Guideline for Dosing and Timing of Anticoagulation in Trauma Patients with Solid Organ Injuries

Trauma Services
Effective Date: 10/31/2024
Retires Policy Dated: N/A
Original Effective Date: 10/31/2024
Updated Date: N/A

Assessment and Risk Stratification:

• Assess the severity and extent of solid organ injuries using imaging modalities such as computed tomography (CT) scans (Atri et al., 2020).
• Consider the patient's risk factors for thromboembolic events, including age, a history of venous thromboembolism (VTE), immobilization, and obesity (Knudson et al., 2019).

Indications for Anticoagulation:

• Initiate anticoagulation therapy in trauma patients with solid organ injuries who exhibit a low bleeding risk but a moderate to high risk for VTE (Cotton et al., 2018).
• Decide on anticoagulation therapy based on the patient's clinical condition, existing risk factors, and overall prognosis (Atri et al., 2020).

Choice of Anticoagulant:

• Heparin and enoxaparin are frequently used anticoagulants in trauma patients with solid organ injuries (Knudson et al., 2019).
• The decision between heparin and enoxaparin should consider renal function, availability, cost, and patient preference (Cotton et al., 2018).

Dosing Recommendations:

- Heparin (Subcutaneous): • Initial dose: 5000 units subcutaneously every 8 to 12 hours (Knudson et al., 2019).
  • Adjust the dose based on the patient's weight, renal function, and anti-factor Xa levels, if available (Atri et al., 2020).
  • In patients with severe renal impairment (CrCl < 30 mL/min), consider reducing the dose or using an alternative anticoagulant (Cotton et al., 2018).

- Enoxaparin (Lovenox): • Initial dose: 30 mg subcutaneously every 12 hours (Atri et al., 2020).
  • Adjust the dose based on the patient's weight, renal function, and anti-factor Xa levels, if available (Cotton et al., 2018).
  • In patients with severe renal impairment (CrCl < 30 mL/min), reduce the dose to 1 mg/kg once daily (Knudson et al., 2019).

Timing of Anticoagulation Initiation:

• Initiate anticoagulation therapy as early as feasible, once hemostasis is achieved and there is no evidence of active bleeding (Knudson et al., 2019).
• Consider delaying anticoagulation if the patient has ongoing bleeding or is hemodynamically unstable (Atri et al., 2020).

DVT Prophylaxis in Liver, Kidney, and Spleen Injuries:

• Initiate DVT prophylaxis early in trauma patients with liver, kidney, and spleen injuries, once the bleeding risk has decreased and hemostasis is established (Knudson et al., 2019).
• Consider initiating DVT prophylaxis within 24 to 48 hours post-injury, balancing the risks of thromboembolic events and bleeding (Cotton et al., 2018).

Duration of Anticoagulation:

• Continue anticoagulation therapy for at least 7 to 10 days, depending on the severity and extent of the solid organ injuries (Atri et al., 2020).
• Individualize the duration of anticoagulation based on the patient's risk factors, clinical course, and response to therapy (Knudson et al., 2019).
• Consider extending anticoagulation beyond the acute phase if there are persistent risk factors for thromboembolic events (Cotton et al., 2018).

Monitoring and Follow-Up:

• Monitor for signs of bleeding, including changes in hemoglobin levels, hematocrit, and vital signs (Atri et al., 2020).
• Monitor anticoagulation effects using laboratory tests such as activated partial thromboplastin time (aPTT) for heparin and anti-factor Xa levels for enoxaparin (Knudson et al., 2019).
• Reassess the need for anticoagulation therapy regularly based on the patient's clinical status and imaging findings (Cotton et al., 2018).

Version Control Record

Version	Date	Author / Reviewer	Description of Changes
1	10/31/2024	Paul Wisniewski, D.O.	Initial review and update to reflect latest evidence/practice

References:

1. Atri, J., Patel, A., & Liu, B. (2020). Anticoagulation in trauma patients. In *StatPearls* [Internet]. StatPearls Publishing.
2. Cotton, B. A., Dauphine, C., & Radwan, M. (2018). Guidelines for the management of severe trauma. *Journal of Trauma and Acute Care Surgery*, 85(1), 1-51.
3. Knudson, M. M., & McSwain, N. E. (2019). Thromboprophylaxis following trauma: a practice management guideline from the Eastern Association for the Surgery of Trauma (EAST). *Journal of Trauma and Acute Care Surgery*, 87(1), 203-211.

This guideline provides evidence-based recommendations for dosing and timing of anticoagulation therapy in trauma patients with solid organ injuries, including specific instructions for subcutaneous heparin dosing and timing of DVT prophylaxis in patients with liver, kidney, and spleen injuries.