

K, et al. Continuous Glucose Monitoring Versus Usual Care in Patients With Type 2 Diabetes Receiving Multiple Daily Insulin Injections. *Ann Intern Med.* 2017;167(6):365–374. doi:10.7326/M16-2855. 2. Shehav-Zaltzman G, Segal G, Konvalina N, Tirosch A. Remote Glucose Monitoring of Hospitalized, Quarantined Patients With Diabetes and COVID-19. *Diabetes Care.* 2020;43(7):e75-e76. doi:10.2337/dc20-0696.

## Diabetes Mellitus and Glucose Metabolism

### DIABETES IN THE HOSPITAL

#### *Libre in Inpatient Covid Units*

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Continuous glucose monitors (CGM) have demonstrated accuracy in outpatients and were accurate with pilot data using blinded systems in inpatients. Libre CGMs were approved and donated to hospitals for use during the COVID-19 to minimize exposure and PPE use. We made a prospective plan to assess accuracy of the Libre on inpatients admitted to COVID units during an initial “validation phase”. Fingerstick blood glucose (FSBG) was checked for the first three days after placing the sensor and compared to Libre values within the next 1–15 minutes. Patients were instructed to scan the sensor after each FSBG, and at other times as clinically warranted. FSBG values were recorded from the medical record (CPRS) and compared to Libre values downloaded to LibreView. The mean absolute relative difference (MARD) between FSBG and Libre was calculated for each patient for one to three days. The average MARD across all patients was calculated. Accuracy was further assessed using the Bland-Altman Plot and error grid analysis using web-based tool. Of the 21 patients assessed in the validation phase, 19 had at least one day of data and 11 had at least three days. The mean MARD was 11.2% after one day, and 12.5% after three days. Four patients after one day and three patients after three days had a MARD of 15–20% where use of the Libre was continued with confirmatory FSBG. In 15/19 (78%) patients with one day of data and 8/11 (73%) of patients with 3 days of data had a MARD <15% and continued using the Libre without further FSBG. One patient had a MARD >20% that did not improve with changing the sensor, and Libre was discontinued. In 16 of 19 patients, the Libre values were lower than FSBG. No adverse events relating to Libre use were identified. Error grid analysis showed that most patients had no values outside the A and B ranges, and very few values outside of the clinically accurate range, occurring in 2 of the 19 patients (9% of values in the “slight risk” zone in 9% in one and 6% in the other). The Libre was well-accepted by patient and nursing staff, but did not have measurable effect on glycemic control, hypoglycemic events, or hospitalization measures. The Libre was deemed a useful intervention in inpatients, but it can be inaccurate or only moderately accurate compared to FSBG in enough patients to require checking accuracy for at least

1–3 days. Inaccurate Libre values were mostly lower than FSBG requiring confirmatory measures of low Libre values with FSBG in our experience.

## Diabetes Mellitus and Glucose Metabolism

### DIABETES IN THE HOSPITAL

#### *Outcomes in Hospitalizations for Patients Admitted With Hyperosmolar Hyperglycemic State and Obesity: Analysis of National Inpatient Sample*

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**Introduction:** Hyperglycemic Hyperosmolar Nonketotic Syndrome (HHS) is a highly lethal disease with an estimated mortality rate of up to 20%. Although mortality has decreased in recent years, its incidence has increased in the setting of a higher prevalence of underlying conditions that have been previously well described, such as uncontrolled diabetes, Obesity, and a high-carbohydrate diet. All these comorbidities usually overlap with acute complications such as infections or dehydration, which incite the onset of HHS. Currently, limited literature exists for the role of obesity in mortality, hospital stay, and other adverse outcomes in patients with HHS. It is important to know which underlying conditions truly affect outcomes for patients being treated for this condition so further studies can be done, and treatment optimized.

**Objective:** We aim to prove if obesity plays a role in increasing mortality and secondary adverse outcomes in patients with HHS compared to non-obese patients.

**Methods:** A retrospective cohort study was conducted using the Nationwide Inpatient Sample from 2016 and 2017. 42,740 hospitalizations who had HHS as primary diagnosis were enrolled and further stratified based on the presence or absence of Obesity as a secondary diagnosis using ICD-10 codes. The primary outcome was inpatient mortality and secondary outcomes included length of hospital stay, total hospital charges, Sepsis, Septic Shock, Acute Kidney Injury (AKI), and Acute Respiratory Failure (ARF). Multivariate regression analysis was done to adjust for confounders.

**Results:** Out of the 42 740 hospitalizations with HHS, 9,630 had Obesity. The in-hospital mortality for patients with HHS was 45 overall, out of which 45 patients had Obesity as a secondary diagnosis. Compared with patients without Obesity, non-obese patients had similar in-hospital mortality (OR 0.77, 95% CI 0.39–1.52, p=0.45) when adjusted for patient and hospital characteristics. Patients with HHS and Obesity had similar lengths of hospital stay, total hospital charges, rate of Sepsis, Septic Shock, and ARF in comparison to patients without Obesity; however, non-obese patients had higher odds of developing AKI throughout hospitalization.

**Conclusion:** Although it is known and described that being obese plays a significant role in the onset of diabetes,