

Hospital Hyperglycemia: Status Investigation and Effect of a Real-time Glycemic Alert System

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Abstract

OBJECTIVE Hospital hyperglycemia is common and associated with potential adverse outcomes. A Hospital-wide Mobile Phone Alert (HMA) system was built to achieve real time glucose monitoring with warnings for glucose excursions. This study investigated the status of glucose control and evaluated the impact of HMA system on inpatient glycemia management. **METHODS** Inpatients with hyperglycemia hospitalized between 1 January, 2017 and 31 December, 2018 were identified excluding those < 18 years of age. The HMA system was activated on 1 October, 2017. It sent real time cellphone warning messages to the patient's designated team physician whenever glucose levels > 10 mmol/L or < 3 mmol/L were detected. A serum glucose > 7.8 mmol/L was defined as hospital hyperglycemia (HH), and > 10 mmol/L was defined as significant HH (SHH). Glucose excursions before and after the HMA system was instituted were compared. **RESULTS** The incidence of HH, SHH and hypoglycemia was 26.1%, 12.8% and 2.5%, respectively. With the HMA system, the monthly glucose related consultation rate for all inpatients increased 65.9%. The rate of HH glucose amount/ total glucose amount improved with the HMA system, being lower than pre HMA system activation for the surgical wards ($15.8 \pm 4.7\%$ vs $21.1 \pm 6.1\%$, $p < 0.05$). **CONCLUSIONS** In this study, one third of inpatients were noted to experience hyperglycemia. Real time cellphone warning messages to the patient's designated team physician can improve consultation utilization for blood glucose excursions. The alert system was found to reduce the incidence of hyperglycemia on surgical wards.

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