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Optimization and adjustment of non-cardiac medications before surgery

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statins

- The use of long-term lipid-lowering therapies for primary and secondary prevention of atherosclerotic cardiovascular events is well established.

- Hydroxymethyl glutaryl coenzyme A reductase inhibitors (statins) reduce atherogenic low-density lipoprotein (LDL)-cholesterol, confer pleiotropic anti-inflammatory effects, and may confer benefits to patients in the perioperative period and beyond.

- The postulated mechanism for a benefit from statins is related to their pleiotropic effects, primarily reducing inflammation and stabilizing plaques.

statins

- In patients currently on statins and scheduled for NCS, continuation of statin therapy is recommended to reduce the risk of MACE.

- In patients who are not on statin , and meet criteria for statin use based on ASCVD history or 10-year risk assessment and are scheduled for NCS, perioperative initiation of statin is recommended with intention of long-term use.

Renin-Angiotensin-Aldosterone System Inhibitors

- ACEi and ARBs are widely used for their antihypertensive and cardiac benefits; therefore, the safety and efficacy of the perioperative use of RAASi is of importance.
- intraoperative hypotension (MAP <60 mm Hg) occurred more commonly when these agents were continued; however, continuation compared with omission did not result in worse clinical outcomes
- RAASi confer a significant reduction in mortality and even dose-dependent reduction in outcomes such as hospitalizations for HF, particularly in patients with LVEF <40%.

Renin-Angiotensin-Aldosterone System Inhibitors

- In select patients on chronic renin-angiotensin-aldosterone system inhibitors (RAASi) for hypertension undergoing elevated-risk NCS, omission 24 hours before surgery may be beneficial to limit intraoperative hypotension.
- If the patient takes them for heart failure with reduced ejection fraction, it is reasonable to continue them perioperatively.

Sodium-glucose cotransporter inhibitors (EMPAGLIFLOZIN)

Inhibit SGL2

Glycosuria +fasting+ surgicals stress increased ketone production and risk of euglycemic DKA

It is recommended to stop it 3 days before surgery

Has a time dependent washout recuirement

Empagliflozin—The Counterargument You Must Acknowledge

- Why continuation is debated: Discontinuation may attenuate cardiorenal protection; some retrospective data suggested holding was associated with more major postoperative complications , though confounded .
- · Shift from universal holding to risk-based stratification—patients with diabetes + fasting + major surgery remain high-risk for euDKA and warrant holding .
- · This patient's risk profile: Diabetes 12 years + major open abdominal surgery + prolonged fasting + potential hypoperfusion = high euDKA risk. The cardiorenal benefit of 3 days of continuation is outweighed by the risk of a perioperative metabolic crisis.
- · What you must monitor if held: Capillary ketones (beta-hydroxybutyrate) if any unexplained acidosis, nausea, or tachycardia develops postoperatively .
- Decision: Hold. Document the rationale. Resume only when full oral intake is restored and hemodynamics are stable.

Empagliflozin—The Evidence for Holding

- Mechanism of harm: SGLT2 inhibitors promote glycosuria and ketogenesis; fasting and surgical stress amplify ketone production while glucose remains deceptively normal .
- · Systematic review data: Among 99 published cases of perioperative SGLT2i-associated ketoacidosis, no episodes occurred when the drug was discontinued ≥3 days before surgery .
- · FDA guidance: Hold SGLT2 inhibitors for at least 3–4 days preoperatively .
- · Guideline evolution: Recent SPAQI consensus (2026) moves toward risk-stratified rather than universal discontinuation—but for major surgery with prolonged fasting, holding remains the safe default .
- Bottom line for this patient: Hold empagliflozin 3 days preoperatively (or 4 days if renal function is borderline—CKD 3a)

Metformin

- Standard practice: Hold metformin on the day of surgery (or the morning dose if on twice-daily dosing).
- · Why not days before? Metformin does not cause ketoacidosis; the concern is lactic acidosis in the setting of renal hypoperfusion or tissue hypoxia.
- · This patient's risk factors:
  - · CKD stage 3a (baseline eGFR likely 45–59)
  - · Major open abdominal surgery → fluid shifts, potential bleeding, hypotension
  - · Heart failure with LVEF 40–45% → susceptible to hypoperfusion
- · Guideline support: Metformin is typically resumed when renal function is confirmed stable and oral intake resumes—usually 48–72 hours postoperatively in major surgery .
- Decision: Hold on day of surgery. Check renal function (creatinine/eGFR) on postoperative day 1 before restarting

Active ACS Symptoms Change Everythingive

· This patient has recurrent ischemic symptoms, dynamic ECG changes, and elevated troponin.

· No amount of perfect drug management compensates for operating on a patient with active myocardial ischemia.

· Before finalizing any medication plan:

  · Has cardiology been consulted today?

  · Is there a plan for repeat angiography if troponin is rising?

  · Could a 24–48 hour delay for cardiac optimization be justified even in "time-sensitive" surgery?

· The anesthesiologist's role: You are not just managing drugs—you are the last line of defense against proceeding with an unoptimized cardiac patie