

**Selected Best Practices and Suggestions for Improvement**

**PSI 9: Postoperative Hemorrhage or Hematoma**

**Why Focus on Postoperative Hemorrhage and Hematoma?**

- Postoperative bleeding is a risk associated with all surgical procedures. The best way to reduce the risk of hemorrhage is to identify and correct potential causes of coagulopathy preoperatively as well as postoperatively.<sup>1</sup>
- Cases from the Nationwide Inpatient Sample that were flagged by this PSI had 3.0% excess mortality, 3.9 days of excess hospitalization, and \$21,431 in excess hospital charges, relative to carefully matched controls that were not flagged.<sup>2</sup>
- As value-based purchasing evolves, quality will be increasingly linked to payment. Perioperative hemorrhage or hematoma is not currently part of Medicare’s Hospital Value-Based Purchasing, but could be considered for future inclusion.

Recommended Practice	Details of Recommended Practice
Management of Blood Loss	Proper management of blood loss, including frequent dressing checks, is key to management of postoperative hemorrhage and hematoma. <sup>1</sup>
Medication Management	Determine if and when discontinuation of antiplatelet/anticoagulant medication prior to the procedure or surgery is appropriate. <sup>1,3,4,5</sup>

**Best Processes/Systems of Care**

**Introduction: Essential First Steps**

- Engage key preoperative/perioperative/procedure personnel, including nurses, physicians, and surgical technicians, and representatives from the quality improvement department to develop evidence-based protocols for care of the patient preoperatively, intraoperatively, and postoperatively to prevent postoperative hemorrhage or hematoma.
- The above team:
  - Identifies the purpose, goals, and scope and defines the target population for this guideline.
  - Analyzes problems with guidelines compliance, identifies opportunities for improvement, and communicates best practices to frontline teams.
  - Monitors measures that would indicate if changes are leading to improvement, identifies process and outcome metrics, and tracks performance using these metrics.
  - Determines appropriate facility resources for effective and permanent adoption of practices.

**Recommended Practice: Management of Blood Loss**

- Interventions include applying pressure to the site and being prepared to return the patient to the operating room:

- Consider developing a standard set of criteria or early warning signs (see below) that will be used to trigger notification of the responsible surgeon of possible postoperative bleeding.
  - Incorporate all components of the criteria/early warning signs into a tool designed to provide standardized documentation of all pertinent details of the event. This tool will provide the data to track patient characteristics, processes, and outcomes for continuous quality improvement.
  - Establish a policy to empower nurses to rapidly escalate up the chain of authority to reach the responsible surgeon (limit time to 5-minute wait after initial page before move to notify next higher level of authority).
  - Provide educational sessions to all clinical staff on the pilot units (nurses, residents, attending physicians, respiratory therapists, patient care technicians, certified nursing assistants, etc.) in the use of the early warning signs criteria, required documentation, and policy for rapid escalation up the chain of authority to notify responsible surgeon.
- Common early warning signs of hemorrhage can include but are not limited to<sup>1</sup>:
    - Restlessness and anxiety.
    - Frank bleeding and bruising.
    - Tachycardia.
    - Diminished cardiac output and dropping central venous pressure.
    - Reductions in urine output.
    - Swelling and discoloration of the extremities.

**Recommended Practice: Medication Management**

- Develop a process and protocol for determining if discontinuation of antiplatelet/anticoagulant medications prior to procedure or surgery is appropriate.<sup>1</sup>
  - Practice recommendation should be selected based on individual patient risk factors and current evidence-based guidelines for a particular surgery.<sup>3,4,5</sup>
  - Obtain a thorough history of medication use prior to surgery. The history must specifically address the use of over-the-counter and prescribed medications.
    - Document this information in the patient’s medical record so that it is available to all care providers.

**Educational Recommendation**

- Plan and provide education on protocols to physician, nursing, and all other staff involved in operative, procedural cases and the care of patients postoperatively. Education should occur upon hire, annually, and when this protocol is added to job responsibilities.

**Effectiveness of Action Items**

- Track compliance with elements of the established protocol by using checklists, appropriate documentation, etc.
- Evaluate effectiveness of new processes, determine gaps, modify processes, as needed and reimplement practices.

- Mandate that all personnel follow the protocols and practices developed by the team to prevent postoperative hemorrhage and hematoma and develop a plan of action for staff in noncompliance.
- Provide feedback to all stakeholders (physician, nursing, and ancillary staff; senior medical staff; and executive medical and administrative leadership) on level of compliance with process.
- Conduct surveillance and determine prevalence of postoperative hemorrhage to evaluate outcomes of new process.
- Monitor and evaluate performance regularly to sustain improvements achieved.

### **Additional Resources**

#### **Systems/Processes**

- The Merck manual for health care professionals: Postoperative care. Available at: [http://www.merckmanuals.com/professional/special\\_subjects/care\\_of\\_the\\_surgical\\_patient/postoperative\\_care.html?qt=&sc=&alt=](http://www.merckmanuals.com/professional/special_subjects/care_of_the_surgical_patient/postoperative_care.html?qt=&sc=&alt=). Accessed June 26, 2014.
- World Health Organization. Summary based on Surgical Care at the district hospital. Available at: <http://www.who.int/surgery/publications/Postoperativecare.pdf>. Accessed June 25, 2014.
- Anticoagulant Toolkit: Reducing Adverse Drug Events. Available at: <http://www.ih.org/knowledge/Pages/Tools/AnticoagulantToolkitReducingADEs.aspx>.

#### **Policies/Protocols**

- [Recommended Curriculum Guidelines for Family Medicine Residents: Care of the Surgical Patient](#), American Academy of Family Physicians
- [http://www.uwhealth.org/files/uwhealth/docs/anticoagulation/Periprocedural\\_Anticoagulation\\_Guideline.pdf](http://www.uwhealth.org/files/uwhealth/docs/anticoagulation/Periprocedural_Anticoagulation_Guideline.pdf)

#### **Tools**

- [The Post-Operative Handover Assessment Tool \(POHAT\)](#)

#### **Staff Required**

- Physicians
- Nursing and nursing assistants
- Respiratory therapists
- Transfusion medicine service

#### **Communication**

- Systemwide education on policy/protocol of monitoring postoperative patients

#### **Authority/Accountability**

- Senior leadership mandating protocol for all providers
- Providers involved in postoperative care are held accountable for following protocol

**References**

1. Dagi TF. The management of postoperative bleeding. *Surg Clin N Am* 2005;85(6):1191-1213. Available at: <http://www.sciencedirect.com/science/article/pii/S0039610905001453>. Accessed June 27, 2014.
2. AHRQ Quality Indicators. Patient Safety Indicators technical specifications - version 4.4. Appendices. Rockville, MD: Agency for Healthcare Research and Quality; March 2012.
3. Jacob M, Smedira N, Blackstone E, et al. Effect of timing of chronic preoperative aspirin discontinuation on morbidity and mortality in coronary artery bypass surgery. *Circulation* 2011;123(6):577-83. Available at: <http://www.sciencedirect.com/science/article/pii/S0002914911033789>. Accessed June 27, 2014.
4. ASGE Standards of Practice Committee, Anderson MA, Ben-Menachem T, et al. Management of antithrombotic agents for endoscopic procedures. *Gastrointest Endosc* 2009;70:1060-70. Available at: <http://www.sciencedirect.com/science/article/pii/S0016510709025498>. Accessed June 27, 2014.
5. Guideline on preventing venous thromboembolic disease in patients undergoing elective hip and knee arthroplasty. Rosemont, IL: American Academy of Orthopaedic Surgeons. Available at: [http://www.aaos.org/research/guidelines/VTE/VTE\\_guideline.asp](http://www.aaos.org/research/guidelines/VTE/VTE_guideline.asp). Accessed November 19, 2013.