TITLE:

TIGHT CONTROL OF BLOOD GLUCOSE WITH I.V. INSULIN: EFFICACY AND SAFETY.

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INTRODUCTION: Van den Berghe et al. have reported that tight control of blood glucose (BG) with intensive insulin therapy can reduce morbidity and mortality with a low incidence of side effects in critically ill patients.¹ However, such a protocol may be difficult to implement outside of a research setting. This retrospective observational cohort study was designed to evaluate the efficacy and the safety of a continuous insulin infusion protocol (CIIP) in the usual ICU setting and to identify causes of hypoglycemia.

METHODS: The CIIP was run by the nursing staff and targeted a BG level between 4.5 and 8.0 mmol/L. BG was measured by capillary sampling every hour until 3 consecutive BG measurements were in the target range, then every 3 hours. Hypoglycemia and severe hypoglycemia were defined as BG level less than 3.5 mmol/L and 2.5 mmol/L respectively. Medical records of 98 consecutive ICU patients who received the CIIP were reviewed. Hypoglycemic events were further investigated to identify risk factors. Data are presented as mean $\pm$ SD.

RESULTS: Patients were aged 58 ± 18 yr, APACHE II score was 23 ± 8 , and BG level before starting the CIIP was 11.5 ± 4.8 mmol/L. CIIP was administered during 177 ± 188 hr. Time between start of the CIIP and 3 consecutive BG levels within the target range was 16.9 ± 19.6 hr. Thereafter mean BG level during CIIP was 7.1 ± 1.0 mmol/L. Hypoglycemia and severe hypoglycemia occurred in 2.5 cases per 1000 patient-hr and 0.8 cases per 1000 patients-hr respectively. No complication of hypoglycemia was observed. Forty-two percent and 37% of the 19 severe hypoglycemic events were associated with corticosteroids given by intermittent IV boluses or with inappropriate application of the CIIP by the nursing staff, respectively.

CONCLUSIONS: Tight control of BG with a CIIP, outside of a research setting, is feasible and safe in the ICU. Corticosteroid use by intermittent boluses was associated with rebound hypoglycemia.

REFERENCES: 1. *N Engl J Med* 345: 1359-67