UMC LOW MOLECULAR WEIGHT HEPARIN
GUIDELINES

Mechanism of Action:
• Acts as an anticoagulant by enhancing the inhibition rate of clotting proteases by antithrombin III impairing normal hemostasis and inhibition of factor Xa.
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Pharmacokinetics:
• Onset of action (peak effect): Anti-factor Xa and antithrombin 3-5 hours
• Elimination: Renal
• Half-Life: Based on anti-factor Xa activity 4.5-7 hours (longer in patients with renal impairment)

Dosing: (doses will be rounded to the nearest 10 mg)
• Prophylaxis:
  ▪ General surgery, medical patients, hip replacement: enoxaparin 40 mg subQ daily
  ▪ Renal dose (CrCl<30 ml/min): enoxaparin 30 mg subQ daily
  ▪ Trauma, knee replacement, hip replacement: enoxaparin 30 mg subQ twice daily
  ▪ Renal dose (CrCl<30 ml/min): enoxaparin 30 mg subQ daily
• Treatment:
  ▪ DVT/PE, unstable angina, NSTEMI: enoxaparin 1 mg/kg subQ twice daily
  ▪ Renal dose (CrCl<30 ml/min): enoxaparin 1 mg/kg subQ daily
  ▪ STEMI:
    ▪ <75 yrs: enoxaparin 30 mg IV bolus plus 1 mg/kg subQ followed by 1 mg/kg q12 hours subQ (max of 100 mg for the first two doses only)
    ▪ >75 yrs: No initial IV bolus; enoxaparin 0.75mg/kg q12h subQ (max of 75 mg for the first two doses only)
    ▪ Renal dose (CrCl<30 ml/min):
      ▪ <75 yrs: enoxaparin 30 mg IV bolus plus 1mg/kg subQ followed by 1mg/kg subQ daily
      ▪ >75 yrs: No initial bolus; enoxaparin 1mg/kg subQ daily
  ▪ PCI
    ▪ If enoxaparin 30 mg IV bolus dose plus 1mg/kg dose or ≥ 2 doses of subQ enoxaparin administered (without IV bolus dose)
      ▪ Procedure within 8 hrs of last subQ dose, no additional enoxaparin
      ▪ Procedure within 8-12 hrs of last subQ dose, give enoxaparin 0.3 mg/kg IV in cath lab
    ▪ If no enoxaparin 30 mg IV bolus dose and if only one dose of subQ enoxaparin administered (without IV bolus dose)
      ▪ At time of procedure, give 0.3 mg/kg IV prior to cath/PCI
    ▪ If no enoxaparin has been administered
      ▪ At time of procedure, give enoxaparin 1 mg/kg IV in cath lab if a IIb/IIIa inhibitor is not given; enoxaparin 0.75 mg/kg IV when a IIb/IIIa will be used

Monitoring:
• Routine monitoring is not necessary in most patients
• Baseline labs
  ▪ PT/INR
  ▪ aPTT
  ▪ CBC
  ▪ Platelet count (platelets should be monitored every 2-3 days for the first 2 weeks, then periodically)
  ▪ Serum creatinine (renal function should be periodically assessed during therapy)
• Monitoring anti-factor Xa levels may be warranted in certain high risk patients
  ▪ Morbid obesity (weight > 190 kg)
  ▪ Very low body weight (< 50 kg)
  ▪ Severe renal impairment (CrCl < 30 ml/min)
  ▪ Pregnancy
  ▪ Patients with extended therapy (> 1 month)
• Anti-factor Xa levels
  ▪ Measure peak concentration 4 hours after the 2nd to 3rd dose
  ▪ Therapeutic range (peak concentration):
    ▪ 0.6-1 units/ml (treatment of VTE with bid dosing)
    ▪ 0.2-0.4 units/ml (prevention of VTE with bid dosing)
Renal Impairment:
- Enoxaparin is primarily eliminated renally. Patients with severe renal impairment will have a prolonged elimination half life which may increase the risk of bleeding
- UFH is recommended in dialysis patients or patients with renal impairment at high risk of bleeding

Reversal Recommendations:
- No complete antidote available for LMWH
- Protamine sulfate
  - neutralizes 60% of the anti-factor Xa activity
  - Reserve for patients with clinically significant bleeding episodes
  - Dosing:
    - LMWH within 8 hrs: administer 1 mg of protamine for every 1 mg (100 units) of LMWH
    - LMWH within 8-12 hrs: administer 0.5 mg of protamine for every 1 mg (100 units) of LMWH
    - LMWH more than 12 hrs: protamine not recommended
    - A second dose of 0.5 mg of protamine per 1 mg (100 units) of LMWH may be administered if bleeding continues

Bridge Therapy:
- If overlapping LMWH or heparin with Warfarin, overlap for at least 5 days. Discontinue LMWH or heparin when INR is therapeutic on two consecutive measurements 24 hr apart.