

## **Collaboration of Hospital Pharmacists and Hospitalists to Improve Glycemic Control of General Medicine Patients: Implementation of a Pilot Inpatient Diabetes Management Program**

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### **Abstract**

#### ***Purpose***

The purpose of this study is to evaluate the effects of the implementation of a hospital pharmacist-hospitalist collaborative pilot inpatient diabetes management program. We will evaluate whether use of a new insulin nomogram and order form that incorporates a basal-mealtime-correctional regimen and specific blood glucose targets compared to usual care. Impact of the insulin nomogram and practice model on the occurrence of hypoglycemia, hyperglycemia and insulin-related medication errors will be assessed.

#### ***Methods***

Study Design: A prospective, open-label, parallel group trial with a randomized blocks design.

Study Population: Diabetic patients receiving insulin admitted to the hospitalist services.

Sample Size: 366 subjects (183 in each group).

Duration of Study: 6 Months.

Study Procedures: Hospitalist physician-led medical teams will be randomized to prescribe insulin using the usual care order form or the study intervention nomogram order form with the pharmacist collaboration. A Nursing Unit Based Pharmacist (NUBP), functioning as the research pharmacist, will collect study data on both study groups. In the intervention group, the NUBP will provide daily monitoring of subjects' glycemic control and communicate with the medical team to facilitate nomogram-driven insulin regimen adjustments. For both the usual care and study intervention groups, pharmacist monitoring will include insulin administration issues, nurse-driven insulin changes (e.g., hold dose/NPO/change dose), adverse drug event avoidance, adverse drug event reporting and one-on-one nurse or medical team education interventions.

Study Data: Data to be collected includes: length of stay, insulin regimen prescribed, length of insulin therapy, daily blood glucose results, insulin administration in response to blood glucose results, number of days with glucose values >180-200 mg/dL or <70 mg/dL, number of days that glucose targets were attained, medication errors, educational interventions, and study related costs.

Statistical Analysis: The study will be analyzed on an intent-to-treat basis. All statistical analysis will be performed at the alpha level of 0.05. Fisher's exact test will be used to evaluate differences in percentages. T-tests will be used to compare means of independent variables. Analysis of variance (ANOVA) with a mixed model will be performed to analyze changes in blood glucose measures and economic outcomes. Regression analysis will be used for adjustments for different baseline measures.

#### ***Conclusions***

We will evaluate the difference between the groups of mean fasting glucose, mean random glucose, mean glucose during hospital stay, mean glucose difference between groups and percent of patients attaining glucose targets. Occurrence and avoidance of adverse events

and medication errors, and number of pharmacist interventions and interactions with the medical team and nurse will also be examined. Direct cost and opportunity cost analyses will also be performed. The impact of a collaborative care model for inpatient diabetes involving by hospital pharmacists and hospitalists will be evaluated.