Hyperglycemic Control in the Hospital

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Introduction

- Hyperglycemia is a common problem in the hospitalized patients with various associated adverse outcomes.
- 25–35% of all US adult inpatients have hyperglycemia, one third of those do not have a prior diagnosis of diabetes[1]
- unrecognized hyperglycemia in the inpatient setting, even when recognized, did not trigger a treatment plan that was sufficiently altered, in a timely fashion, to improve glycemic levels[2]
- intensive insulin management of hyperglycemia to achieve near-normal glycemic levels have shown inconsistent benefits regarding study end points with elevated insulin requirements and frequent iatrogenic hypoglycemia
- Rational glycemic control may indeed result in improved clinical outcomes and reduced mortality in hospitalized patients[3]
- American Association of Clinical Endocrinologists (AACE) and the American Diabetes Association (ADA) recommendations:

- Hospitalized non critical patients: premeal glucose target of < 140 mg/dl and random< 180 mg/dl
- Critical ill Patients: target ranges of 140–180 mg/dl

Aim Statement

- Targeted Glucose levels for Hospitalized non critical patients 70 to 180 mg/dl
- Improve the Glycemic Control rates from 67% to 80% in 3 east in four months using the DM protocol
- Included patients: all the adult patients admitted to the 3 east
- Diabetes Pharmacist reviews 3East patients Mon-Fri and calls providers with suggested adjustments based on Pattern Management algorithm, page 22 of Blue Book

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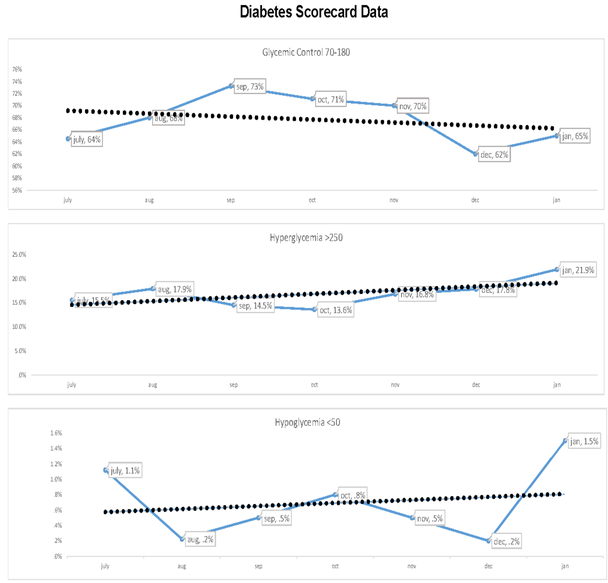
Process/Results

- September 13, 2016: 1st meeting of 3East Work Group
  - Set BG goal: 70-180 on Day 3 of admission, review charts on Day 2
  - Starting October 4, Diabetes Pharmacist reviews 3East patients Mon-Fri and calls providers with suggested adjustments based on Pattern Management algorithm, page 22 of Blue Book
- November 10, 2016
  - Ongoing review of 3East patients on insulin by pharmacist
  - 3East pharmacists unable to participate in project
  - Dr. Hardee will review patients with FSBS >250, starting Dec 1 to determine reasons for ongoing excessive hyperglycemia (i.e., “>250 Drill down”)
- November 18, 2016
  - Starting Dec 1, 2016, ongoing review of 3East patients on insulin, MDs cover when Diabetes Pharmacist not available, including week-ends
  - Discussed >250 Drill down (attached)
  - Hospitalists encourage colleagues to follow recommendations Steroid-induced Hyperglycemia in Diabetes Blue Book
  - Encouraged pharmacist to be more assertive to get FSBS <140 and all <180, use Cortext to make recommendations >12 N, use chain-of-command if needed
- December 15, 2016
  - Reviewed data, not very encouraging
  - Continue current strategy
- December 15, 2016
  - Reviewed data, not very encouraging
  - Continue current strategy
- January 19, 2017
  - Reviewed data
  - Interventions show some reduction in those patients with FSBS >180 but <250
  - Continue ongoing review and recommendations
  - Enlist help from 3East pharmacists
- February 20, 2017
  - Conclusion: Strategy of having diabetes pharmacist or physician colleagues review charts and make recommendations does not have significant impact on glycemic control, and is not practical for extension to other units.

Recommendations

- Earlier use of IV insulin. Barrier identified is that IU beds are often needed for more acute issues than glycemic control.
- Encourage Endocrinology consults for defined conditions.
- Better nursing coordination of insulin-FSBS-meals
- Identify strategy for when and how to aggressively increase SQ insulin doses
- Patients with known reasons for insulin resistance (obesity-BMI≥30, sepsis, high-dose steroids, taking metformin, pioglitazone, or GLP-1 agonists at home) may require higher insulin doses during hospitalization.
- Initial conservative weight-based dosing is recommended, but rapid escalation may be needed in order to control blood glucose during relative short stays in the hospital.
- If FSBS 300-400 on 2nd day of admission, immediate escalation of insulin dose to TOTAL DAILY DOSE of 0.6 units/kg (or 0.3 units/kg in ESRD) may be considered.
- If FSBS >400, IV insulin is recommended.

Results



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