GLYCEMIC CONTROL
MENTORED IMPLEMENTATION
PROGRAM (GCMI)

CASE STUDY
Sutter Roseville Medical Center
Roseville, California
THE CHALLENGE

Diabetes mellitus (DM) has reached epidemic proportions in the United States. A reported 9.3 percent of adults over 20 years of age have diabetes, representing more than 20 million persons. Complications from diabetes are significant and can include kidney failure, lower extremity amputations, eye problems and blindness, heart disease, hypertension and stroke. Hyperglycemia and hypoglycemia and related conditions are prevalent in hospitalized patients and are associated with an increase in morbidity and mortality, creating the potential for poor outcomes in a wide range of hospital inpatients.

Hospitals nationwide face challenges with providing effective and safe inpatient glycemic control for both critical and noncritical hospitalized patients who are diabetic or at risk for diabetes. Patients with diabetes or prediabetes who are hospitalized for another illness, for minor or major surgery, or for trauma or other health problems present a special challenge to clinicians. In addition, the number of patients hospitalized specifically for diabetes is increasing. From 1988 to 2009, the number of hospital discharges with diabetes as first-listed diagnosis increased from 454,000 to 688,000.

Promoting better inpatient glycemic control is increasingly identified as a major priority by quality improvement (QI) organizations and hospital administrators and medical staff for preventing readmissions, improving quality and providing patient care with better outcomes.

A PROVEN SOLUTION: GLY

The Society of Hospital Medicine’s (SHM’s) Glycemic Control Mentored Implementation Program (GCMI) supports the development and implementation of glycemic control programs at hospitals nationwide with the ultimate goal of optimizing the care of inpatients with hyperglycemia and diabetes and preventing hypoglycemia.
SHM’s Glycemic Control program guides hospitals on the institution of best practices and offers access to resources to facilitate these processes. These include:

- Clinical tools (insulin orders, protocols and guidelines)
- Data Registry to track and trend hypoglycemia, uncontrolled hyperglycemia and hypoglycemia management (glucometrics)
- Benchmarking to allow for comparison of performance across multiple sites
- Project management tools
- Implementation guide with step-by-step details for planning an intervention
- Educational tools designed to provide background information for professionals new to quality improvement
- Review of key literature
- Active listserv to facilitate the exchange of information and sharing of success stories

The Glycemic Control program provides comprehensive support including year-round coaching and mentoring from national experts. Mentors with expertise in QI and diabetes work with participating teams to tackle issues specific to each hospital utilizing proven QI work techniques. Mentoring takes place during scheduled webinars and telephone calls offered over a 12- to 18-month period. Instruction is organized around the step-by-step Glycemic Control Implementation Guide.

Topics include:

- Care coordination and thorough follow-up care
- Effective hypoglycemia management and prevention protocol
- Infusion insulin
- Subcutaneous insulin protocols
- Transition from subcutaneous to infusion

The online Glycemic Control Resource Room is a comprehensive resource that offers best practices and the latest information utilizing run charts to measure effectiveness, process mapping and methods for managing and retaining success rates, and demonstrate financial return on investment. This valuable tool provides links to guidelines, key references and examples of order sets, algorithms, protocols and educational materials.

For additional information and pricing, please contact Ann Nolan at anolan@hospitalmedicine.org or call 267-702-2674.
IMPLEMENTING NEW ORDER SETS AND ADVANCING GLUCOSE CONTROL AT SUTTER ROSEVILLE MEDICAL CENTER AND ASSOCIATED HOSPITALS
IN 2009, SHM LAUNCHED GLYCEMIC CONTROL MENTORED IMPLEMENTATION IN A COHORT OF 30 HOSPITALS NATIONWIDE. Now in its third round, the program is underway at 100 hospitals across the United States.

SUTTER ROSEVILLE MEDICAL CENTER, Roseville, California:
Established in 1982, Sutter Roseville Medical Center is a community-based, nonprofit 313-bed hospital serving Placer County and metropolitan Sacramento in northern California. Sutter Roseville is part of the Sutter Health Network, which includes 24 acute care hospitals.

Sutter Health Network's main medical center in Sacramento began the GCMI program in 2010 by implementing one new subcutaneous insulin order set and related training. In 2012, the hospital rolled out the new order set to several of its network hospitals and plans to expand the program’s reach.

“I started out as a glycemic control champion for Sutter Roseville,” explains Karrie N. Berg, DO, a hospitalist based at the medical center. “A physician at our Sacramento hospital was passionate about managing diabetes and controlling blood sugars in the hospital setting. This physician works with GCMI and the mentorship program.”

After some staffing changes, Berg became more involved with the Glycemic Control program and assumed a regional leadership role for glycemic control at six Sutter hospitals, including Roseville and Sacramento.
Berg noted the importance of the multi-disciplinary team in the Glycemic Control program. “This has been a group effort,” she notes. “We have physicians, nurses, pharmacists, nurse leaders, unit nurses from different areas of the hospital, surgical, ICU, medical and telemetry who help train and build awareness of the program.”

Sutter’s leadership fully supported the initiative. “Our institution is invested in this program because hyperglycemia in the hospital is very important and the research shows that when it is not controlled it can lead to infection, pneumonia and even mortality,” remarks Berg.

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The data from Sutter SHOWCASES THE SUCCESS of SHM’s Glycemic Control program.

- Sutter was able to reduce the percent of days with a day-weighted mean blood glucose of ≥ 180 from a high of 33 percent to a low of 19.5 percent.
- Sutter reduced the mean time between first glucose reading less than 70 and next documented reading from a high of 146 minutes to a low of 45 minutes.
- Sutter reduced the mean time between first glucose reading less than 70 and resolution from a median of 100.8 minutes to 65.4 minutes during the same time period in two years (2010/2012).
- Sutter was able to increase the percent of readings per stay that were in range during a three-year period.

In addition to launching the first order set, Sutter hospitals are preparing to institute the new order sets developed at Sacramento. These include operating room order sets that provide patients instructions for the morning of surgery in addition to managing their medical condition and medications at home. Another order set provides instructions for anesthesiologists during surgery.

Plans are also underway for diabetic ketoacidosis (DKA) and insulin drip order sets. “We learned through a clinical trial at Roseville that DKA was sporadic in the ER,” explains Berg. “Patients are often in the ER for long periods of time and we are looking into starting treatment earlier to avoid sending them to the ICU. This will prevent patients from becoming sicker and save the hospital money as well.”

While the challenges of prescribing insulin in the hospital are many, they are not insurmountable, especially when hospitals participate in programs such as SHM’s Glycemic Control program.

“We are offering better diabetic education services to patients while in the hospital and after they are sent home. Our ongoing staff training and education shows positive results. We have been very happy with the GCMI program. Our plan now is to continue with the educational process for the new order sets and return to the hospitals to re-teach and make certain everything is going right. Our data is demonstrating that inpatient glycemic control is working,” Berg notes.
The Society’s mission is to promote the highest quality care for hospitalized patients, and provide opportunities and support to hospitalists.

ABOUT THE SOCIETY OF HOSPITAL MEDICINE (SHM)

SHM is the largest organization in the nation representing more than 10,000 hospitalists and the practice of hospital medicine. The Society’s mission is to promote the highest quality care for hospitalized patients, and provide opportunities and support to hospitalists. It is committed to enhancing the practice of hospital medicine by promoting education, research and advocacy, and does so in part by offering a host of evidence-based tools at www.hospitalmedicine.org/thecenter.