

Title: A retrospective review of glycemic control of patients on parenteral nutrition with correctional insulin administered every 4 hours

Background: Glycemic control in hospitalized patients is an ongoing dilemma that can be linked to morbidity and mortality. Extrinsic factors such as parenteral nutrition (PN) can add enough physiological stress to create hyperglycemia leading to immune dysfunction, electrolyte abnormalities, and death. Previously, blood glucose was monitored every 6 hours during parenteral nutrition with correctional scale insulin administered as needed. This was recently changed to monitoring blood glucose every 4 hours with ambitions to maintain glycemic control. The primary end point of our study is to compare glycemic control when more stringent, 4-hour point of care glucose check is measured vs. our previous 6-hour process.

Methods: Data was collected when the standard point of care glucose was checked every 6 hours. From March to November 2019 we monitored blood glucose levels every 4 hours for 39 hospitalized patients, diabetic and nondiabetic, that received PN and correctional insulin for glycemic control. We excluded any patients who were also receiving intravenous (IV) insulin while on parenteral nutrition. We analyzed the day weighted mean blood glucose before PN, during PN, and after PN, total daily units of short acting insulin, total daily glargine units, and number of hypoglycemic events. The data was then compared to previous data to see if more frequent monitoring positively impacted glycemic control for hospitalized patients.

Results: Compared to patients receiving correctional insulin every 6 hours, patients that received correctional insulin every 4 hours had a smaller increase in day-weighted mean blood glucose once PN started (difference of -18 mg/dL) and had a lower average day-weighted blood glucose overall while PN was running (difference of -9.7 mg/dL)

Conclusion: Point of Care Blood Glucose monitoring every 4 hours for patients on parenteral nutrition had better patient outcomes. Although blood glucose was higher before PN started, patients that were monitored every 4 hours showed overall improvement in glycemic control while PN was running and after PN was stopped. There were also fewer patients with hypoglycemic events in the 4-hour monitoring group than in the 6-hour monitoring group.