

In-Hospital Management of Nondiabetes Hyperglycemia

16 Comparison of 2 Methodologies of Glycemic Control in the Intensive Care Unit

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Background: The Portland protocol (Pp), an IV insulin protocol first described in cardiothoracic patients, and the Glucommander (Glu), a computerized variable-rate adaptive algorithm, both achieve glycemic control in the intensive care unit but have not been directly compared. The best method of targeted-range glycemic control thus remains unelucidated.

Objective: To compare the Pp and the Glu.

Methods: In this retrospective study, 21 patients (Glu, 10; Pp, 11) were started on the 2 protocols per hospital standards when their blood glucose (BG) levels were >140 mg/dL (Glu) and >150 mg/dL (Pp). Target range was 100 to 150 mg/dL for patients receiving Pp and 80 to 110 mg/dL for those receiving Glu. The percentage of time within the defined range after IV insulin initiation was calculated, and the groups were compared with analysis of variance.

Results: On day 1, Glu was less successful than Pp at maintaining normoglycemia (42.1% vs 60.2% in target range). Glu patients started with higher BG levels (256.8 mg/dL vs 172.8 mg/dL) and took longer to get to target range (12.5 hours vs 2.9 hours). On days 2 and 3, despite a more ambitious target range, Glu was more successful than Pp at achieving glycemic control (Table).

Conclusion: The longer time for Glu patients to reach target range on day 1 may have been due to their higher mean starting BG level. Subsequently, Glu was more successful than Pp at achieving glycemic control.

Table.

	Glu (n = 10)	Pp (n = 11)	P
Initial blood glucose level (mg/dL)	256.8 ± 136.7	172.8 ± 54.1	NS
Mean duration to target range (hr)	12.5 ± 4.9	2.9 ± 4.2	0.001
Time in range (% ± SD)			
Day 1	42.1 ± 5.5	60.2 ± 6.7	0.05
Day 2	73.7 ± 6.0	52 ± 6.2	0.02
Day 3	69.7 ± 9.5	46.5 ± 10.1	NS

Glu = Glucommander; Pp = Portland protocol.

17 Effective Application of Glycemic Control in a Rural Hospital: Small Tests of Change Stimulate a Hospitalwide Culture Shift in Management of Hyperglycemia

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Background: Mounting evidence supports the benefits of glycemic control in hospital acute and intensive care unit (ICU) populations.

Objective: To develop and implement a physician-ordered, nurse-driven, standardized insulin protocol with dosing indicators for glycemic control in a rural community hospital.

Methods: A team that included a physician champion, a diabetes educator, an ICU nurse manager, and staff nurses focused on safety, elimination of transcription errors, monitoring of adverse drug events, and occurrences of hypoglycemia in hospitalized patients. Data collected included use of the protocol, blood glucose (BG) ranges, and occurrence of hypoglycemic events. Tools were developed for tracking BG control.

Results: Within 5 months, with no increase in hypoglycemic events, an SC insulin protocol for fasting and nonfasting patients was implemented—first in the ICU and then in medical/surgical and acute rehabilitation units. The protocol allowed for use of basal insulin and could be adapted for patients with diabetes mellitus and stress hyperglycemia. A hospitalwide hypoglycemia policy and an IV insulin protocol were adopted for ICU patients. These protocols were accepted by a large number of physicians and improved BG control in patients throughout the hospital.

Conclusion: A team approach is an effective way to develop and implement a standardized insulin protocol for glycemic control.