along with insulin infusion considerably decreased the length of ICU stay and the cost of hospitalization. This can substantially cut the financial burden of therapy, as most of them were from poor socioeconomic background.

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