

Blood Glucose Measurements in Critically Ill Patients

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Abstract

Studies on tight glycemic control by intensive insulin therapy abruptly changed the climate of limited interest in the problem of hyperglycemia in critically ill patients and reopened the discussion on accuracy and reliability of glucose sensor devices. This article describes important components of blood glucose measurements and their interferences with the focus on the intensive care unit setting. Typical methodologies, organized from analytical accuracy to clinical accuracy, to assess imprecision and bias of a glucose sensor are also discussed. Finally, a list of recommendations and requirements to be considered when evaluating (time-discrete) glucose sensor devices is given.

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Abbreviations: (BG) blood glucose, (Hct) hematocrit, (ICU) intensive care unit, (ISO) International Organization for Standardization, (NICE-SUGAR) Normoglycemia in Intensive Care Evaluation and Survival Using Glucose Algorithm Regulation, (TGC) tight glycemic control

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