

Perioperative Monitoring Protocol for Euglycemic Diabetic Ketoacidosis in Patients Using SGLT-2 Inhibitors

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INTRODUCTION

- SGLT-2 inhibitors (SGLT-2i's) are widely used to treat type 2 diabetes (T2DM), heart failure, and chronic kidney disease.
- Despite their benefits, SGLT-2i's are associated with euglycemic diabetic ketoacidosis (eDKA) in the perioperative period.
- The FDA recommends holding most SGLT-2i's to reduce the risk of eDKA while fasting, but postoperative monitoring is evolving.
- In this study, a retrospective analysis was performed for surgical patients taking SGLT-2i's. A protocol was also developed for pre- and postoperative assessment, risk stratification and monitoring to reduce the risk of eDKA

AIM STATEMENT

- AIM: To increase the percentage of cases with appropriate postoperative labs for patients who have failed to hold SGLT-2i by 15% over a 3-month period.

PRE INTERVENTION

- A multidisciplinary team developed an intervention to standardize preop assessment, medication holding guidelines, and lab ordering for high-risk patients
- These protocols were formally introduced at departmental grand rounds and disseminated via departmental email.

BENCHMARK DATA

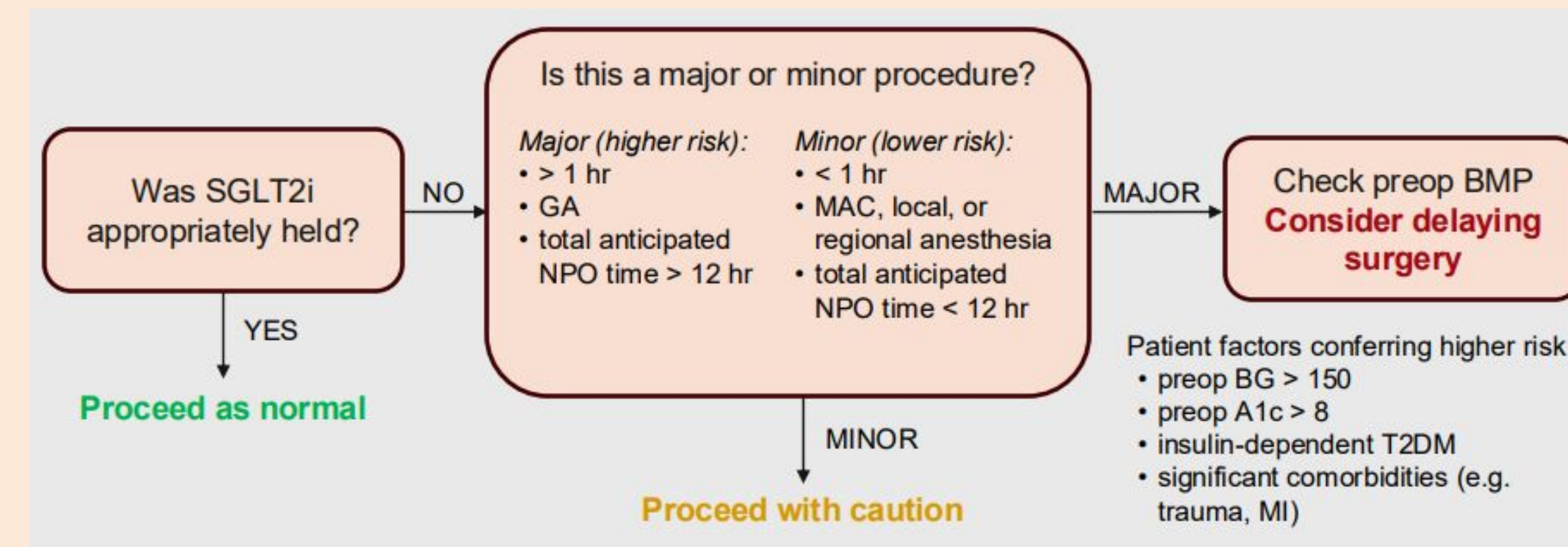


Figure 1: Proposed protocol to standardize preoperative assessment and monitoring of patients taking SGLT-2i's

- Alongside protocol development, retrospective analysis of adult inpatient and outpatient cases at an academic institution was conducted over 24-months
- SGLT-2i usage was assessed with labs ordered pre- and post- operatively
- Of 119,154 adult patients, 4.1% (n = 4859) were taking SGLT-2is. Of those, between 65 and 75% had a diagnosis of T2DM versus heart failure, renal failure. 74% patients taking SGLT-2is for T2DM received preoperative fingerstick glucose (FSG) screening, and 15% underwent testing with a BMP and anion gap
- Of those taking SGLT-2i's for non-diabetes indications, 48% received a pre-op FSG and 16% had BMPs drawn

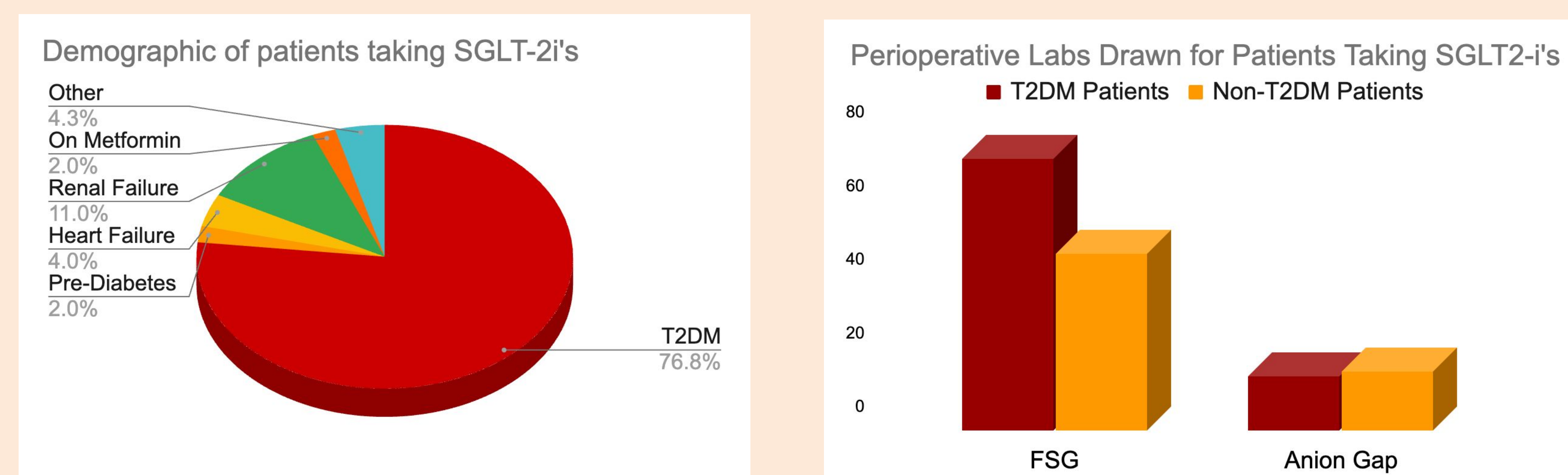


Figure 2: Pre-intervention perioperative laboratory values for patients taking SGLT-2i's, for T2DM and non-T2DM indications

DISCUSSION

- Results suggest that while providers are appropriately screening diabetic patients' FSGs at a higher rate, there is no apparent escalation of BMP/AG screening despite T2DM conferring elevated risk of eDKA
- Limitations include that EMR data did not capture which patients failed to hold their SGLT-2i's.
- Benchmark data primarily represent the rate at which pre- and postoperative screening was performed in diabetic and non-diabetic patients, but not whether those tests were indicated based on failure to hold SGLT-2is in the perioperative period.

POST INTERVENTION RESULTS

- With standardized protocols recently disseminated at Grand Rounds and post-intervention data collection in progress, the initiative will continue to focus on trackable documentation of SGLT-2i holding compliance, risk stratification, and standardized intraoperative and postoperative screening.

REFERENCES

- Raiten JM, Morlok A, D'Ambrosia S, Ruggero MA, Flood J. Perioperative Management of Patients Receiving Sodium-Glucose Cotransporter 2 Inhibitors: Development of a Clinical Guideline at a Large Academic Medical Center. J Cardiothorac Vasc Anesth. 2024 Jan;38(1):57-66. Doi: 10.1053/j.jvca.2023.10.011. Epub 2023 Oct 10. PMID: 37932195.