

The Effect of Tight Glucose Control in the Critically Ill Population

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Problem/Purpose

The management of blood glucose in the presence of critical illness, even in patients with no history of diabetes mellitus, has been highlighted as a measure to reduce ICU (intensive care unit) mortality and length of stay. The literature reveals that tight glucose control results in reduced blood stream infection rates, reduced need for renal replacement therapy, reduced transfusion requirements, and a reduction in the need for prolonged ventilatory support. The purpose of this study is to explore the effects of tight glucose control in the critically ill population.

Evidence

Many well documented studies show that maintaining a blood sugar level of 80-140 in the critically ill patient results in dramatically improved patient outcomes. Systematic reviews of the literature revealed that intensive insulin therapy in the critically ill population results in multi-faceted improved patient outcomes; including improved infection rates, decreased renal insufficiency, and ventilator support.

Strategy

A tight glucose insulin protocol was developed and instituted for all ICU patients. Patients who met criteria were placed on an insulin drip to maintain a blood sugar of 80-140. Chart audits were completed after discharge to evaluate the effectiveness of tight glucose control with a focus on length of stay, ventilator days, average glucose levels, various laboratory tests, and mortality. Education was completed with the nursing and medical staff to highlight the importance of this clinical intervention.

Practice Change

Improved clinical practice is a result of research, literature review, and a synthesis of best practice. The implementation of this evidence-based measure in our ICU focused on providing a standard of care that would improve critical care outcomes at our hospital.

Evaluation

Chart audits were completed pre-protocol and on protocol to track the effects of controlling glucose levels in the critically ill population. Patient outcomes and staff compliance will be followed closely.

Results

Preliminary results reveal improved control of glucose levels with an average glucose of 128 upon discharge from the ICU. Average units of blood transfusion administered are lower and hemoglobin levels are higher for patients on the insulin protocol. In addition, creatinine levels are lower for patients indicating a decrease in renal insufficiency. Infection rates for ventilator associated pneumonia, blood stream infection, and urinary tract infections are dramatically improved. Results are ongoing. Further research is needed.

Recommendations are forthcoming.

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