Reduction of Hypoglycemia Across 180 U.S. Hospitals Using eGlycemic Management System® for IV Insulin Therapy with ICU and non-ICU Patients

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OBJECTIVE

Evaluate the broad-scale impact of eGlycemic Management System® (eGMS®)* on incidence of hypoglycemia among ICU and non-ICU patients receiving intravenous (IV) insulin therapy during hospitalization.

METHOD

Wake Forest School of Medicine (Winston-Salem, NC) conducted a retrospective analysis of 116,917 patients who received IV insulin therapy guided by eGMS® during a hospital admission between 12/10/17 and 12/10/19. Data was coalesced from 180 sites, 590 units, more than 20 specialties and seven primary areas of care, including emergency department, floor (sans obstetrics), intensive care unit, obstetrics, perioperative, procedural and step-down.

Primary endpoints were percentages of blood glucose measurements (BGs) <40 mg/dL and <70 mg/dL. A secondary endpoint was percentage of BGs >250 mg/dL.

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PATIENT CHARACTERISTICS			
Total #Patients	116,917	Average Admission Creatinine (mg/dL)	1.63
Total #BG Measurements	5,388,398	Average Admission Potassium (mmol/L)	4.47
Average Age (Yrs)	57	Average Admission Anion Gap (mmol/L)	17.63
Average Height (cm)	170	Median Time Admission-to-eGMS® Initiation (hrs)	8
Average Weight (kg)	87	Median Time on eGMS® (hrs)	25
Average BMI	30	Median Time to Target BG Range (hrs)	5
Average A1C (%)	9.1	Median Hospital Length of Stay (days)	6.1
Average Admission BG (mg/dL)	352.05	Average BG After Reaching Target (mg/dL)	142
Average Initial BG (mg/dL)	314	Average all BG Measurements (mg/dL)	177

AREA OF CARE	#BGs Total	Avg BG	#BGs <40 mg/dL	%BGs <40 mg/dL	#BGs <70 mg/dL	%BGs <70 mg/dL
ED	192,345	328 mg/dL	45	0.0234%	497	0.2584%
FLOOR (sans OB)	433,879	184 mg/dL	135	0.0311%	3,857	0.8890%
ICU	4,103,254	152 mg/dL	590	0.0144%	20,502	0.4997%
OB	5,008	146 mg/dL	1	0.0200%	90	1.7971%
PERIOP	52,493	156 mg/dL	0	0.0000%	156	0.2972%
PROCEDURAL	11,654	159 mg/dL	0	0.0000%	165	1.4158%
STEP-DOWN	589,765	161 mg/dL	92	0.0156%	3,264	0.5534%
ALL (TOTAL)	5,388,398	177 mg/dL	863	0.0160%	28,531	0.5295%

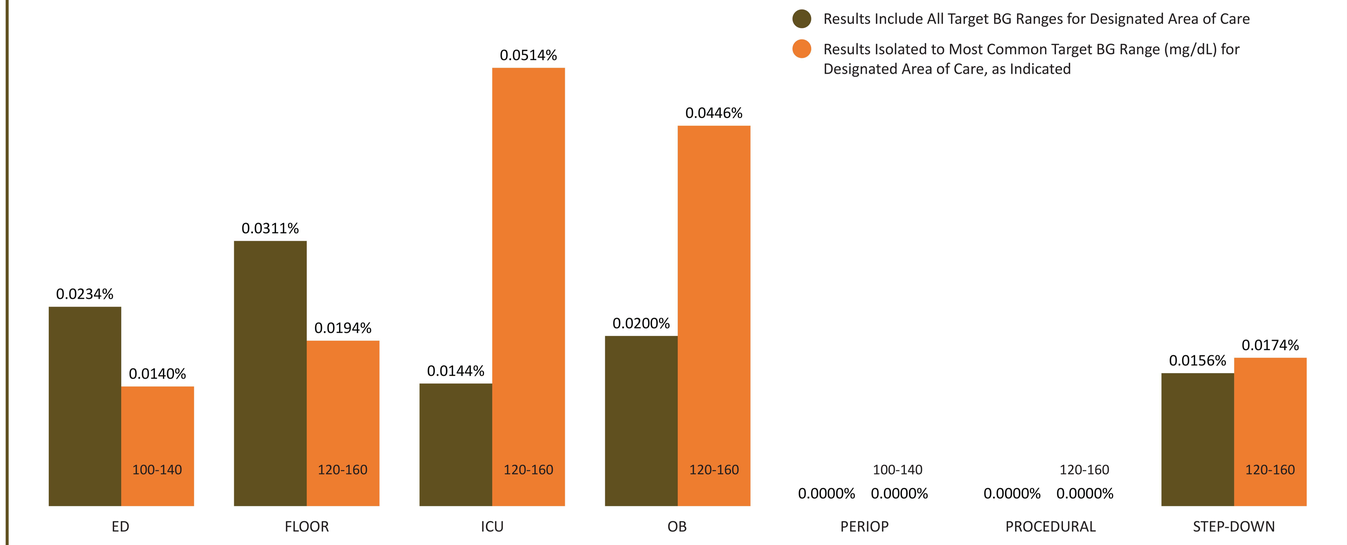
RESULT

Utilization of eGMS® to guide IV insulin therapy during hospitalization was observed to result in low incidence of hypoglycemia across 180 sites, 590 units, more than 20 specialties, seven primary areas of care, 116,917 patients and 5,388,398 BG measurements. As primary endpoints, the overall mean average percentage of BGs <40 mg/dL was 0.0160% and <70 mg/dL was 0.5295%. As a secondary endpoint, the overall mean average percentage of BGs >250 mg/dL (severe hyperglycemia) was 9.5%.

CONCLUSION

Data suggests that acute care facilities of all types, sizes and geographic locales can rely on eGMS® to safely and effectively achieve low incidence of hypoglycemia among ICU and non-ICU patients requiring IV insulin therapy during hospitalization, across virtually any area of care and any specialty.

Hypoglycemia <40 mg/dL by Area of Care (% Total #BG Measurements)



Hypoglycemia <70 mg/dL by Area of Care (% Total #BG Measurements)