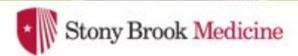


Quality Diabetes Care: Engagement through Innovation & Standardization

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Background:

Stony Brook Medicine cares for over 7,000 inpatients with diabetes annually, crossing the spectrum of clinical care by both disease state and geographic location. In order to align with best practices, Stony Brook underwent a dramatic transformation to align the institution with national standards of care in diabetes management. As a chronic “secondary diagnosis,” diabetes is associated with a significant increase in length of stay, risk for readmission. Uncontrolled diabetes contributes to increased morbidity and mortality among all hospitalizations. Through development and implementation of four major pillars: 1. “glucometrics”; 2. policy & procedure; 3. standardized order entry; and, 4. system-wide education), our multidisciplinary team achieved significant improvements in system-wide diabetes outcomes as well as markedly reduced length of stay and readmission rates, resulting in a net savings to the institution of over \$7.2 million.

Project Strategy:

In 2015, a Diabetes Advisory Committee (DAC) was formed under the purview of a new hospital quality strategy vector focusing on clinical outcomes. This group was charged with spearheading the transformation and driving the innovation needed to establish Stony Brook as the region’s leader in diabetes care and a recognized diabetes center of excellence. The clinical impact of diabetes care is far ranging and influences many familiar hospital outcome measures, providing a barometer for specific clinical process measures of diabetes care with national and regional benchmarks outlined by the American Diabetes Association (ADA) and the New York State Partnership for Patients (NYSPFP). The evolution of diabetes care at Stony Brook has included each of these "glucometric" measures defined, tracked, and analyzed through a series of real-time and historic automated dashboard monitors. Through improvement cycles and amendments within the EPR, Stony Brook standardized safe and protocolized insulin ordering and administration while developing a glucometric flag system to ensure safe and outcomes-driven progression. These efforts were paired with a dynamic and novel educational strategy leveraging a diverse and broad array of learning platforms, both in-person and on-line.

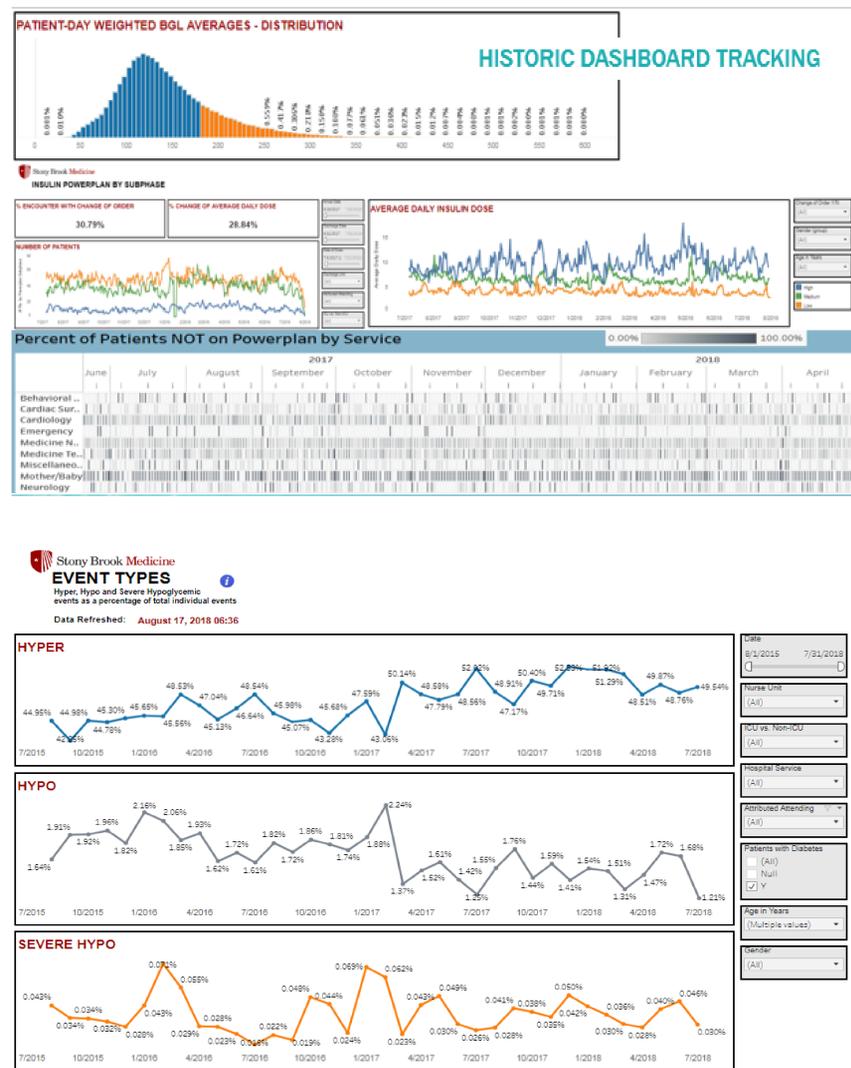
Stony Brook has developed the ability to identify and risk-stratify all inpatients based on diabetes and associated risk factors, while simultaneously tracking quality outcomes with real time and historic automated analysis.

Glucometrics:

Diabetes care and associated metrics are well defined by the ADA and include further program and quality measures as outlined by the Joint Commission Advanced Disease Specific Certification for Inpatient Diabetes. Stony Brook began by establishing baseline reports from coded data, obtained through the Vizient Clinical Database. These measures used a series of diabetes ICD-9/10 codes for all diabetes diagnoses and included:

- Rate of hemoglobin A1C (HbA1c) within 90 days of inpatient admission
- Readmission with 7/14/30 days
- Length of stay (LOS) and LOS index
- High-risk patient stratification
- Utilization of appropriate carbohydrate controlled diets
- Instances of hypo- or severe hypoglycemic events
- Patient volume and CMI
- Insulin pump utilization

Each of these process and outcome measures were then designed into a Tableau reporting program in conjunction with our Cerner EPR platform. Working with our Information Technology and Visualization teams, designed, built, tested and deployed a real-time diabetes dashboard with access through an online portal. Pulling directly from the EPR based on these diabetes ICD-9/10 codes and associated clinical flags, all patient histories and select clinical criteria were available within one hour of entry into the EPR. A secondary historic dashboard was then designed to monitor these same flags on a trended basis over time. This dashboard innovation allows for real-time filtering by ordering physician, patient unit location, and patient level glucose history, allowing



Standardized Care & Outcomes:

System-wide insulin ordering standardization based on patients’ insulin sensitivity impacted each of the defined glucometrics, as well as provided tracking within these dashboards for appropriate regimen selection throughout a patient's admission. In accordance with ADA guidelines, Stony Brook has worked with our Laboratory department to align thresholds of hypoglycemia, critical value reporting, and HbA1c referential histories within the EPR.

Current data analyses report significant improvements from a 2014 baseline period:

- HbA1c compliance within 90 days of admission has increase from **50%** at baseline to **87%** in Q2 2018 and is closely tied to select order inclusions within the new PowerPlans.
- 30-day readmission rates have decreased from a baseline **16.82** to **12.85%**, paired with a LOS index decrease from **1.14** to near **1.0** for 2017. These improvements in patient care and throughput are associated with a net savings of over **\$7.2 million**.
- Implementation of standardized insulin ordering has aligned administration schedules while decreasing point-of-care fingerstick glucose checks by over 10,000 tests per quarter, streamlining of nursing workflow in support of patients with diabetes.
- Standardized policy for the recognition of and support for patients utilizing insulin pump therapy, system-wide.
- Diabetes-specific patient safety reporting in order to inform a robust RCA approach to diabetes “never events” in the hospital.

