Study on the blood glucose management with controlled goal feed in Malaysian critically ill patients

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Abstract

Stress-induced hyperglycaemia is commonly occurred in the intensive care unit (ICU). It is known that the intensive insulin therapy (IIT) has successfully managed the blood glucose level within the targeted band. However, modifications on the current practice need to be considered to minimize the risk of hypoglycaemia and mortality. Thus, the aim of this study is to assess the performance of a new practice known as Stochastic Targeted (STAR) Protocol in managing blood glucose levels in Malaysia ICU setting. STAR is a tablet-computer based protocols that provides patient-specific glucose control framework accounting for patient variability with a stochastically derived maximum 5% risk of hypoglycaemia events. A retrospective 92 non-diabetes patient's data who underwent IIT were identified. Patient's blood glucose levels, exogenous insulin and nutrition inputs including patient demographics were extracted from the ICU charts to create virtual patients by using physiologically mathematical model. Three trials were simulated with controlled goal feed (GF) and without GF. Only one type of nutrition is considered in this study which is Glucerna. The outcomes will be compared in terms of %BG within the targeted band of 4.4 to 10.0 mmol/L, the total number of BG measurements, and the % of severe hypoglycaemia. The results indicate that STAR virtual trial with controlled GF reduced the risk of hypoglycaemia to 3% and the clinical burden up to 1630 hours while maintaining BG within the targeted band. The total number of BG measurements also decreased to 5384 from 7038. Thus, the implementation of STAR protocol in the Malaysia ICU is beneficial and it is proven safe while aiding nurses and physicians in reducing the clinical burden and medical cost in treating stress-induce hyperglycaemia in the demanding ICU setting.

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