

Under routine conditions and under different nutritional protocols the Space GlucoseControl system with integrated eMPC algorithm has exhibited its suitability for glycaemia control in critically ill patients” Blaha et al (2016).

Abstract:

BACKGROUND: Glycaemia control (GC) remains an important therapeutic goal in critically ill patients. The enhanced Model Predictive Control (eMPC) algorithm, which models the behaviour of blood glucose (BG) and insulin sensitivity in individual ICU patients with variable blood samples, is an effective, clinically proven computer based protocol successfully tested at multiple institutions on medical and surgical patients with different nutritional protocols. eMPC has been integrated into the B.Braun Space GlucoseControl system (SGC), which allows direct data communication between pumps and microprocessor. The present study was undertaken to assess the clinical performance and safety of the SGC for glycaemia control in critically ill patients under routine conditions in different ICU settings and with various nutritional protocols.

METHODS: The study endpoints were the percentage of time the BG was within the target range 4.4 - 8.3 mmol.l-1, the frequency of hypoglycaemic episodes, adherence to the advice of the SGC and BG measurement intervals. BG was monitored, and insulin was given as a continuous infusion according to the advice of the SGC. Nutritional management (enteral, parenteral or both) was carried out at the discretion of each centre.

RESULTS: 17 centres from 9 European countries included a total of 508 patients, the median study time was 2.9 (1.9-6.1) days. The median (IQR) time-in-target was 83.0 (68.7-93.1) % of time with the mean proposed measurement interval 2.0 ± 0.5 hours. 99.6 % of the SGC advices on insulin infusion rate were accepted by the user. Only 4 episodes (0.01 % of all BG measurements) of severe hypoglycaemia

CONCLUSION: Under routine conditions and under different nutritional protocols the Space GlucoseControl system with integrated eMPC algorithm has exhibited its suitability for glycaemia control in critically ill patients.

TRIAL REGISTRATION: ClinicalTrials.gov NCT01523665.

Reference:

Blaha, J., Barteczko-Grajek, B., Berezowicz, P., Charvat, J., Chvojka, J., Grau, T., Holmgren, J., Jaschinski, U., Kopecky, P., Manak, J., Moehl, M., Paddle, J., Pasculli, M., Petersson, J., Petros, S., Radrizzani, D., Singh, V. and Starkopf, J. (2016) Space GlucoseControl system for blood glucose control in intensive care patients - a European multicentre observational study. BMC Anesthesiology. 16(1), p.8.

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