VTE UWMC/HMC VTE PROPHYLAXIS GUIDELINE

DVT/PE Risk Factors:

Age > 40
ICU
Prior VTE
Obesity
CHF
Ischemic CVA
COPD
Serious Infection
Malignancy
Myocardial infarction
Respiratory Failure
Inflam. Bowel Disease
Central Venous Cath.
Varicose Veins
Collagen Vascular Dz.
Hypercoagulable States
Fractures / Trauma
Recent Surgery
Estrogen or Tamoxifen
Pregnancy
Nephrotic syndrome
Head Trauma

Limited Mobility ***OR*** Prolonged Bedrest + 1 VTE Risk Factor?

YES

NO

Low Risk:
Daily reassessment and DOCUMENTATION for new risk factors or prolonged stay?

REASSESS DAILY

Heparin[a] or Enoxaparin[b] Contraindicated?

- Active bleeding within 48-72 hours [c]
- Hypertensive Crisis
- Coagulopathy / Severe Liver Disease
- Heparin Induced Thrombocytopenia (HIT)
- Platelet Count < 20K without coagulopathy
- LP, spinal injection or epidural catheter [d]
- Recent intraocular, spinal, intracranial surgery
- Use of tPA for stroke w/in 24 hrs
- Head Trauma or CNS Hemorrhage
- Multiple trauma with high bleeding risk
- Proven or suspected peri-spinal hematoma
- Other high risk for bleeding or active bleeding conditions based on judgment

YES

MECHANICAL DEVICES[e]

- Mechanical Devices include Compression Devices (SCD's) or Elastic Stockings (ES).
- Consider Foot Pumps when external fixators or large bulky dressings prevent use of SCD's.
- Caution about fall risk and discomfort with compression devices.
- Mechanical devices must be worn continuously to be effective.

NO

NO CONTRAINDICATIONS TO Heparin[a] or Enoxaparin[b]
(see next page)

[a] Heparin (Low Dose Unfractionated Heparin), does not need to be dose adjusted in renal failure or dialysis.

[b] Enoxaparin (Low Molecular Weight Heparin), Special Notes: i- For BMI > 50 Use 40mg Q12º, ii- For Clcr < 30, use 30mg QD iii- Use in dialysis is not absolutely contraindicated, but dialysis patients might preferentially receive heparin instead of enoxaparin.

[c] Discuss with service that has expertise in specific bleeding issue, e.g. Gastroenterology for GIB, Neurosurgery for SAH, Neurology for hemorrhagic stroke, Orthopedics for hip fracture, etc. ***The 48-72 hour period of stabilty is intended as a guideline only and each case must be considered individually for optimal patient safety.***

[d] Special Caution due to risk of spinal hematoma. General guidelines are as follows, but clinical judgment must take precedence. No Prophylactic (low dose) **Heparin** 2-4 hours before or 2 hours after LP/spinal injection. No Prophylactic (low dose) **Enoxaparin** 12 hours before or 2 hours after LP/spinal injection. Consult anesthesia service for management in the setting of an epidural catheter. Platelets should be checked prior to needle insertion to r/o HIT. Concurrent use of NSAIDS, Thienopyridine Derivatives (Plavix) or GP IIb/IIIa Inhibitors with prophylactic **Heparin or Enoxaparin** may increase bleeding risk. (***Note these guidelines DO NOT APPLY to full dose and therapeutic doses of Heparin or Enoxaparin***).

[e] Mechanical Devices: 1) Mechanical devices should be used when anticoagulant-based prophylaxis is contraindicated (1C+). 2) It is common practice to utilize SCD's intraoperatively when anticoagulant-based prophylaxis is withheld, however, there is NO evidence basis supporting this practice; 3) Mechanical devices may be removed when the patient is initiated on anticoagulant-based prophylaxis except in selected high risk groups described in table;

[f] Consideration of extended DVT prophylaxis has been recommended in post THR and TKR, but may also be a consideration in any high risk patient who will remain bed bound post-discharge.

[g] ACCP endorses either Heparin or Enoxaparin as a 1A recommendation for ischemic stroke. Several reports favor Enoxaparin over Heparin.

[h] Evidence to favor Enox. vs. Heparin in lower risk trauma patients is lacking, however, evidence consistently favors Enoxaparin in higher risk patients.

[i] Suboptimal prophylaxis defined as initiation of LMWH > 36 hours after trauma, interruption of LMWH during hospital course, or transfer from an outside facility.

$ COSTS: Heparin 5000 Units ($0.55 / dose); Enoxaparin 30 mg ($13.23 / dose); Enoxaparin 40 mg ($17.64 / dose)

Level of Evidence: Grade 1 vs. 2 = Certain vs. Less Certain of the magnitude of the benefits or risks; Quality of the Data: Grade A = RCT's with consistent results; Grade B = RCT's with weak or inconsistent results; Grade C+ = Compelling observational data or secure generalizations from RCT's to other groups; Grade C = Non-compelling observational data or weak generalization from RCT's.

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Clinical Group	1st Line Regimen	2nd Line Regimen	SCD / ES Augmentation?	Duplex Screen in Asymptomatic?	Extended Prophylaxis?[f]
Medically ill: Mod. Risk: Mild medical illness w/Reduced mobility.	Heparin 5000 units SQ Q8º or Q12º (1A)	Enoxaparin 40 mg SQ daily (1A)	No	No	No
Medically ill, High Risk: ICU Patients, Obesity, Hypercoagulable states, Previous DVT, OR 2 or more DVT risk factors above.	Heparin 5000 units SQ Q8º (1A)	Enoxaparin 40 mg SQ daily (1A)	No	No	Consider in high risk patients.
Medically ill: Special Cases: Uncompensated CHF Active Malignancy Ischemic Stroke Trauma / Ortho Surgery	Enoxaparin 40 mg SQ daily (1A)	Mechanical prophylaxis	May be effective in high risk patients. (1C)	No	Consider in high risk patients.
Neurology: schemic Stroke[g]	Heparin 5000 units SQ Q8º or Q12º	Enoxaparin 40 mg SQ daily	No	No	Consider in high risk patients.
Neurology: Hemorrhagic Stroke (When clinically stable and hemorrhages on CT are stable.)	Heparin 5000 units SQ Q8º or Q12º (2B)	Enoxaparin 40 mg SQ daily	No	No	No
Trauma Low/Mod Risk [h], including non-High Risk states (eg. single system, non-orthopedic) and no DVT risk factors.	Enoxaparin 30 mg SQ Q12º or Heparin 5000 units SQ Q8º or Q12º (1A)	Mechanical prophylaxis (1B)	No	No	No
Trauma: High Risk , including long bone Fx, pelvic Fx, femur Fx, spine injury, venous injury, use of femoral line and/or DVT risk factors. (As soon as risk of bleeding is low enough to permit use of prophylactic anticoagulants.) (1A)	Enoxaparin 30 mg SQ Q12º (1A)	Mechanical prophylaxis (1B)	No	High risk for VTE (SCI, LE or pelvic Fx, head injury, femoral line) AND **suboptimal:** [i] prophylaxis. (1C)	Enoxaparin or Warfarin Recommended in high risk patients with impaired mobility. (2C)
Spinal Cord Injury (When primary hemostasis is evident.)	Enoxaparin 30 mg SQ Q12º (1B)	LD UH 5000 units SQ Q8º or Q12º AND Mechanical prophylaxis (2B)	May be effective in high risk patients (2B)	High risk for VTE (SCI, LE or pelvic Fx, head injury, femoral line) AND **suboptimal:** [i] prophylaxis. (1C)	Enoxaparin or Warfarin recommended in rehabilitation phase. (1C)
Neurosurgery--Head Injury or Bleed (When clinically stable and hemorrhages on CT scan are stable.)	Heparin 5000 units SQ Q8º or Q12º	Enoxaparin 40 mg SQ daily	May be effective in high risk patients (2B)	No	No
Neurosurgery-- Elective (Generally considered safe 48–72 hours after surgery.)	Heparin 5000 units SQ Q8º or Q12º (2B)	Enoxaparin 40 mg SQ daily (2A)	May be effective in high risk patients (2B)	No	No
Orthopedics: Elective total knee/hip replacement Hip Fracture Surgery	Enoxaparin 30mg SQ Q12º (1A) *(either 12 hrs before or 12-24 hrs post-op) (1A)*	Adjusted Dose Warfarin (1A)	May be effective in high risk patients. (2C)	No (1A)	Recommended for high risk patients for 10-35 days total. (1A)

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Clinical Group	1st Line Regimen	2nd Line Regimen	SCD / ES Augmentation?	Duplex Screen in Asymptomatic?	Extended Prophylaxis? ****
Orthopedics: Low risk, includes isolated extremity injuries w/ no DVT risk factors	Early Mobilization	Not Applicable	No	No	No
Orthopedics: High risk, includes isolated extremity injuries w/ DVT risk factors	Heparin 5000 units SQ Q8º or Q12º	Enoxaparin 30 mg SQ Q12º	No	No (1A)	Physician discretion
Elective Spine Surgery: Low Risk, includes c-spine and no DVT risk factors.	Early Mobilization (1C)	Not Applicable	No	No	No
Elective Spine Surgery: High risk, includes lumbar spine, anterior approach, neuro deficit and/or DVT risk factors	Heparin 5000 units SQ Q8º or Q12º (1C+)	Enoxaparin 40 mg SQ dail (1B)	May be effective in high risk patients (1C+)	No	Consider in high risk patients.
Burns	Heparin 5000 units SQ Q8º or Q12º (1C+)	Enoxaparin 40 mg SQ daily (1C+)	No	No	Consider in high risk patients.
Surgical / Lap Procedures, Low risk for DVT: Minor or Lap procs, TURP, Age < 40, No DVT risk factors.	Early Mobilization (1A- 1C+)	Not Applicable	No	No	No
Surgical / Lap Procedures, Moderate risk for DVT: Age > 40, Benign GYN, Major GU, or DVT risk factors.	Heparin 5000 units SQ Q12º or Q8º (1A)	Enoxaparin 40 mg SQ daily (1A)	No	No	No
Surgical / Lap Procedures, High risk for DVT: Major surgery, Age > 60, GYN or GU malignancy, or multiple DVT risk factors.	Heparin 5000 units SQ Q8º (1A)	Enoxaparin 40 mg SQ daily (1A)	May be effective in high risk patients (1C+)	No	Consider in high risk patients, especially cancer patients. (2A)