New Anticoagulation protocols for COVID patients

COVID patients experience coagulation changes requiring more aggressive anticoagulation. As a result there will be anticoagulation orders added to the COVID ordersets. They will drive the MD to order heparin or enoxaparin.

These order sets are going live on 4/24 and patients will be identified by MD/LIP as low, intermediate or high risk.

The patients care team will place the patient in one of the risk categories based on lab values (D-dimer) and clinical status (whether or not they have a VTE).

The corresponding prophylaxis or treatment will be ordered using either enoxaparin or unfractionated heparin (SQ or IV).

Once the risk profile is determined along with renal function (CrCl), an order set will be selected for the patient.

Enoxaparin and SQ heparin will be ordered once or twice a day or an unfractionated (UF) heparin infusion will be ordered. These are weight based protocols. The Heparin orders are the same ones you already use.

When UF Heparin is ordered, it may or may not be initiated with a bolus depending on the patients risk level and prior anticoagulation status. The dose will still be adjusted based on the patient’s aPTT.

**Caution:** Physicians are being asked to assess patient’s labs and clinical status daily. The patient may need to be changed to a more aggressive heparin orderset (e.g. from intermediate to high risk).

If a patient has been on anticoagulation and their status/risk has changed, there may be an increase or decrease in heparin ordered with or without a bolus.

***Pharmacy is available to discuss the treatment strategy with the team. The pharmacist will advise on the treatment strategy to use to attain the desired clinical and aPTT goals.***
INTERMEDIATE RISK

- Intermediate Risk: No VTE but D-dimer > 2,000
  - CrCL ≥ 30 mL/min: Increased intensity Enoxaparin Prophylaxis
  - CrCL < 30 mL/min: Unfractionated Heparin Infusion (No Bolus and Low aPTT Goal: 45-65)
    - Heparin infusion NO BOLUS Low (aPTT Goal: 45-65)
      - Heparin (NO BOLUS LOW) 25,000 units in 250 mL (100 units/mL) infusion
        - Initial Infusion Rate (8 units/kg/hr): 1,200 units/hr aPTT <45 Increase infusion by 300 units/hr aPTT 45 units/hr aPTT >75 Hold infusion for 2 hours AND Decrease by 450 units/hr AND notify MD/LIP. MUS

HIGH RISK

- CrCL < 30 mL/min: Unfractionated Heparin Infusion
  - Heparin infusion for DVT/PE/arterial thrombosis (aPTT Goal: 55-90) BMI ≥ 30
  - BMI based dosing is initiated with an infusion dose: 15 units/kg/h on patients aPTT level
    - Heparin injection 10,000 Units
      - 10,000 Units, Intravenous, Once, today at 1115, For 1 dose
        - "Initial loading dose"
          - The original dose of 12,000 Units (80 Units/kg Once) exceeded the recommended single dose limit of 10,000 Units.
  - Heparin (DVT/PE/arterial thrombosis) 25,000 units in 250 mL (100 units/mL) infusion
    - Initial Dose: 2,250 units/hr Weight used: 04/23/20 : [1] 150 kg aPTT <40 Give BOLUS AND increase by 600 units/hr aPTT 55-90 No Change aPTT 91-150 Decrease by 300 units/hr aPTT >150 HOLD infusion for 1 hour NOTIFY MD/LIP for 2 consecutive aPTT values outside of the goal aPTT range
      - Intravenous Continuous Stasis starts at 1115
Anticoagulation in COVID-19 at BMC

Low Risk
- No clinical evidence or concern for VTE/diagnosis and no other indication for anticoagulation.
- D-dimer < 2,000 ng/mL
- No bleeding or prothrombotic events on hospital
- Intentionally below 300 ng/mL for anticoagulation

Intermediate Risk
- Very high D-dimer 2,000 ng/mL (exceeds 8 times ULN of BMC assay)

High Risk/Full AC
- Confirmed VTE
- Established reason for therapeutic AC (AFib, prosthetic valve, etc.)
- HD/CVHD with clotting of dialysis tubing or lines resulting in repeated interruptions of therapy
- High clinical concern for DVT/PE but unstable/unable to undergo confirmatory testing

CICL 3 300 mL/min
- Standard Intensity Enoxaparin Prophylaxis
  - 40 mg once daily for BMI < 40 and weight < 120 kg
  - 40 mg twice daily for BMI ≥ 40 or weight ≥ 120 kg

CICL < 300 mL/min
- Unfractionated SQ Heparin Prophylaxis
  - 5,000 units twice daily for BMI < 40 and weight < 120 kg
  - 7,500 units twice daily for BMI ≥ 40 or weight ≥ 120 kg

ICU patients at intermediate risk: Consider screen for DVT with POCUS

Pregnancy: Use BMC’s OB VTE order set plus suggest 8-6 weeks of prophylactic enoxaparin for symptomatic COVID postpartum patients

CICL 3 300 mL/min
- Increased Intensity Enoxaparin Prophylaxis
  - 0.5 mg/kg twice daily (with maximum dose of 70 mg)
  - 0.5 mg/kg twice daily for < 150 kg
  - No bolus with infusion of 8 units/kg/hr

Unfractionated Heparin Infusion
- No bolus and see aPTT Goal 50-80
- No bolus with infusion of 8 units/kg/hr

CICL < 300 mL/min
- Full Anticoagulation with Enoxaparin
  - 1 mg/kg twice daily

Unfractionated Heparin Infusion
- Bolus and standard aPTT Goal 50-80
- If not on anticoagulation, 80 units/kg bolus then infusion of 10 units/kg/hr for BMI < 30 or 15 units/kg/hr for BMI ≥ 30
- If currently on anticoagulation or transitioning from intermediate to high risk, consider consulting Pharmacy (page INR x5, x7 hours) to determine appropriate adjustment

Consider VTE screening in patients with rapid increases in D-dimer (≥ 5-fold in 48 hours) or acutely worsening oxygenation/increased dead space. Consider empiric anticoagulation if low bleeding risk

** May continue prior anticoagulation regimen if deemed appropriate

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May consider extended prophylaxis for 4 weeks upon discharge (potential agent such as apixaban 2.5 mg BID)