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## Diabetes & Glucose Metabolism

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### *A Novel Algorithm For The Management Of Inpatient Covid-19 Steroid-induced Hyperglycemia*

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**Objective/Background:** Hyperglycemia in hospitalized patients with COVID-19 is linked to increased morbidity and mortality. With increasing use of glucocorticoid (GC) therapy for COVID-19 hypoxemia, clinicians are challenged with an increased prevalence of hyperglycemia. **Methods:** We developed an insulin protocol to aid front line providers in the management of GC-induced hyperglycemia for hospitalized adults with COVID-19. The protocol was based on expert opinion and was available from March 2021 onward. Glycemic and clinical outcomes were obtained for patients treated with GC and retrospectively compared to historical controls treated with GC admitted up to 6 months prior to protocol implementation. Glycemic parameters for finger stick glucose values (FSG) were defined as hypoglycemia <70 mg/dL, euglycemia 70-180 mg/dL, mild hyperglycemia 180-250 mg/dL and severe hyperglycemia >250 mg/dL. To account for differences in the quantity of total FSG between groups, we adjusted for length of stay and calculated the proportion of FSG per patient. **Results:** 130 patients with COVID-19 and GC induced hyperglycemia from before (n=65) and after (n=65) protocol implementation were matched 1: 1 based on age, weight, and sex. There were no significant differences in other baseline patient characteristics. Significantly more patients in the protocol group had mean FSG in the euglycemic range (16.9% vs 38.5%, p=0.006), and there was a decrease in patients with mean glucose in the mild hyperglycemia range that trended toward significance (50.8% vs 35.4%, p=0.076). The protocol group had a significantly lower proportion of hypoglycemic FSG per patient (0.

003 vs 0.008,  $p=0.044$ ). Patients in the protocol group had more euglycemic FSG per patient, but this did not reach significance (0.413 vs 0.350,  $p=0.239$ ). Similarly, the proportion of mild hyperglycemic FSG per patient trended lower in the protocol group (0.315 vs 0.272,  $p=0.291$ ). There were no significant differences in severe hyperglycemia per patient (0.311 vs 0.328,  $p=0.828$ ). The protocol group had a significantly higher utilization of basal-bolus insulin regimen ( $n=43$  vs  $n=63$ ,  $p<0.0001$ ) with an increase percentage of bolus insulin utilization in peak total daily dose (70.2% vs 62.4%,  $p=0.08$ ). Total peak day insulin dose trended lower in the protocol group (0.25 vs 0.32 U/kg,  $p=0.36$ ). **Conclusion:** A novel insulin protocol for the management of GC-induced hyperglycemia in hospitalized COVID-19 patients is an effective tool to achieve reductions in hypoglycemic events and higher utilization of standard of care basal-bolus insulin regimens without increased hyperglycemia or total daily dose of insulin.

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