USING DATA TO SUPPORT GLYCEMIC MANAGEMENT IN THE INPATIENT SETTING

Virginia Peragallo-Dittko
Executive Director, Diabetes and Obesity Institute
Winthrop University Hospital
Professor of Medicine
Stony Brook School of Medicine
Who We Serve at Winthrop
591-bed major teaching hospital

Diverse racial and ethnic communities served

54% increase in diabetes admissions since 2000
Our Journey- Where We Began

- Business-as-usual model, not following the Standards of Care
- Regular insulin sliding scale
- Look alike-sound alike types of insulin on formulary
- Orange juice loaded with sugar to treat hypoglycemia with no evaluation of efficacy
- POC Blood Glucose measured more than an hour before correction dose of insulin given
- 1800 ADA diet
- No tools for patient education by direct care nurses
Our Journey
Where We Are Now

- Evidence-based care according to Clinical Guidelines
- 27 insulin-specific computerized order sets including hyperkalemia
- Physiologic Insulin Replacement
- Focused insulin formulary
- No oral agents except for treatment of Gestational diabetes
- Robust, effective Hypoglycemia Protocol
- POC glucose performed by RN allowing for coordination of blood glucose, insulin and meal
- Consistent Carbohydrate diets. Carb counts on menus
- Tools for patient education based on assessed learning needs
- Follow-up appointments with Primary Care Providers
Hospital-Wide Insulin Safety Committee

Mission:

To improve the safety of insulin administration practices through core program components including disease-specific care standards, clinical practice guidelines and performance measurement.
How Did We Get Here?

**POSITION STATEMENT**

**Standards of Medical Care in Diabetes**

**Winthrop-University Hospital Inpatient HbA1c Ranges**

- **May 2012**
  - Range <7.0: 59%
  - Range 7.0-10.0: 31%
  - Range >10.0: 10%

- **June 2012**
  - Range <7.0: 57%
  - Range 7.0-10.0: 37%
  - Range >10.0: 6%

*Winthrop University Hospital Diabetes and Obesity Institute*
Hypoglycemia Data

Winthrop-University Hospital Data
2010 Pre-Intervention Data as Compared to Prevalence of Hypoglycemia 2012-2016
Drill Down to Reveal More Detail and Contributing Factors

August 2016 (prevalence 0.37%)
Severe hypoglycemia (blood glucose less than 40 mg/dL)
(1 event)
- 13 events in patients >80 y
- 11 events in patients not treated with insulin
- 6 events in patients who do not have diabetes
- 19 patients admitted to the hospital because of hypoglycemia
- 4 events following treatment for hyperkalemia
Hypoglycemia Protocol Study Aims

- Does Winthrop’s hypoglycemia protocol (NPO with IV access) correct patients effectively 15 minutes post treatment as defined as glucose > 70 mg/dl?

- Does the utilization of 50 mL of dextrose 50% (25 gm) overcorrect patients to a glucose level > 180 mg/dL, at the 1 hour 15 minute mark post treatment?

- Are there any patient factors which could account for the differences in patients who failed to correct or overcorrected?
Distribution of Glucose 1 Hour 15 Minutes Post Treatment

- Mean: 134.82
- Median: 132.00
- Std Dev: 38.341
- Minimum: 29.000
- Maximum: 325.00
Hypoglycemia Study Summary

- Winthrop’s Nurse Driven Hospital Wide Hypoglycemia Protocol (NPO with IV access) is a very effective method of rapidly correcting all causes of hypoglycemia.

- Overcorrection to glucose levels > 180 mg/dL does occur at a rate of 10%.

- Factors for overcorrection:
  - Baseline glucose had no impact on overcorrection.
  - Factors analyzed predicted that age and BMI were protective of overcorrection.
Key Messages

- Multidisciplinary - role of the Pharmacist
- Data do not have to be sophisticated nor completely computerized
- Data not only build excitement for the team with improvement but raise concern and aid in problem solving
- Start with high risk areas where you can have greatest impact