Patients with Kidney Disease Reach Target Glucose With Low Incidence of Hypoglycemia When IV Insulin Is Managed on eGlycemic Management System Glucommander

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OBJECTIVE

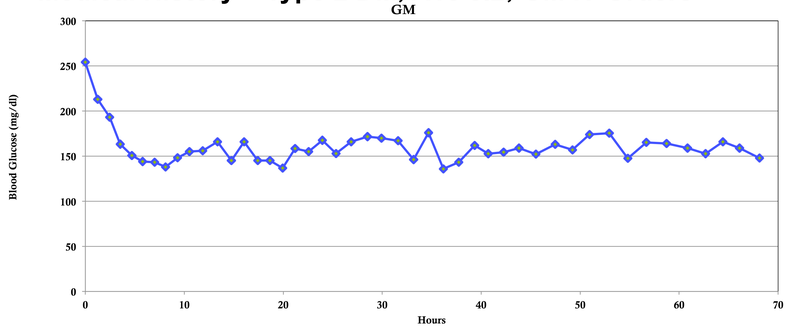
Glucose control in hospitalized patients with kidney disease can be challenging. The impact of decreasing Glomerular Filtration Rate (GFR) on active insulin time may lead to accumulation of insulin and subsequent life-threatening hypoglycemia that is often difficult to correct. Thus, providers must be judicious in the use of insulin in this population. We studied the use of Glucommander™, (GM) a cloud based insulin algorithm, to treat hyperglycemia in patients with kidney disease.

METHODS

We retrospectively evaluated the efficacy and safety of using GM for patients with kidney disease who required IV insulin using the following inclusion criteria:

- Adult patients with type 1 or 2 diabetes mellitus
- 2 blood glucoses (BG) >180 mg/dL or 1 BG > 250 mg/dL
- Creatinine > 3.0 mEq/L
- 716 patient charts over 10 months were available
- Glucose target was set at 140-180 mg/dL.

Figure 1. Case Study: Chief Complaint – Angina; Past Medical History – Type 2 DM, A1c 8.2; GM IV Orders



RESULTS

The mean insulin infusion treatment time was 51.5 hours. 35,915 BG readings were analyzed with an average starting BG of 511 mg/dl (+/- 277) and 155 mg/dL (+/- 53) while patients were on GM. Hypoglycemia <40 mg/dL was 0.1% and <70 mg/dL was 1.0%. Time to target was 6.8 hours (+/- 1.3) and the percent of BG in the prescribed target range of 140-180 mg/dL was 72.5%.

Table 1	
Patients	716
Mean Treatment Time	51.5+/-21 Hours
Average Initial BG	511 +/-277 mg/dL
Average BG on GM	155 +/- 53 mg/dL
Average Time to Target	6.8 Hours +/-1.3
Number of BG Readings	35,915

Figure 2. Kidney Disease Patients with Creatinine > 3.0 mEq/L

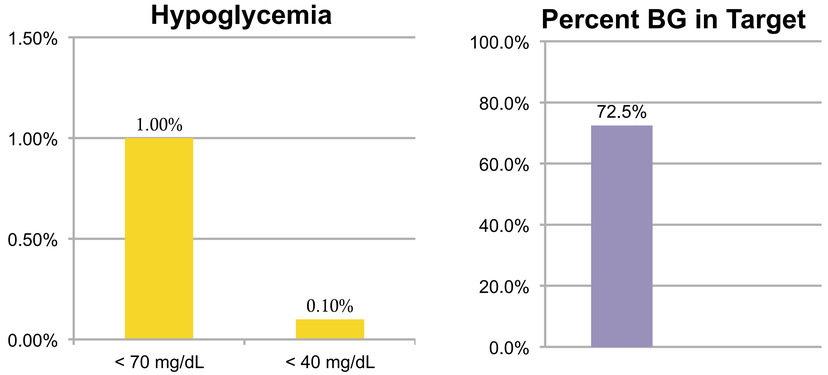
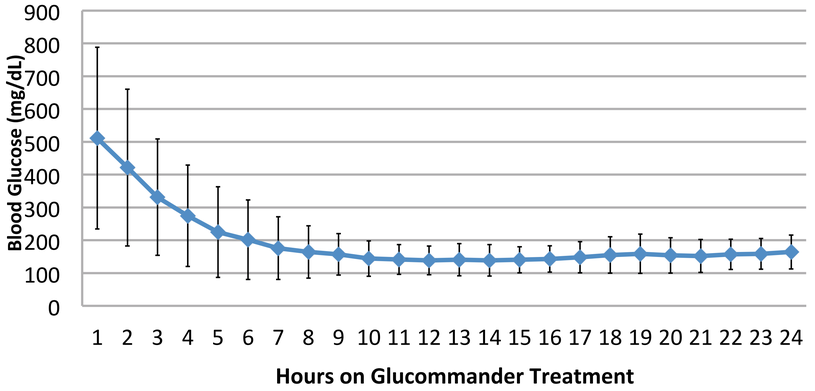


Figure 3. CKD Patients with Creatinine > 3.0 mEq/L (N= 716)



CONCLUSION

This study demonstrates patients with kidney disease can reach target glucose in a reasonable timeframe with a very low incidence of hypoglycemia. In conclusion, Glucommander™ can efficaciously, but more importantly safely, reduce and control blood glucose in patients with decreased renal function.

AFFILIATIONS

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