Outpatient Insulin Regimens and the Effect on Inpatient Hypoglycemia

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Background

- 13.1 million adults in the U.S. have diabetes (13% of all US adults 18 and older).
- 339 per 1000 U.S. patients with diabetes were hospitalized in 2016.
- Insulin doses greater than 0.6 units/kg/day are associated with a higher percentage of inpatient hypoglycemia.
- A hypoglycemic event in the hospital results in higher cost, longer length of stay, and higher mortality for these patients.

Primary Outcome	Secondary Outcomes
• The impact of outpatient insulin regimens on inpatient hypoglycemic events, defined as blood glucose less than 70 mg/dL within the first 48 hours of admission	• Rehospitalization, amputation, or death rate within 90 days after having an inpatient hypoglycemic event • Length of stay between groups

	Mild Hypoglycemia (55-69 mg/dL)	Moderate Hypoglycemia (41-54 mg/dL)	Severe Hypoglycemia (<40 mg/dL)
Number of patients	11	5	3

Disclosures

- Hannah Page: Nothing to disclose
- Amelia Honey: Nothing to disclose

References

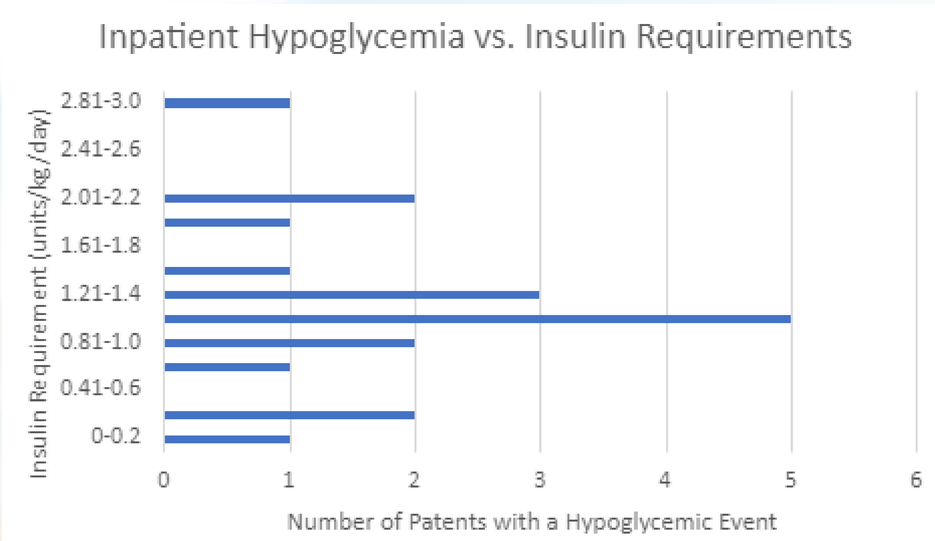
- Available upon request.

Methods

Study design

- Retrospective chart review
- Assessment of patients charts for: medical record number, age, gender, diagnosis, date admitted, length of stay, unit of admission, change of unit while admitted, prior to admission insulin dose, insulin and rescue medications administered during admission, lab/test results, BMI, rehospitalization within 90 days, amputation within 90 days, death within 90 days.

Inclusion Criteria	Exclusion Criteria
• Males and females • Age 18 years and older • Admitted to Mercy Hospital from 08/01/2018-08/01/2020 • Diagnosed with Type 1 or Type 2 Diabetes Mellitus • Presence of an established outpatient insulin regimen	• Patients treated for diabetic ketoacidosis • Patients treated for diabetic hyperglycemic hyperosmolar syndrome • Patients treated for myocardial infarction • Patients receiving glucocorticoids • Patients receiving dextrose containing fluids • Patients on TPN • Patients that were NPO



Results and Conclusions

- Out of 105 patients, 19 had a hypoglycemic event within the first 48 hours of admission (18%) and 86 did not. 7 of the patients with a hypoglycemic event and 34 of the patients without a hypoglycemic event did not have their insulin regimens decreased upon admission ($p = 0.84$).
- 5 of the 8 patients with more severe instances of hypoglycemia did not have their insulin regimens decreased upon admission. Additionally, 1 of these patients required a transfer to the ICU.
- Both groups had an average decrease of 21% in units/kg/day upon admission.
- Length of stay for the control group was 5.60 days and length of stay for the hypoglycemia group was 5.68 days.
- There was no significant difference between rates of rehospitalization, amputation, or death within 90 days of having an inpatient hypoglycemic event. Of note, both deaths in the hypoglycemia group happened in patients with more severe instances of hypoglycemia.
- The graph below shows that 84% of the hypoglycemic events happened in patients with insulin requirements > 0.4 units/kg/day.

Long-Term Effects

- **Rehospitalization ($p = 0.42$)**
  - Control – 41/86 (47.67%)
  - Hypoglycemia – 11/19 (57.90%)
- **Amputation ($p = 0.74$)**
  - Control – 26/86 (30.23%)
  - Hypoglycemia – 5/19 (26.32%)
- **Death ($p = 0.60$)**
  - Control – 6/86 (6.98%)
  - Hypoglycemia – 2/19 (10.53%)