PRE-OPERATIVE GLYCEMIC CONTROL PRIOR TO ELECTIVE SURGERY

1. CASE FOR CHANGE

Long term glycemic control and perioperative hyperglycemia are recognized risk factors for infectious complications in diabetic surgical patients.** Hyperglycemia in the peri-operative setting doubles the SSI risk. Current Anesthesia Guidelines should be reviewed by the Primary Care Provider (PCP) to mitigate risk in diabetic patients, current anesthesiology guidelines state “HgbA1C within 90 days of surgery is recommended . Consider delaying procedure with results greater than 8 until blood sugars are under adequate control. Finger stick glucose done at time of arrival the day of surgery”**

- Baseline data from Mercy System Review Jan-2016 thru Sept. 2017 revealed 8,025 patients 18 yrs or older with Diabetes. Of these, 79% had a Hgb A1C < 8.9% and 10% had a Hgb A1C of 8.3 to 9.0 and 11% had a Hgb A1C > 9.1
- 7% of the Pre-op OR cancellations in EPIC (7/1/2016 thru 6/30/2017) were due to elevated HgbA1C or blood sugar.
- Current Pre-op H & P does not pull the last HgbA1C from problem list for Type 1 or Type 2 Diabetic patients.
- Currently no standardized tool/guideline to address Glycemic Control Prior to Surgery.

**https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4934432/**

2. CURRENT STATE

- EPIC OR Cancellation report showed 7% of OR cancellations (7/1/2016 thru 6/30/2017) were due to elevated HgbA1C or blood sugars
- Meds to take and hold policy included orals and insulin directives
- No Pre-operative evidence based algorithm for Pre-operative glycemic control for adult patients undergoing elective surgery
- Mercy Diabetes Committee working with EPIC Physician builder team to add interventions if HgbA1C >9 to prompt providers to choose referral to Diabetes Center, med adjustment, or insulin institution
- The Pre-op H & P did not prompt providers to ensure a HgbA1C was completed within 3 months of surgery or that patient education regarding oral and injectable insulins was completed. It also did not address what to do with the HgbA1C result for the patient undergoing elective surgical procedures
- Mercy Quality Management has identified HgbA1C as Quality metric

3. TARGET CONDITION

- Goal is 100% compliance of HgbA1C drawn within 3 months on all Mercy system diabetic patients before elective surgery
- EPIC Mercy System Review report to capture all Mercy patients 18 years or older with Type 1 or 2 Diabetes and HgbA1C < 8.1 to 9.2 and HgbA1C > 9.1
- Develop a standardized pre-op glycemic control tool/algorithm for use by Mercy care providers, Anesthesia and Perioperative Team
- Decrease in OR cancellations due to high HgbA1C or high blood sugars
- Increase in pre-op referrals to Mercy Diabetes Clinic for glycemic optimization

4. ROOT CAUSE/GAPS

- Identify root causes of lack of referral from Mercy PCP to the Outpatient Diabetes Clinic
- Mercy PCP’s unaware of resources available/cost of Outpatient Diabetes Clinic services
- No clear direction/algorithm to guide the PCP to optimize patients for surgery
- Perioperative Teams lack of awareness that HgbA1C and high blood sugars were causing day of surgery cancellations
- Pre-Op Meds to Take and Hold Prior to Surgery policy needed updated to reflect the latest

5. POSSIBLE SOLUTIONS

- Staff education and marketing of the Diabetes Clinic for optimization
- Make the Pre-op H & P smarter to pull from problem list the Diabetes diagnosis and suggest the options available to optimize the patient for surgery
- Trial the diabetes education with the Ortho population in coordination with the Total Joint Class, diabetic specialist to instruct on night and morning of surgery in coordination with PCP
- Standards the pre-optimization algorithm for use Mercy System wide and build as protocol in EPIC
- Engage all PASE/Pre-op staff/PCP/Anesthesia/and Surgeons and identify their role in pre-op optimization for elective surgical patients

6. TRIALS

- 11-15-2017: Physician Leadership Quality Council accepted the new algorithm with suggested revisions
- New H & P Smartnote trialed with 3 providers initially to seek input and test the build
- New H & P Smartnote created and sent to all Mercy system diabetic patients before elective surgery
- Perioperative Teams lack of awareness that HgbA1C and high blood sugars were causing day of surgery cancellations
- Pre-Op Meds to Take and Hold Prior to Surgery policy needed updated to reflect the latest

7. COMPLETION PLAN

- Preoperative Glycemic Control Prior to Surgery
  - Hgb A1C (within 3 mo)
  - 8.1-9.0%
  - 5.8%
  - >9%
  - <5%
- Strongly encourage to postpone elective surgery & discuss with anesthesiologist/or and surgeon
- Consider referral to outpatient diabetes center
- Show 2 weeks of improved DM control (avg BG < 180 mg/dl)
- Proceed with surgery

8. RESULTS

- Developed and vetted the “Pre-operative Glycemic Control Algorithm Prior to Elective Surgery” through the Physician Leadership Council and educated out to all Mercy Physician Clinics
- Algorithm to Medical Director council in January of 2018
- Most recent data (March 2018) shows a decrease in OR cancellations due to elevated Hgb A1C or blood sugars by 5% from baseline data (7/1/2016 thru 6/30/2017)
- Mercy system baseline data revealed the number of referrals for patients with Hgb A1C > 9.1 sent to the Outpatient Diabetic Clinic Pre-op was 45% and increased to 50% of patients after the algorithm went LIVE (EXCEL) 723534
- Algorithm added to Pre-op smart note
- Policies reflecting the new process were updated including:
  - “Meds to Take and Hold Prior to Surgery”
  - “Anesthesia Pre-operative Testing Guidelines”

9. LESSONS LEARNED

- Great collaboration with Anesthesia, Dr. Yacoub, Diabetic Clinical Specialist and Diabetes Committee to coordinate care for pre-op optimization for the surgical patient
- Identified opportunity to review the scope of the Clinical Diabetes Educator role in pre-op optimization
- Process Improvement projects can impact OR cancellation rates

REFERENCE:
*Diabetes and Risk of Surgical Site Infection: A systematic review and meta-analysis* [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4934432/]