Safety and Efficacy of eGlycemic Management System® among Labor and Delivery Patients at a Not-for-Profit Hospital in Hawaii

HAWAIʻI PACIFIC HEALTH | KAPIʻOLANI MEDICAL CENTER FOR WOMEN & CHILDREN

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BACKGROUND

The American College of Obstetrics and Gynecology recommends tight glycemic control (blood glucose <110 mg/dL) during labor and delivery in patients with type 1, type 2 and gestational diabetes to minimize risk of neonatal hypoglycemia. Inherently, this targeted treatment can be associated with higher risk of complications, especially hypoglycemia in the mother as she is already in a potentially ketotic state.

OBJECTIVE

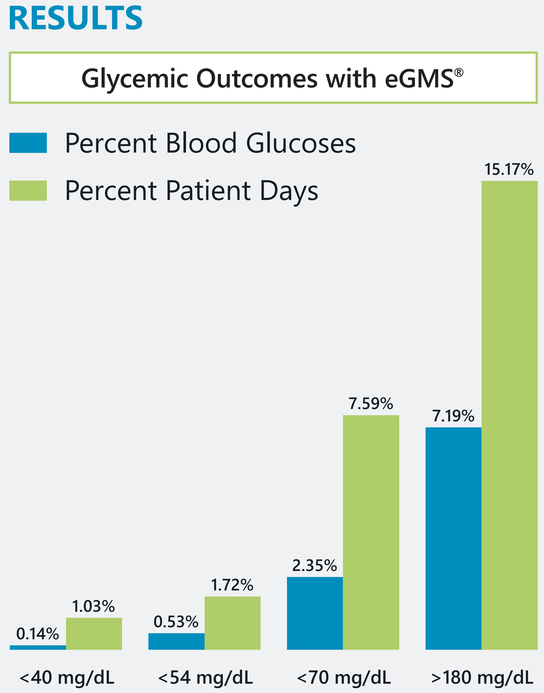
The objective of this study was to evaluate if the Glytec® eGlycemic Management System® (eGMS®) safely supports tight glycemic control, with minimal episodes of hypoglycemia, among labor and delivery patients with diabetes who receive antepartum and intrapartum intravenous (IV) insulin therapy.

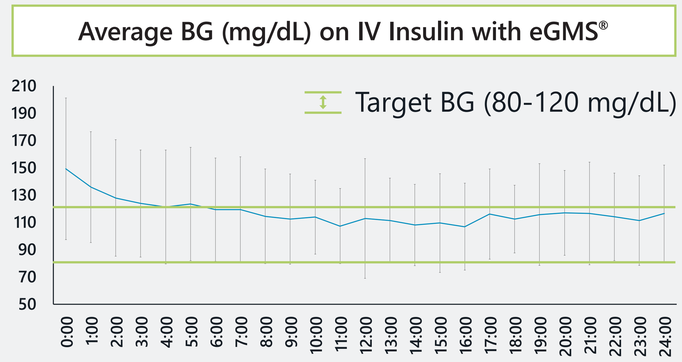
METHODS

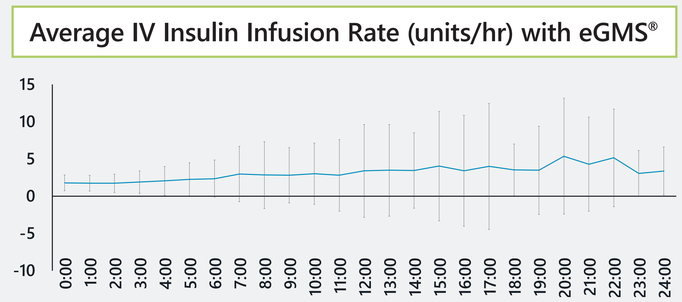
This retrospective quality improvement study examined rates of moderate hypoglycemia <70 mg/dL, severe hypoglycemia <54 mg/dL and extreme hypoglycemia <40 mg/dL as primary outcomes as well as moderate hyperglycemia >180 mg/dL and median time to target (80-120 mg/dL) as secondary outcomes. Included in the study were patients admitted to a not-for-profit tertiary birthing facility in Honolulu, Hawaii from November 2015 through June 2018 who were managed using eGMS®.

DEMOGRAPHIC VARIABLES	Value	SD
Number of Patients	204	
Average Age (years)	29	
Average A1C (%) (n=92)	7.16	
Average Height (cm)	161	
Average Weight (kg)	94.30	
Average Initial BG (mg/dL)	152	51.44
Average Final BG (mg/dL)	113	32.77
Average of all BGs First Day (mg/dL)	128	43.94
Average of all BGs Last Day (mg/dL)	117	31.33
Average Length of Stay (days)	4.71	
Total Number of POC Glucose Tests	4,174	
Median Time to Target (hrs)	6.0	
Median Time on eGMS® (hrs)	7.0	

RESULTS







DISCUSSION

There is limited information in the literature regarding rate of complications with aggressive glycemic control among labor and delivery patients with diabetes. Prior to the availability of computer-guided insulin dosing algorithms, bedside nurses had to use complex paper-based protocols, which poses high risk of error.

CONCLUSION

eGMS® offers a safe and effective approach to managing IV insulin for labor and delivery patients with diabetes, and results in minimal hypoglycemia. It is an easy-to-use alternative to complex paper-based protocols and can be adopted in busy, high-volume facilities that treat high-risk patients. In the future, it will be desirable to study the impact of eGMS® on incidence of neonatal hypoglycemia requiring admission to the NICU for IV dextrose therapy.