

Lower glucose levels before hospital discharge associated with readmission, death in diabetes patients

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Lower glucose levels during the 24 hours prior to discharge were associated with higher risk of readmission and mortality in a recent study of patients with diabetes.

The retrospective cohort study included 843,978 patients with diabetes admitted to Veterans Affairs hospitals in 2000 through 2014. The authors collected patients' minimum point-of-care glucose values during the last 24 hours of hospitalization and compared them to adjusted rates of readmission and mortality after discharge. Results were published by the *Journal of Clinical Endocrinology and Metabolism* on May 1.

Overall, 17.3% of the patients were readmitted within 30 days, and 30-, 90-, and 180-day crude mortality rates were 2.3%, 6.0%, and 10%, respectively. The study used glucose values of 100 to 109 mg/dL (5.6 to 6.1 mmol/L) as the reference range. Patients with minimum glucose readings of 90 to 99 mg/dL (5.0 to 5.5 mmol/L) on the last day of hospitalization had similar rates of readmission and postdischarge mortality to the reference population. However, levels below that range were associated with progressively increasing risk of readmission and mortality. For example, compared to the reference group, the event rate ratio for 30-day readmission was 1.04 with a minimum glucose level of 80 to 89 mg/dL (4.4 to 4.9 mmol/L) and 1.46 for a glucose level of 10 to 19 mg/dL (0.6 to 1.1 mmol/L). Similarly, the event rate

ratio for mortality within 180 days increased from 1.07 with a minimum glucose level of 80 to 89 mg/dL (4.4 to 4.9 mmol/L) to 1.96 for a glucose of 10 to 19 mg/dL (0.6 to 1.1 mmol/L).

The authors identified thresholds at which risk for these adverse outcomes increased: 92.9 mg/dL (5.2 mmol/L) for 30-day readmission, 45.2 mg/dL (2.5 mmol/L) for 30-day mortality, 65.8 mg/dL (3.7 mmol/L) for 90-day mortality, 67.3 mg/dL (3.7 mmol/L) for 180-day mortality, and 87.2 mg/dL (4.8 mmol/L) for the combined outcome of readmission or mortality within 30 days. They concluded that patients with diabetes who had hypoglycemia or near-normal glucose values during the last day of hospitalization had higher risk of readmission and mortality but noted that the reasons for this association are unknown. “The transition of care from the inpatient to the outpatient setting is often challenging, leading to adverse events, poor glyceemic control, increased emergency room visits, higher hospital readmission rates and costs,” the study said.

The authors recommended several potential approaches to this problem that should be tested in future trials, including delaying patients' release from the hospital until normoglycemia is achieved, modifying outpatient diabetes medication regimens, and advising patients to perform frequent glucose monitoring or use continuous glucose monitoring devices. They noted that the study was limited because it included only veterans, who are more likely to be male, elderly, and chronically ill than the general population. The results also do not apply to patients without a diagnosis of diabetes.