Introduction: The prevalence of chronic dysglycemia (diabetes and prediabetes) in patients admitted to Swedish intensive care units (ICUs) is unknown. We aimed to determine the prevalence of such chronic dysglycemia and assess its impact on blood glucose control and patient-centred outcomes in critically ill patients.

Methods: In this retrospective, observational study, we obtained routine glycated haemoglobin A1c (HbA1c) measured in patients admitted to four tertiary ICUs in Sweden between March and August 2016. Based on previous diabetes history and HbA1c we determined the prevalence of chronic dysglycemia (prediabetes, undiagnosed diabetes and known diabetes). We compared indices of acute glycemic control in the ICU and explored the association between chronic dysglycemia and ICU-associated infections, mechanical ventilation, renal replacement therapy, vasopressor therapy, and mortality within 90 days.

Results: Of 943 patients, 312 (33%) had chronic dysglycemia. Of these 312 patients, 127 (41%) had prediabetes or undiagnosed diabetes and 185 (59%) had a known diabetes diagnosis. During ICU stay, patients with chronic dysglycemia had higher average blood glucose, spent less time in target glucose range, had greater glucose variability, and were more likely to develop hypoglycemia than patients without chronic dysglycemia. Chronic dysglycemia was associated with greater need for renal replacement therapy (odds ratio 2.10, 95% CI 1.35-3.27) and increased 90-day mortality (hazard ratio 1.33, 95% CI 1.01-1.77) after adjustment for Simplified Acute Physiology Score 3. In contrast, chronic dysglycemia was not associated with mechanical ventilation, vasopressor therapy, or ICU-associated infections.

Conclusion: In four tertiary Swedish ICUs, measurement of HbA1c showed that 1/3 of patients had chronic dysglycemia (prediabetes or diabetes). Chronic dysglycemia was associated with marked derangements in glycemic control during ICU stay, greater need for renal replacement therapy and with increased mortality at 90 days.