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Commentary

Continuous Glucose Monitoring in Hospitalized Patients: Is It Time to Embrace a Paradigm Shift?

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The use of continuous glucose monitoring (CGM) has transformed outpatient diabetes care, yet its implementation in the inpatient setting remains limited [1,2]. In our recent systematic review and meta-analysis of six randomized controlled trials (RCTs) (n=979), we evaluated whether adding unblinded CGM (real-time or intermittently scanned) to point-of-care (POC) glucose testing, to assist with insulin adjustment, improves outcomes for non-critically ill, hospitalized adults with diabetes mellitus. We found that the addition of CGM significantly increased time in range (TIR, 70–180 mg/dL) by a mean difference (MD) of +7.24% (P <0.00001), supported by high-certainty evidence. It also reduced time below range (TBR) <70 mg/dL (MD: −1.23%, P=0.02; moderate certainty) and <54 mg/dL (MD: −0.95%, P<0.00001; high certainty). Time above range (TAR) >250 mg/dL decreased by −3.70% (P=0.003), and mean glucose levels declined by −10.93 mg/dL (P=0.0003), both with high-certainty evidence. In terms of safety outcomes, CGM use reduced hypoglycemic events <70 mg/dL (MD: −1.21 events per patient, P=0.001; low certainty) and <54 mg/dL (MD: −1.24 events per patient, P=0.03). Notably, nocturnal hypoglycemic events were also reduced for both <70 mg/dL (MD: −0.16 events per patient, P=0.002) and <54 mg/dL (MD: −0.11 events per patient, P=0.006), although the certainty of evidence was not formally graded for these specific outcomes [1-3].

We believe these findings mark an inflection point in hospital glucose management. While point-of-care (POC) glucose testing has long been the mainstay, CGM offers high frequency of data points, rate-of-change of glycemia over time, direction of blood glucose levels and potential for proactive hypo-and hyperglycemia prevention [4]. Although the six included RCTs in our review varied in population, diabetes types, insulin protocols, and device models (Dexcom G6 and Guardian Sensor 3), our sensitivity analyses demonstrated robust, consistent benefit across subgroups. Nevertheless, we recognize that further research is warranted to address remaining knowledge gaps and to further validate these findings across diverse clinical settings. The implementation of CGM in the general ward still faces several challenges. It requires integration of CGM with electronic medical records and training staff and providers on initiation of download and interpretation. Ideally software integration should include the use of artificial intelligence to pick up patterns of hypo and hyperglycemia and a new "glucose monitoring team," like a telemetry unit should review those flags in real time and inform the treatment team to make clinical decisions. But even more basic integration can provide retrospective data that will assist providers in making insulin adjustments based on better quality of that than what is provided by POC glucose alone [5].

The 2025 Standards of Care in Diabetes from the American Diabetes Association (ADA) now endorse universal use of CGM for all patients with diabetes, regardless of insulin therapy, as well as the continued use of CGM during hospitalization in those already utilizing the technology [6]. Our findings reinforce this recommendation to continue CGM during hospitalization in patients admitted already using the technology but also as a primary tool that could be started in hospital to assist glycemic management in patients with hyperglycemia. With evidence mounting improved outcomes, fewer hypoglycemic events, and no apparent safety concerns, we believe CGM will eventually be implemented as standard practice for most non-ICU inpatients with hyperglycemia.

In conclusion, continuous glucose monitoring (CGM) represents a significant advancement in diabetes management in non-critically ill hospitalized patients. By enabling continuous insight into glycemic patterns, it facilitates optimized glycemic management, resulting in improved safety and clinical outcomes compared to the use of POC glucose testing alone. With supportive policies, appropriate infrastructure, and comprehensive training, CGM integration into routine inpatient care is warranted – particularly for patients at the highest risk of hypoglycemia. Advancing beyond intermittent glucose measurements to leverage continuous data represents a critical evolution in optimizing inpatient glycemic management.

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