Surgical Patient Optimization Guideline Checklist

Preoperative Clinicians

Level 1

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The current state of the issue

Anemia and poor glycemic control are key modifiable risk factors that worsen perioperative outcomes in those undergoing major surgery. Both preoperative anemia and perioperative hyperglycemia are associated with longer hospital stays[i], increased costs, higher morbidity and mortality[ii],[iii], and worse recovery. Even mild anemia can affect 30-day outcomes, and perioperative glucose levels predict short-term mortality[iv], while evidence shows hyperglycemia impacts non-diabetic patients more negatively than those with diabetes. In Washington state, there is significant variation in practices regarding anemia management and glycemic optimization in patients with and without diabetes.

General Preoperative Glycemic Optimization

- ☐ **At the time a referral for major elective surgery is considered, evaluate glycemic control** in all patients.
  - ☐ Screen for risk factors and develop a plan for testing and treating hyperglycemia in all patients coming for surgery.
  - ☐ **Not all people with diabetes have been diagnosed yet**. Screen each patient referred for surgery for risk factors not previously indicated on medical record.
  - ☐ **Consider testing HbA1c.** Perform testing as early as possible in presurgical process. (i.e. with enough time to be able to make changes to optimize patient health)

Preoperative Glycemic Optimization for Patients with Diabetes

- ☐ Perform a preoperative risk assessment for people at high risk for ischemic heart disease, those with autonomic neuropathy or renal failure, per most updated American Diabetes Association guidelines.
- ☐ Discuss and determine goals (e.g., reduction of HbA1c, increase in hemoglobin/hematocrit levels) of medical optimization of glycemic control and anemia before surgery.
- ☐ Set an HbA1c goal for surgery
  - ☐ Whenever possible, target should be HbA1c <8%.
  - ☐ HbA1c is highly individualized, and goals of optimization should be made between patients and providers considering co-occurring conditions and risks for

hypoglycemic events.

- [ ] Plan medication management as appropriate, including but not limited to: v
  - [ ] Insulin transition plans for insulin-dependent patients with diabetes, including those on automated insulin delivery systems (AID)
  - [ ] Basal insulin plus pre-meal short- or rapid-acting coverage supports improved glycemic outcomes and lower perioperative complications.
  - [ ] Reduction of 25% basal insulin dose given evening before surgery can lower risk of hypoglycemia.
- [ ] Consider holding oral diabetes medications
  - [ ] Newer oral meds all have prolonged fasting recommendations (currently clears only for 24hrs) and some may require holding for 72+ hrs: GLP-1 RAs and/or GLP-1/GIP Ras, DPP-4 inhibitors, SGLT2 inhibitors
- [ ] Holding versus continuing other meds will depend on renal function and other patient factors: Oral hypoglycemics, (metformin, sulfonylureas, meglitinides, thiazolidinediones, etc.) Consider holding SGLT2 inhibitors 3-4 days before surgery
- [ ] If a patient is unable to demonstrate good glycemic control (e.g., HbA1c < 8%), or plan for good glycemic control,
  - [ ] Consider the benefits and risks of recommending delaying the procedure until reaching the patient's individualized threshold for glycemic control. May also be influenced by availability of intensive perioperative glycemic control resources
  - [ ] Consider waiting to schedule the elective procedure until patient reaches their individualized threshold for glycemic control optimization

Perioperative Anemia Control

- [ ] As early as possible in the presurgical process in anyone being considered for intermediate, moderate, or high risk surgery, screen for anemia with complete blood count.
- [ ] For patients with anemia (Hb <13g/dL), identify underlying cause of anemia. Assessment should include the following
  - [ ] Comprehensive medical and medication history and physical exam
  - [ ] Order other lab tests as indicated to diagnose underlying cause. Consider the algorithm in Appendix H and other evidence-based resources for evaluation of anemia in healthy individuals in outpatient setting. Minimize blood draw amount (e.g., Peds tubes) when able
- [ ] Communicate anemia optimization plan with the surgical team, including relevant lab values, underlying cause as identified, and treatment goals and plan.
  - [ ] Repeat lab testing to assess response to treatment (CBC, iron studies, etc.)
    - [ ] If response is adequate, proceed to surgery
    - [ ] If response is inadequate (Hb <12 g/dL)
      - [ ] For urgent surgery, discussing risks and benefits of further evaluation and timing of determining underlying cause of anemia during the preoperative period.
      - [ ] For elective surgery with moderate or high risk of blood loss, recommend delaying surgery to further optimize anemia status.
  - [ ] Refer as needed to continue treatment for anemia after procedure complete.

- [ ] Special considerations for patients that cannot receive blood products:
  - [ ] Take a full medical history including history of anemia, abnormal bleeding, coexisting conditions, medical/surgical history, and current medications that could impact hemostasis
  - [ ] Consider discontinuation of medications that could induce coagulopathies (e.g., analgesics like NSAIDS, antibiotics like beta-lactams)vii, anticoagulants and review other medications or supplements that impact coagulations/platelet function
  - [ ] Consider higher hemoglobin level goals for preoperative management (e.g., Hb 13-14g/dL)
  - [ ] Determine with patient what blood products are acceptable/unacceptable. Clearly identify them in the medical record.
  - [ ] For patients that cannot accept blood products: Follow Evidence-informed guidelines for anemia optimization in patients that cannot accept blood products.

Resources

- The Bree Report on Surgical Patient Optimization is meant to supplement these resources.
  - Full Bree Report on Surgical Patient Optimization
  - Implementation Guide on Surgical Patient Optimization
  - Surgical COAP
  - Spine COAP
  - Guidelines - ERAS® Society
  - Clinical Strategies to Avoid Blood Transfusion

Read the full Bree Report on Surgical Patient Optimizations online by scanning the QR code:

Connect with the Bree Collaborative at bree@qualityhealth.org

References: [i] Schatz C, Plötz W, Beckmann J, Bredow K, Leidl R, Buschner P. Associations of preoperative anemia and postoperative hemoglobin values with hospital costs in total knee arthroplasty (TKA). Arch Orthop Trauma Surg. 2023 Nov;143(11):6741-6751. [ii] Musallam KM, et al. . Preoperative anaemia and postoperative outcomes in non-cardiac surgery: a retrospective cohort study. Lancet. 2011 Oct 15;378(9800):1396-407[iii] Myles, P. S., Richards, T., Klein, A., Wood, E. M., Wallace, S., Shulman, M. A., Martin, C., Bellomo, R., Corcoran, T. B., Peyton, P. J., Story, D. A., Leslie, K., Forbes, A., & RELIEF Trial Investigators (2022). Postoperative anaemia and patient-centred outcomes after major abdominal surgery: a retrospective cohort study. *British journal of anaesthesia*, *129*(3), 346–354. https://doi.org/10.1016/j.bja.2022.06.014[iv] van den Boom, W., Schroeder, R. A., Manning, M. W., Setji, T. L., Fiestan, G. O., & Dunson, D. B. (2018). Effect of A1C and Glucose on Postoperative Mortality in Noncardiac and Cardiac Surgeries. Diabetes care, 41(4), 782–788.

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