SUBJECT: Venous Thromboembolism Prophylaxis Guidelines

Purpose:

Standardize practices for the treatment of multiply injured trauma patients and establish guidelines for the administration of venous thromboembolism prophylaxis in high risk patients.

Establish a consensus for administration of chemical VTE prophylaxis in patients who are to undergo invasive procedures, or have high risk injuries.

High risk patients are those anticipated to be hospitalized for > 24 hours and have 1 or more of the following risk factors:
- Anticipated immobilization > 24 hours
- Multiple system trauma
- History of venous thromboembolism (DVT/PE)
- History of hypocoagulable disease
- Traumatic brain injury with GCS <12
- Pelvic fracture
- Long bone fracture
- Spinal fracture
- Major vascular injury to neck, thorax, abdomen, or extremities
- History of/current diagnosis of cancer
- Obesity (BMI >30)
- Multiple rib fractures
- Tobacco use within 1 month

Procedure:

If NOT contraindicated, high risk patients will be treated with both anticoagulation and compression devices.

1) Compression hose and sequential compression devices should be used for all high risk patients.
   a. SCD’s are contraindicated in patients with lower extremity fractures prior to fixation.
   b. SCD’s are contraindicated in patients with external fixators or large open wounds.
   c. SCD’s may be used on fractured extremities following open reduction and internal fixation.
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2) Relative contraindications to INITIAL chemical VTE prophylaxis include:
   a. Ongoing blood loss
   b. Coagulopathy
   c. Non-operative management of liver, spleen, and renal injuries
   d. Traumatic brain injury
   e. History of heparin induced thrombocytopenia

3) All high-risk patients who do not have a contraindication should be started on enoxaparin (1st line) or heparin (2nd line):
   a. Patients < 125kg, and GFR >30 ml/min: Enoxaparin 30mg SQ q12h
   b. Patients >125kg, and GFR >30ml/min: Enoxaparin 40mg SQ q12h
   c. Patients <125kg, GFR <30 ml/min: Heparin 5000 units SQ q8h
   d. Patients >125kg, GFR <30ml/min: Heparin 7500 units SQ q8h

4) Management of Lovenox dosing for ACS patients
   a. An “Anti-Xa assay” should be ordered in Epic to be drawn 4 hours following the 3rd dose of Lovenox
   b. If <0.2, increase dose 10mg each dose and recheck Anti-Xa assay after 3 doses
   c. If 0.2-0.4, no adjustment necessary. No further anti-Xa levels needed.
   d. If >0.4, reduce dose by 10mg each dose and recheck after 3 doses.
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IVC Filters-
Filters will be placed within 48 hours of time of consult in patients who meet the following criteria:
   a. The patient cannot receive prophylactic doses of anticoagulation for at least five days due to a traumatic injury.
   b. The bleeding risks of prophylactic heparin or Lovenox administration outweigh the benefits
   c. At least one of the following criteria are present
      i. The patient is on the ventilator and/or has a GCS <8
      ii. The patient has a spinal fracture
      iii. The patient has a lower extremity fracture
      iv. The patient has a pelvic fracture

When medically appropriate to start prophylactic doses of anticoagulation
   d. If there is no contraindication, perform a bilateral lower extremity venous duplex. If negative for DVT, schedule retrieval of the IVC filter during the same admission.
   OR
   e. If the patient is cleared for prophylactic doses for anticoagulation, but the doses are being held for frequent trips to the operating room, the IVC filter may be left in place. When the series of operations are complete, a bilateral lower extremity venous duplex should be performed. If negative, schedule retrieval of the IVC filter during the same admission.

Initiation of anticoagulation for at-risk patient populations:
   a. Solid Organ Injury
      1) In the non-operative management of liver, spleen, and renal injuries, VTE prophylaxis may be initiated after
         a) 24 hours without blood loss for grade I/II injuries (stable Hct, no transfusions)
         b) 48 hours without blood loss for grade III/IV/V injuries.
   b. Traumatic Brain Injury
      1) Chemical VTE prophylaxis may be initiated 24 hours following stable head CT, and 48 hours after craniotomy. VTE prophylaxis does not need to be held for EVD/ICP monitor placement or removal.
c. Spinal fractures and spinal cord injuries (SCI)
   1) Patients with spine fractures or SCI may be started on VTE prophylaxis once the
      spine surgeon has deemed that there is no emergent need for surgical
      decompression or stabilization

   2) If urgent surgery is planned, VTE prophylaxis will be held the night before
      operation, and resumed at 24 hours post-operatively.

d. Regional anesthetic catheter placement for pain control (epidural, etc)
   1) Chemical VTE prophylaxis will be held for 12 hours prior to catheter placement
      and removal. While the catheter is in place, the patient should be placed on either
      enoxaparin 40mg q24h or heparin 5000units q8h depending on renal function.

   Chemical VTE prophylaxis should not be routinely held for musculoskeletal procedures/injuries.
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References:


