Profile
Orange Regional Medical Center (ORMC) is a 501(c)(3), non-profit organization. Formed by the merger of Arden Hill Hospital and Horton Medical Center, Orange Regional moved the two campuses into a single-site, new, state-of-the-art facility on August 5, 2011. This is the first new hospital built in New York State in over 20 years, boasts seven floors of state-of-the-art technology, provides 383 beds, and employs over 2,400 healthcare professionals. More than 600 doctors have privileges at the hospital and treat thousands of area families, friends and neighbors. In addition to the main hospital, we also provide several outpatient services, including diagnostic imaging and laboratory services. With the opening of our Outpatient Building, many of our outpatient services previously provided at other off-campus locations, have relocated into this new, state-of-the-art building on our main hospital campus in Middletown, NY.

The Challenge
With the inception of Epic EMR in 2011, an opportunity to leverage technology to improve diabetes outcomes was presented. Glycemic control was suboptimal, especially in the Intensive care units. Previous insulin infusion protocols had rates of hypoglycemia (glucose < 70 mg/dl) of 66% and a 6% rate of severe hypoglycemia (glucose < 40 mg/dl.). Additionally, the average time to target was over 17 hours. There was no standardized protocol to manage hyperglycemia. Our institution did not have an inpatient endocrinology team to “manually fix this problem. It is well known that uncontrolled hyperglycemia in the inpatient population impacts mortality, complication rates and length of stay.

Implementation Overview
Our institution utilized Epic and web integrated glucometers to provide baseline data. The tools available in Epic EMR were optimized and new ones were built: order sets, patient clinical reports, flow sheets, and best practice advisories. A new interface was built which incorporated a third party software system for insulin infusion management (Glytec Glucommander®). The Glytec software, which uses a predictive algorithm for precise insulin dosing and hypoglycemia management, was fully integrated with the clinical tools within the EPIC EMR. The system allowed for real-time hospital-wide monitoring of current insulin infusion patients and potential candidates for insulin infusion. Glucommander went live in January 2015 in the ED and Intensive care Unit.

Key participants involved in the process:
Physicians, Nurses, Diabetes coordinators, Dietitians, Pharmacists and I.T team.

Resulting Value / ROI
In the year post Glucommander implementation there was a 50% decrease in in time to target post insulin infusion initiation (from >17 hours to 8 hours and 45 min), a concurrent decrease in hypoglycemia (glucose <70 mg/dl) from 66% to 16.3%, and a decrease in severe hypoglycemia (glucose <40 mg/dl) (from 16.3% to 0%). End user satisfaction also increased with utilization. The length of stay in the ICU for reason of hyperglycemia decreased, freeing up valuable ICU beds. A parallel study showed that mortality decreased as hyperglycemia...
mia improved, moving in tandem until glycemic values reached 182 mg/dl, supporting current ICU guidelines (glucose target 140-180 mg/dl).

**Lessons Learned**
The support of hospital administration was essential in the prioritization of this glycemic project and in the provision of necessary resources.

The creation of a comprehensive project team consisting of diabetes coordinators, physicians, nurses, IT, dieticians, pharmacists and others was essential to explore and identify areas of weakness, which were then targeted for improvement.

Education of nurses and providers in the principles of diabetes management, along with ongoing bedside training and support should not be underestimated. It is essential for success.

Utilization of system analytics can provide key insights that can lead to improved outcomes, efficiencies and end user satisfaction.

“Providing clinicians with actionable data for patient-specific insulin dosing has demonstrated a faster time to normalization. This initiative effectively aligned functional IT capabilities with the practical needs of clinicians.”

Brian Tew CHCIO, VP & CIO

“We are pleased to have received Stage 7 designation, as it acknowledges our efforts in leveraging technology as we improve the health of the communities we serve.”

Brian Tew CHCIO, VP & CIO