

# Comparison of Computer-Guided Versus Standard Insulin Infusion Regimens in Patients with Diabetic Ketoacidosis

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## BACKGROUND

Continuous insulin infusion (CII) is widely accepted as the standard of care for the treatment of patients with diabetic ketoacidosis (DKA). A variety of standard (paper form-based) and computer-based algorithms have been shown to be effective in the management of hyperglycemia in critically ill patients. It is not known, however, if computer-based algorithms are superior to standard protocols in the management of patients with DKA.

## METHODS

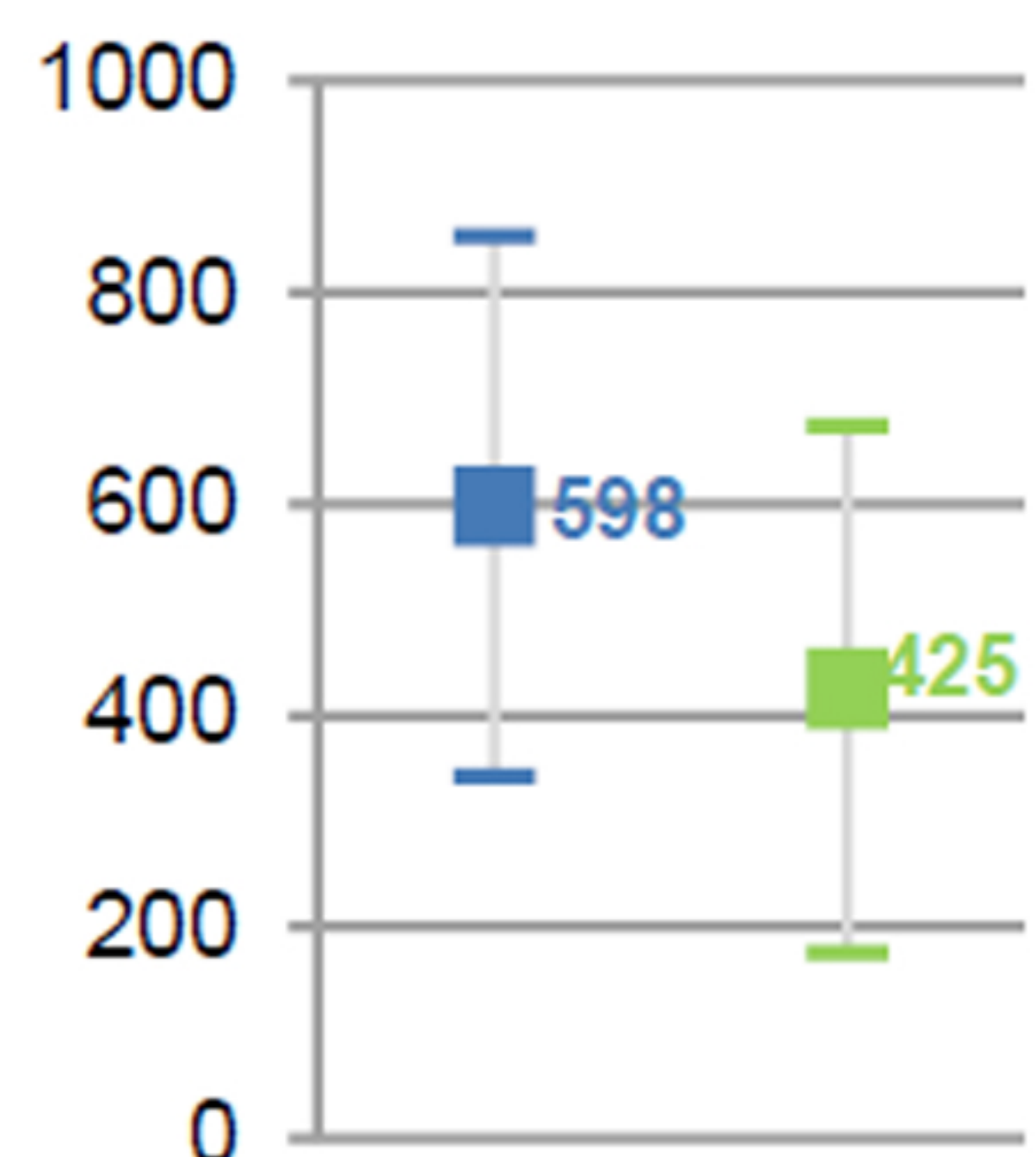
Accordingly, this retrospective multicenter study was conducted, comprised of 2,665 patients with DKA treated with either a computer-guided program (Glucommander, n= 1750) or standard protocols (n=915) in 34 medical institutions in the US. Assessments were made for differences in time to resolve hyperglycemia (<200 mg/dL), acidosis (HCO<sub>3</sub> > 18 mmol/L), and number of hypoglycemic events (BG <70 mg/dL and <40 mg/dL).

## RESULTS

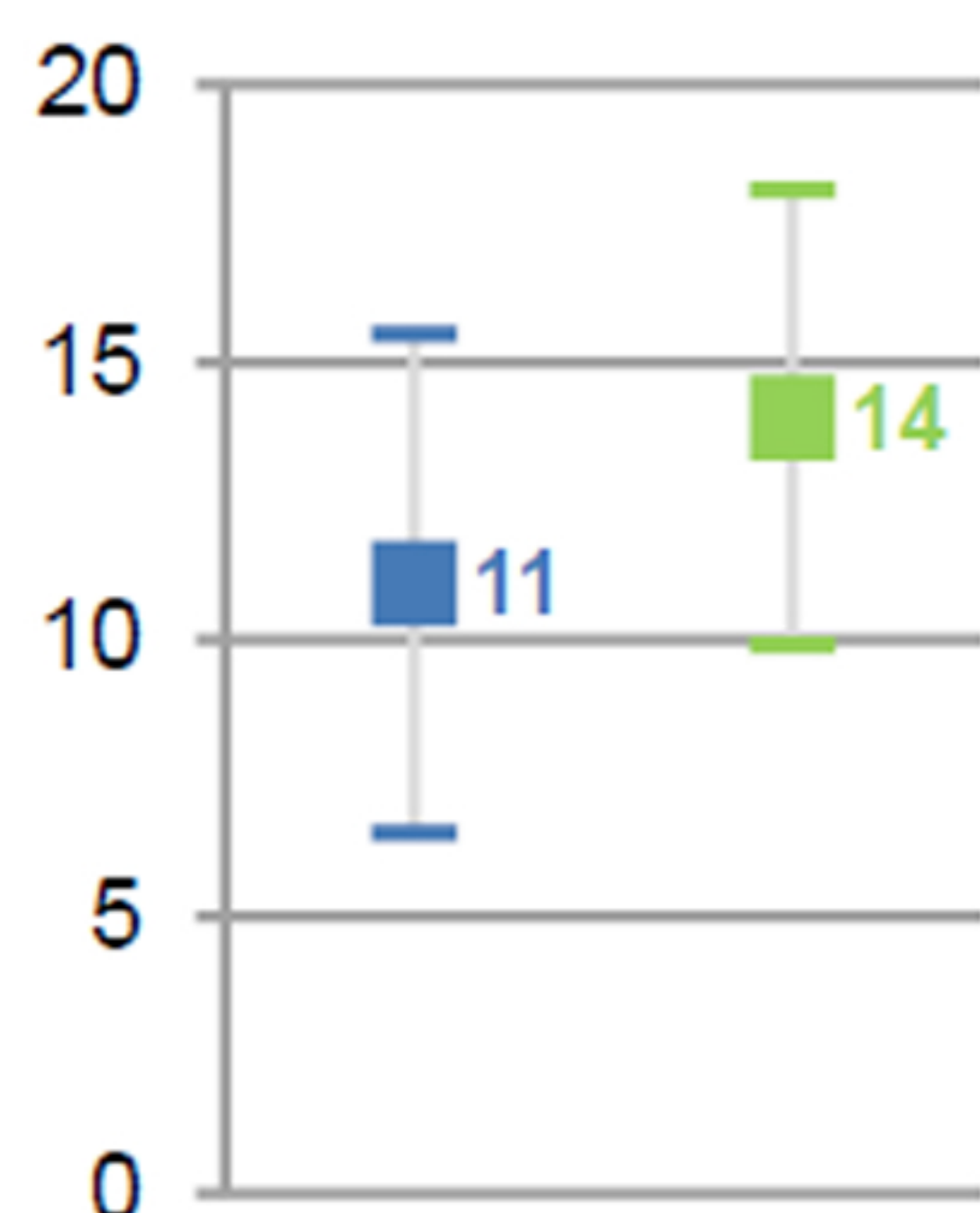
The results of the outcome parameters between the two groups are outlined in the table and graphs.

|                                     | Glucommander | Standard    | P-values |
|-------------------------------------|--------------|-------------|----------|
| Median Time BG < 200 mg/dL          | 9.15 Hours   | 10.97 Hours | <0.001   |
| Median Time Bicarbonate > 18 mmol/l | 13.6 Hours   | 17.3 Hours  | <0.001   |
| Median Length of Hospital Stay      | 3.2 Days     | 4.5 Days    | <0.001   |

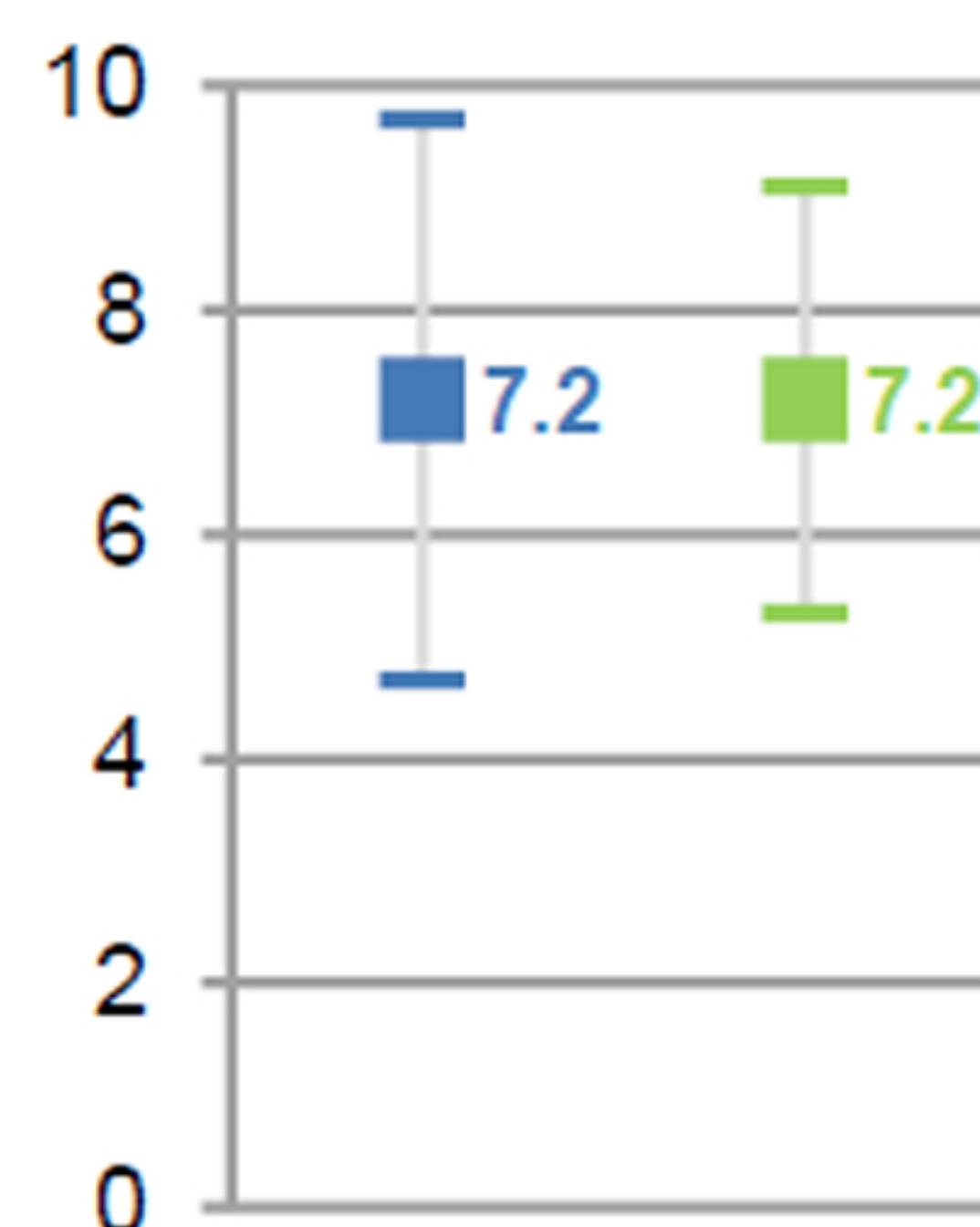
Mean Admission BG (mg/dL)



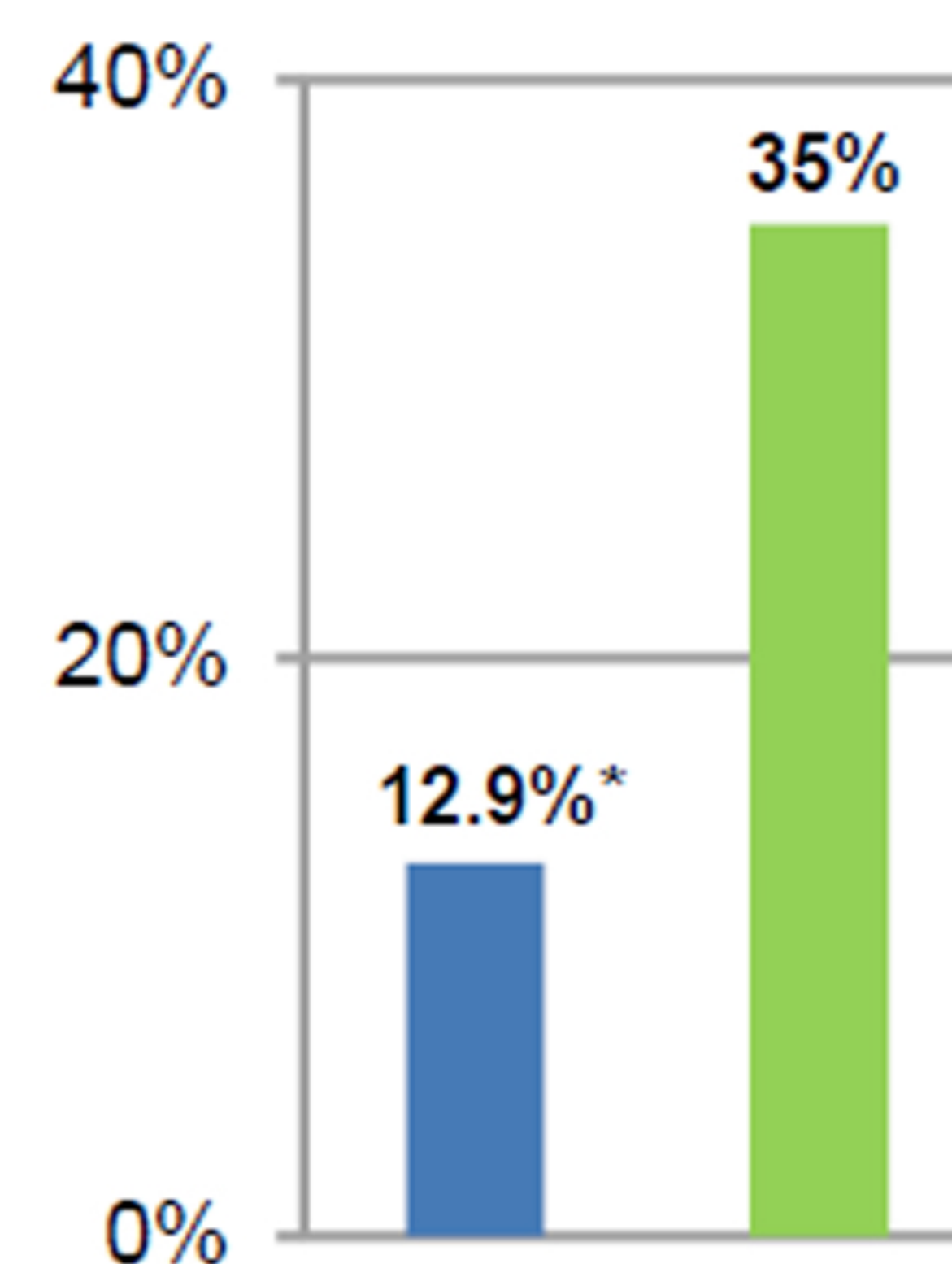
Mean Bicarbonate (mmol/l)



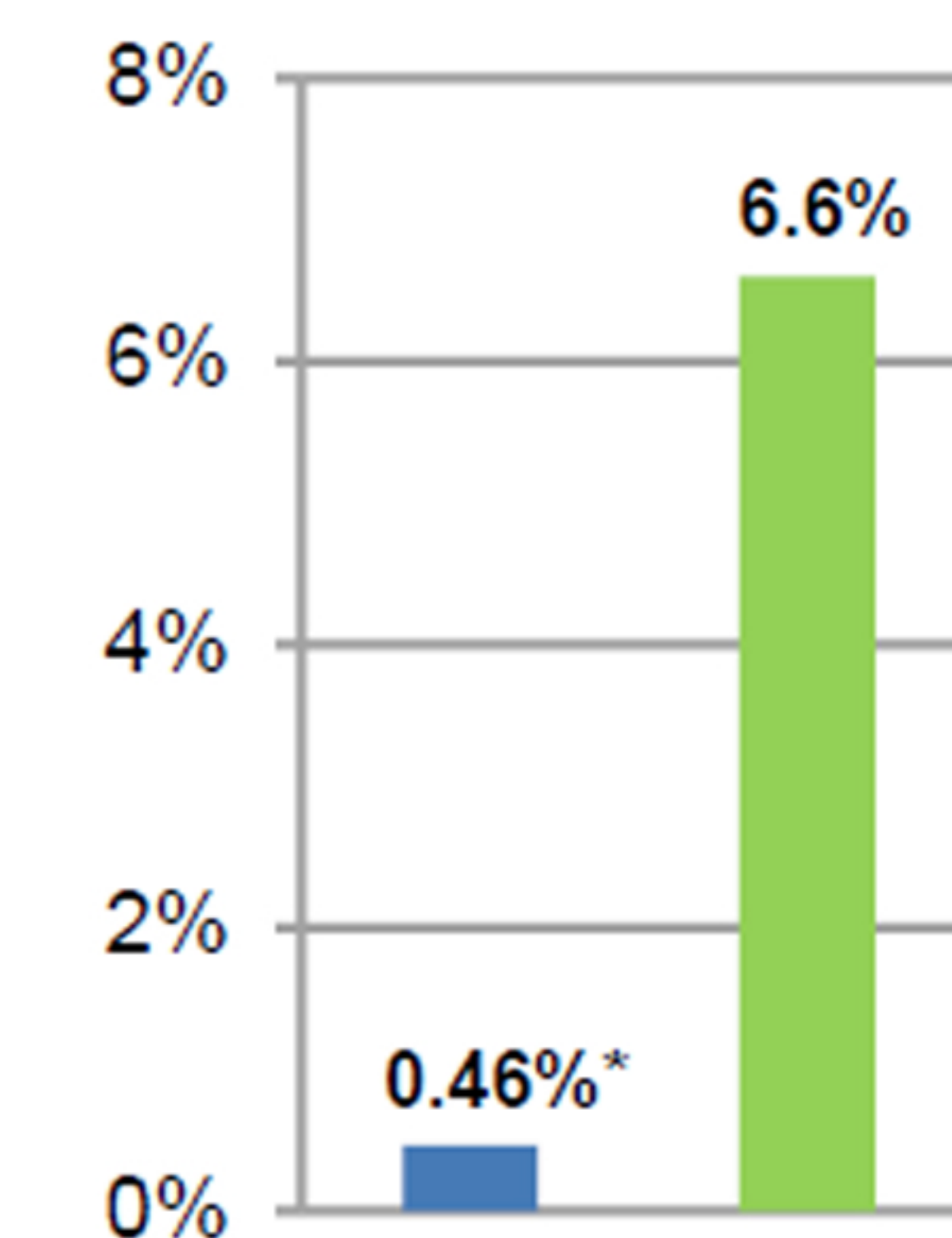
Mean pH



Hypoglycemia < 70 mg/dl



Severe Hypoglycemia < 40 mg/dl



\*P = < 0.001

## CONCLUSION

In conclusion, the use of Glucommander as a component of DKA management is associated with significantly less hypoglycemia, faster time to normalization of blood glucose (< 200 mg/dl) and bicarbonate (<18 mmol/l) than standard orders for treatment of DKA. There was also a significant difference in LOS for patients treated with Glucommander than standard orders (4.5 vs. 3.2 days). Prospective randomized clinical trials comparing the efficacy and cost of computer-based algorithms versus standard CII regimens are warranted.

Glucommander

Standard

## AFFILIATIONS



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