Patient Safety Improvements with IV Insulin Compared to Subcutaneous Insulin in the ICU

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Objective:
In the ICU setting, compare the use of continuous insulin infusions to similar patients on long-acting basal subcutaneous insulin, on patient safety-related to hypoglycemia and efficiency outcomes, such as time to target.

Method:
Retrospective comparison of 100 patients on continuous IV insulin via eGlycemic management system, Glucommander, to 100 patients on long-acting insulin. Patients with DKA were excluded, and all patients were >18 years old. Both groups were on therapy for at least 48 hours and grouped according to the initial insulin therapy chosen.

Result:
Patients on continuous IV insulin had significant reductions in hypoglycemia, p-value < 0.05, compared to a similar group on subcutaneous basal insulin. Patients on continuous IV insulin had no reported severe hypoglycemia rates, and rates of < 70 mg/dl based on all blood glucose testing was 0.1%. The patients on subcutaneous basal insulin initially had rates of severe hypoglycemia of 1.5% and < 70 mg/dl of 3.1%. The time to target was 18.6 hours in the subcutaneous group on average, and 7.1 hours in the IV insulin group.

Conclusion:
For the management of critically ill patients with hyperglycemia, continuous IV insulin is preferred to subcutaneous insulin.