

Glycemic Control in the Burn Intensive Care Unit: Focus on the Role of Anemia in Glucose Measurement

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Abstract

Glycemic control with intensive insulin therapy (IIT) has received widespread adoption secondary to findings of improved clinical outcomes and survival in the burn population. Severe burn as a model for trauma is characterized by a hypermetabolic state, hyperglycemia, and insulin resistance. In this article, we review the findings of a burn center research facility in terms of understanding glucose management. The conferred benefits from IIT, our findings of poor outcomes associated with glycemic variability, advantages from preserved diurnal variation of glucose and insulin, and impacts of glucometer error and hematocrit correction factor are discussed. We conclude with direction for further study and the need for a reliable continuous glucose monitoring system. Such efforts will further the endeavor for achieving adequate glycemic control in order to assess the efficacy of target ranges and use of IIT.

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Abbreviations: (ABA) American Burn Association, (ADA) American Diabetes Association, (BG) blood glucose, (CDSS) computer decision support software, (CGM) continuous glucose monitoring, (HCT) hematocrit, (ICU) intensive care unit, (IIT) intensive insulin therapy, (POC) point of care, (RBC) red blood cell, (TBSA) total body surface area

Keywords: artificial pancreas, burn, computer decision support, continuous glucose monitor, diurnal variation, glucometer, glucose variability, hematocrit effect, hypoglycemia, intensive insulin therapy

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