Meeting Inpatient Glycemic Targets through Increased use of Basal Bolus Insulin Therapy

MD Anderson Cancer Center

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Problem/Background

- American Diabetes Association guidelines for inpatient management recommend blood glucose between 100-180 mg/dL for non-critically ill hospitalized patients.
- Adequate glycemic control is an important aspect of overall cancer treatment outcomes. Uncontrolled glucose levels in inpatients can cause adverse outcomes.
- The use of a sliding scale (SSI) only insulin regimen is one of the common reasons for hyperglycemia in the hospitals, but Basal bolus Insulin (BBI) therapy is found to be more effective.
- As per the baseline data more than 66 % of diabetes patients with blood glucose >200 mg/dL are being placed on the SSI regimen in the Hospital Medicine unit.
- Providers rely on SSI rather than BBI due to knowledge deficit , fear of causing hypoglycemia, lack of best practice protocols/ guidelines, or structured order sets.

Purpose/Goal

- Increase the use of Basal Bolus Insulin therapy within 48 hours of blood sugar more than 200 mg/dL, in non-critically ill diabetes patients admitted to the Hospital Medicine unit of MD Anderson Cancer Center by 40% from baseline by October 2021.

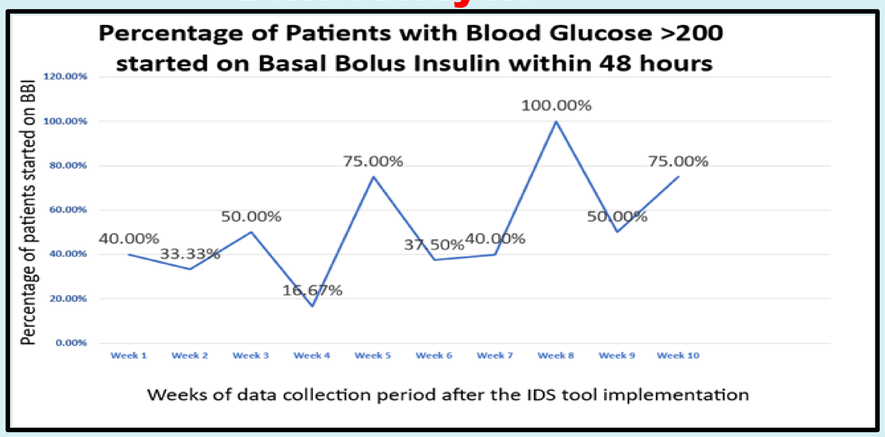
Methods

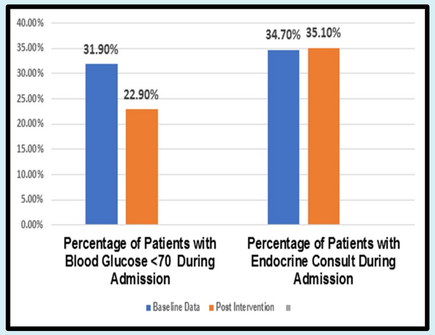
- Design : QI project, Pre-post intervention group design.
- Setting : Single inpatient unit, (Hospital Medicine unit) within a large comprehensive Cancer Center in USA.
- Sample/Inclusion criteria : Non critically ill diabetes patients with blood glucose levels >200mg/dL (ICD codes used to filter the data E11* (type 2 diabetes), OR E09* OR E13* (the star captures all the sub codes underneath).
- Exclusion criteria : Type 1 diabetes, pediatric patients , ICU status patients, patients with Covid 19 diagnosis, patients on insulin pump, tube feed or TPN.
- Preliminary post intervention data (weekly from December 1, 2020, to February 8, 2021)

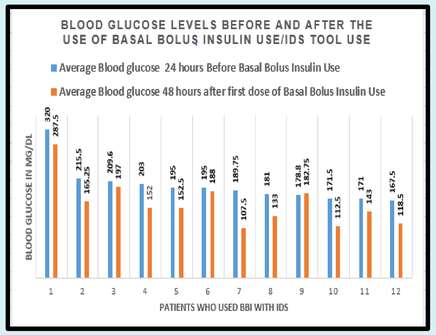
Intervention

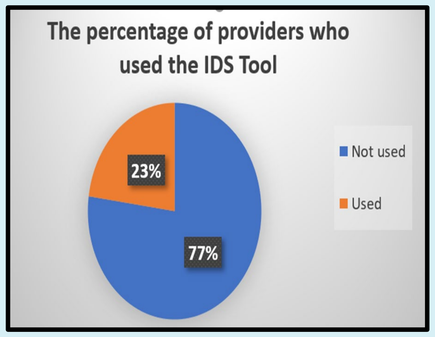
- Implementation of Insulin decision support (IDS) tool, based on the institutional hyperglycemia algorithm, to guide providers to place BBI orders. The IDS tool would allow providers to identify patients needing insulin, determine the total daily dose of insulin taking into consideration of patient's weight, nutritional status, steroid use, and kidney function etc., and divide the total daily dose into basal, bolus and correctional parts and then link to actual insulin orders.
- Education of Hospital Medicine providers, and weekly e-mail reminders.

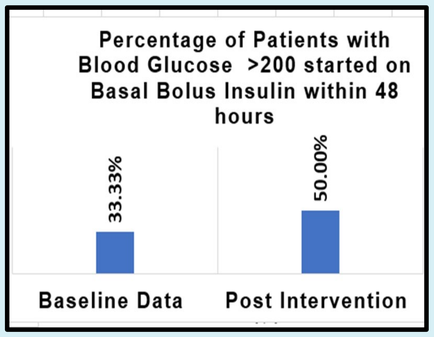
Data Analysis











Preliminary Data

- The implementation of IDS tool, which is integrated in the Epic, can assist providers in placing appropriate BBI insulin orders.
- Increased use of BBI use can result in reduction in hyperglycemia and hypoglycemia which can enhances overall patient safety and outcomes.
- Expanding or standardizing the intervention to other areas can help change prescriber practice and better glycemic control.
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- Provider involvement and interest is an important factor in the utilization of the IDS tool.

Looking Ahead

- Continue to identify barriers in using the IDS tool and provide education and support.
- Make necessary changes to the IDS tool based on provider feedback.
- Reanalyze data for a longer period to see the trend in the of BBI use.
- Expand the intervention to other primary care units at MD Anderson
- Aim for further increase of BBI use to 70-80%.

Reference - Inpatient Hyperglycemia Algorithm

Pre-intervention data from January 1, 2019 – March 31, 2019

Preliminary Post intervention data from December 1, 2020 - February 8, 2021