Evidence-Based Guidelines for DVT and GI Prophylaxis

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Deep Vein Thrombosis (DVT) Prophylaxis

Importance of DVT Prophylaxis

- **Prevention of Clot Formation**: DVT occurs when a blood clot forms in a deep vein, most commonly in the legs. Without treatment, these clots can travel to the lungs, causing a pulmonary embolism (PE), a life-threatening condition (Raskob et al., 2016).
- **Reduction in Pulmonary Embolism (PE) Risk**: Prophylaxis significantly reduces the risk of PE, which is one of the most serious complications of DVT. PE can lead to respiratory failure, cardiac arrest, and death (Geerts et al., 2008).
- **Improvement in Post-Surgery Outcomes**: Patients undergoing surgery, especially orthopedic surgeries (e.g., hip or knee replacement), are at higher risk for DVT. Prophylaxis reduces complications, speeds recovery, and prevents long-term disability (Geerts et al., 2008).
- **Cost-Effectiveness**: Prevention is more cost-effective than treating DVT and PE, as it reduces healthcare costs related to prolonged hospital stays, intensive care, and long-term treatments (Bates et al., 2008).
- **Mortality Reduction**: Studies show that prophylaxis significantly reduces the risk of mortality from PE. For instance, the use of heparin reduces PE-related mortality by 70% (Bates et al., 2008).

DVT Prophylaxis Dosage

- **Heparin**:
  - Subcutaneous injection: 5,000 units every 8-12 hours.
  - For major surgeries (e.g., abdominal or orthopedic), use 5,000 units every 8-12 hours. APTT monitoring may be required in high-risk patients (Geerts et al., 2008).
- **Enoxaparin (Lovenox)**:
  - orthopedic surgeries (e.g., hip or knee replacement), are at higher risk for DVT.
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- **Enoxaparin (Lovenox)**:
  - Subcutaneous injection: 40 mg once daily, starting 2 hours before surgery and continuing for 7-10 days post-surgery.
  - For patients with renal insufficiency, reduce the dose to 20–30 mg once daily.
  - For hip/knee replacement surgeries, administer 30 mg twice daily (Kakkar et al., 2012).
- **Evidence**:
  - Heparin reduces PE-related mortality by 70% (Bates et al., 2008).
  - Enoxaparin reduces symptomatic venous thromboembolism by 50% in orthopedic surgery patients (Geerts et al., 2008).

Gastrointestinal (GI) Prophylaxis

Importance of GI Prophylaxis

- **Prevention of Gastric Stress Ulcers and GI Bleeding**: Critically ill patients are at risk for stress ulcers and GI bleeding, especially in those with mechanical ventilation, coagulopathy, or a history of GI bleeding (Alhazzani et al., 2013).
- **Reduction in Mortality and Morbidity**: Prophylaxis reduces the incidence of GI bleeding, improves recovery, and lowers mortality, particularly in high-risk patients (Cook et al., 2016).
- **Efficacy of Proton Pump Inhibitors (PPIs)**: Studies show PPIs decrease the risk of stress ulcer-related bleeding by 50-70%, with superior efficacy compared to H2-receptor antagonists (H2RAs) (Alhazzani et al., 2013; Cook et al., 2016).

Risk Factors for GI Bleeding

- **High-Risk Groups**:
  - Mechanical ventilation >48 hours
  - Coagulopathy (INR >1.5, platelets <50,000)
  - History of GI bleeding or peptic ulcer disease
  - Severe burns, trauma, or sepsis
  - Shock (Cook et al., 2016)

Indications for Prophylaxis

- Prophylaxis should be used in critically ill patients who meet any of the above criteria (Cook et al., 2016).

Medications for GI Prophylaxis

- **Proton Pump Inhibitors (PPIs)**:
  - **Dosage**: Omeprazole 20-40 mg daily (oral or IV), Pantoprazole 40 mg daily (oral or IV).
  - **Indication**: For critically ill patients at high risk for GI bleeding.
  - **Mechanism**: PPIs inhibit gastric acid secretion, thereby reducing stress ulcer risk (Alhazzani et al., 2013).
- **H2-Receptor Antagonists (H2RAs)**:
  - **Dosage**: Ranitidine 50 mg every 8 hours (IV) or 150 mg twice daily (oral), Famotidine 20 mg twice daily (oral or IV).
  - **Indication**: For patients who cannot tolerate PPIs or in combination therapy.
  - **Mechanism**: H2RAs block histamine receptors, reducing stomach acid secretion, but are less effective than PPIs in preventing GI bleeding (Cook et al., 2016).

Mortality and Morbidity in Stress Ulcer Bleeding

- **General Mortality Rate**: Stress ulcer bleeding in critically ill patients has a mortality rate of 10-30%, which can increase to 50% in cases of massive gastrointestinal bleeding (Cook et al., 2016).
- **ICU Mortality**: Mortality in ICU patients with stress ulcer bleeding can range from 20- 50%, depending on the underlying condition, treatment timing, and patient stability (Miller et al., 2015).

Impact of GI Prophylaxis on Mortality

- **Studies**: Prophylaxis significantly reduces GI bleeding, which can reduce associated mortality by up to 50% (Cook et al., 2016).
- **Effectiveness of PPIs**: PPI use is associated with a significant reduction in mortality related to stress ulcer bleeding (Cook et al., 2016).

Summary Recommendations

- **DVT Prophylaxis**:
  - Administer heparin or enoxaparin based on patient risk and surgery type.
  - Monitor high-risk patients for anticoagulation effectiveness, and adjust dosing as needed.
  - Use prophylaxis in all high-risk surgical patients to reduce DVT and PE incidence.

- **GI Prophylaxis**:
  - Use PPIs for critically ill patients at high risk of GI bleeding.
  - Use H2RAs for those who cannot tolerate PPIs or in combination therapy.
  - Initiate prophylaxis in patients with risk factors like mechanical ventilation, coagulopathy, or trauma.

Version Control Record			
Version	**Date**	**Author/Reviewer**	**Description of Changes**
1	1/21/2026	Paul Wisniewski, D.O.	Initial review and update to reflect latest evidence/practice

These guidelines are based on evidence from key studies (Cook et al., 2016; Geerts et al., 2008; Bates et al., 2008) and aim to reduce mortality and morbidity by preventing DVT and GI bleeding in hospitalized patients.

Work Cited

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