Evaluation of the feasibility of use of continuous glucose monitoring (CGM) in a cancer hospital

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Introduction

Inpatient hyperglycemia is associated with poor clinical outcomes. A basal bolus approach to insulin therapy is recommended in the hospital setting (Galindo, et al. 2020). The current standard is to manage blood glucose based on point of care (POC) glucose testing. Recent articles by Galindo et. al (2020) and Fortmann et. Al (2020) have shown that of real time continuous glucose monitoring (RT-CGM) can be useful in decreasing lower mean glucose, decreasing percentage of time in hyperglycemia (>250 mg/dL) and increasing detection of hypoglycemic events.

Recently several studies have been conducted evaluating the accuracy/ reliability of CGM in hospitalized patients in the ICU as well as on the general floors. However, little is known about the benefits of the use of RT-CGM in patients with type 1 and 2 diabetes and cancer in a hospital setting. Patients with cancer have several factors that can lead to tremendous variability in glucose including administration of steroids, use of artificial nutrition and change in PO status in response to cancer treatment. Patients with diabetes and cancer are unique in that they often receive steroids as part of their treatment and those undergoing transplants are often admitted to the hospital for prolonged periods of time.

Our attempts to obtain glycemic control often involve point of care (POC) blood glucose monitoring (fingersticks) upwards of 4 times a day even with this amount of testing, it is often hard to detect episodes of hyper/hypoglycemia or to prevent extremely glycemic variability.. For some patients with chemotherapy related neuropathy, fingerstick glucose monitoring can be extremely painful. And for those with thrombocytopenia—use of the "industrial" lancet often leads to prolonged bleeding times and severe bruising.

The use of RT-CGM could be useful in improving overall glycemic management among this population. In addition, continuous glucose monitors can alarm if a patient's glucose is outside of target range which can allow more real-time glucose management and proactive treatment of hypoglycemia in an asymptomatic patient.

Objective

- To determine the feasibility of RT-CGM use among hospitalized patients with diabetes and cancer.

Methodology

We conducted a retrospective chart review of 25 adult patient with either T1 or T2DM admitted to our institution between 8/2020- 01/2021. Patients were admitted to the general floor. The patients utilized either their own CGM device or a device placed by a member of our diabetes service team.

Patients continued to receive standard of care POC BG measurements using hospital meter (Nova Biomedical Stat). Insulin dosing was based on POC testing.

Results

Among our population there were 12 females (48%) and 13 males (52%), average age was 58.04 years. Fifty-two percent of patients had T1DM (20% with immunotherapy-induced T1DM) and 48% with T2DM. Average length of stay (LOS) was 11.68 days.
Forty percent of patients received steroids with potency ranging from hydrocortisone 25 mg to dexamethasone 20 mg and 20% had platelet counts less than 140 K/uL (8% less than 50 K/uL) and 36% wore Dexcom G6 and 64% FreeStyle Libre.
Of the patients included melanoma-12%, leukemia-20%, lymphoma-16%, myeloma-12%, GI cancers- 24% and other-16%.
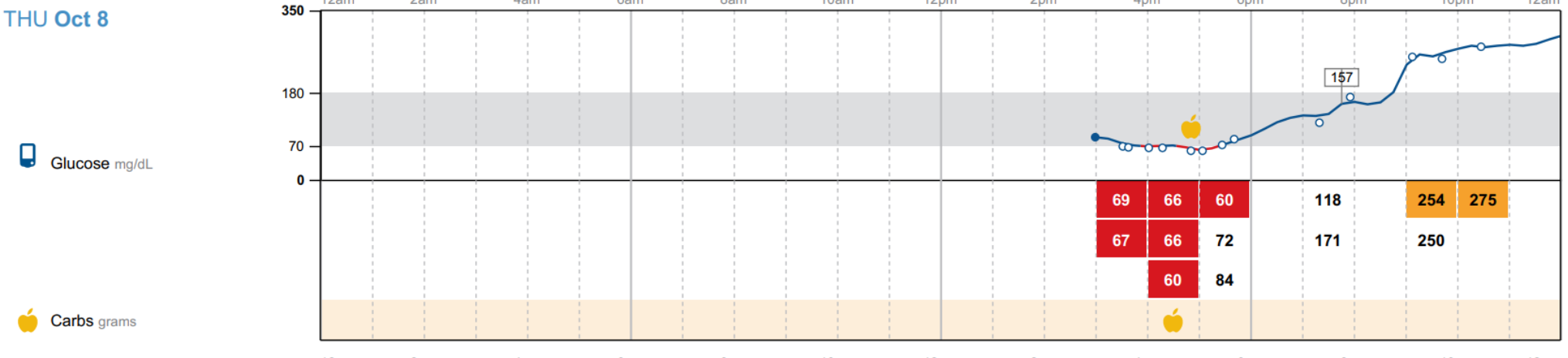
Conclusion

- In our preliminary review, we noted sensors may be safely utilized in patients with platelets less than 140 K/uL.
- The use of RT-CGM was instrumental in detecting hyper/hypoglycemia that may have otherwise gone undetected/undocumented.
- The use of CGM (with alarms on) allowed the patient to notify the nursing staff of episodes of hyper/hypoglycemia.
- Among hospitalized patients with cancer we found the Libre and Dexcom sensors could be utilized without adverse events.

Selected References

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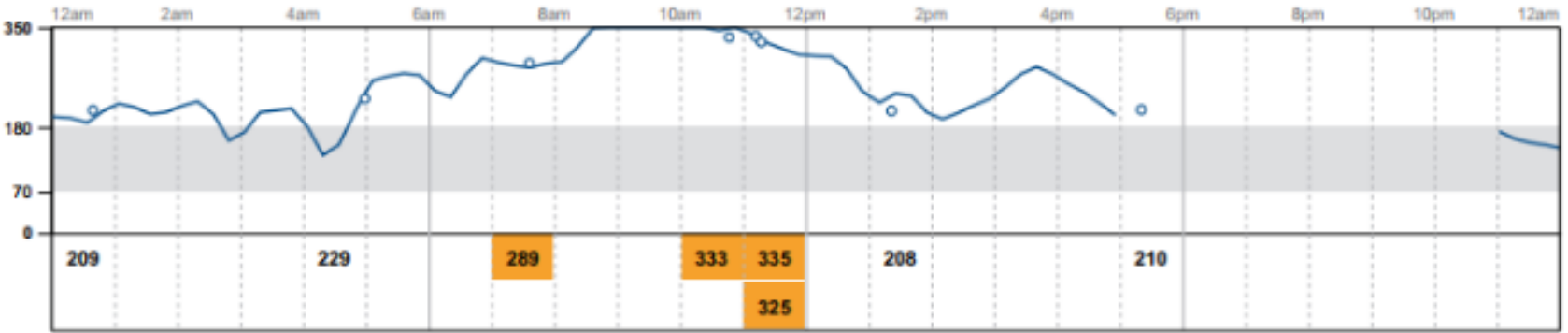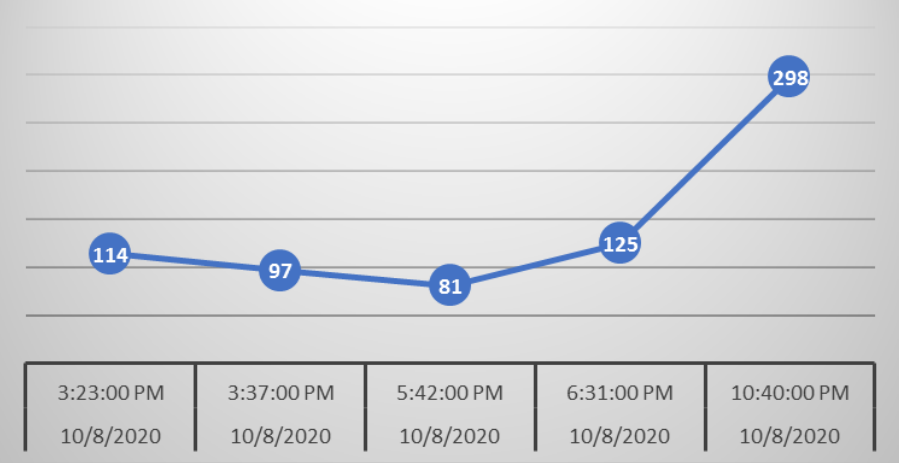
Case 1

Case 2