Glucose Management Protocol Development: A Successful Collaborative Effort

Melinda Davis, RN, MSN, CCRN, CNL

Purpose:

A multidisciplinary initiative was undertaken to create a glucose management protocol including a computer software program that calculates continuous intravenous (IV) insulin doses.

Description:

High blood glucose (BG) increases patients' vulnerability to hospital-acquired infections, volume depletion, poor tissue healing and a prolonged hospital stay. Several large prospective clinical trials have shown that tight control of BG levels with IV insulin infusion reduces morbidity and mortality and improves outcomes in the intensive care unit (ICU) setting. To reduce complications, it is important to maintain BG in a tight range without compromising patient safety by lowering glucose levels to a hypoglycemic state. The multidisciplinary team worked to develop and implement a nurse-driven standardized IV insulin protocol for the ICUs that used an IV insulin dose calculator software application, EndoTool, with the goal of tight glucose control. The team developed comprehensive order templates that guide the provider through a step-by-step process of specified protocol orders. Data collection tools and methods to track the effectiveness of the protocol and the algorithms used by EndoTool were developed. EndoTool algorithms are dynamic and "learn" the unique responses of the patient and calculate initiation and maintenance IV insulin infusion rates based on the patient's response to previous insulin doses.

Evaluation/Outcomes:

Post-implementation data were measured against pre-implementation data, including average BG reading, average BG within 4 hours of therapy, and average peak BG. Data from patients on an insulin drip in July 2006 were compared with data from patients on an insulin drip in March 2007. The average BG decreased from 137 to 127, average BG 4 hours after initiation decreased from 182 to 126 and the average peak BG decreased from 255 to 219.