Continuous Feeding with a Diabetes-specific Formula Improves Glycemic Variability and Reduces Insulin Requirements in Tube Fed Patients with Type 2 Diabetes Managed with Insulin

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Rationale: While several studies have shown that inpatient hyperglycemia predicts poor clinical outcomes, the use of diabetes-specific enteral formulas to manage glycemia has not been thoroughly investigated. The objective of this study was to compare 1) glycemic variability (calculated as mean amplitude of glycemic excursions, or MAGE) 2) mean glucose and 3) distribution of glucose measurements between continuous administration of a diabetes-specific formula (DSF) and standard formula (STF) in tube fed patients with type 2 diabetes managed with insulin.

Methods: Twelve long-term facility-dwelling subjects with gastrostomy feeding tubes and insulin-treated type 2 diabetes were sequentially administered STF and DSF in a nonrandomized, unblinded fashion. Subjects were fed using a 16-h continuous feeding schedule for 4d (calorie target: 25 kcal/kg/day). Glucose was measured every 10 minutes using a continuous glucose monitoring system.

Results: MAGE (mean ± SEM) was 71.5% higher when subjects received STF than DSF (110.6±15.3 mg/dL v. 64.5±6.8 mg/dl, p=0.003). Mean glucose during continuous feeding was lower with DSF than STF (171.0±17.4 mg/dL v. 202.1±17.4 mg/dl, p=0.024). There were 60.5% more glucose measurements in the target range of 70–180 mg/dL (62.6±12.7% v. 39.0±11.6%, p=0.023), 46.7% fewer glucose measurements >200 mg/dL (27.6±11.9% v. 51.8±11.6%, p=0.024) and no significant hypoglycemia. Short-acting insulin requirements decreased 28.6% (p = 0.004) when subjects received DSF (7.8±2.3 U/d v. 10.9±3.3 U/d, p=0.039).

Conclusion: Compared with STF, DSF contributed to less glycemic variability, lower mean glucose, less hyperglycemia, and less insulin was required to manage blood glucose levels. These findings demonstrate the benefits of diabetes-specific formulas

versus standard for more effective and safe management of glycemia in tube fed patients with diabetes.