



Duke Guidelines for Antithrombotic Therapy in Hospitalized Patients with COVID 19

Initial Workup: DIC screen (PT/PTT/Fibrinogen/D-dimer); CBC; CMP

LEVEL 1/LOW RISK (COVID 19 confirmed; non-ICU patient; no other clinical indication for anticoagulant therapy; D-dimer generally <2,500 ng/mL)

Enoxaparin 40 mg daily (prophylactic dosing) for all patients (PREFERRED REGIMEN) unless*:

1. BMI > 40kg/m² or weight > 100kg: Enoxaparin 60mg Q24H
2. Renal Failure (CrCl < 30mL/min): SubQ Heparin 5,000U Q12H
3. Contraindication to anticoagulation (active bleeding or Plts < 25K): Mechanical Prophylaxis (SCDs)

Monitoring: DIC screen, CBC, creatinine every 1-2 days (clinically stable hospitalized patients who are not otherwise having laboratory studies drawn every 2 days can be checked less frequently based on clinical assessment)

LEVEL 2/INTERMEDIATE RISK (COVID 19 confirmed; this primarily applies as a consideration for the ICU patient with a D-dimer >2,500 ng/mL but without documented VTE or concerns for vascular access occlusions; selected non-ICU patients who are considered to have a particularly high prothrombotic risk may also be considered for this regimen)

Enoxaparin 0.5 mg/kg Q12H (intermediate range dose) PREFERRED REGIMEN unless*:

1. Renal Failure (CrCl <30mL/min): Heparin infusion 40 U/kg bolus followed by 15 U/kg/hr. Target Heparin Level 0.3-0.5 U/mL (lower therapeutic range)
2. Patients at High Risk for Bleeding: consider Low-Risk protocol or Mechanical Prophylaxis
3. Contraindications to anticoagulation (active bleeding or Plts <25K): Mechanical Prophylaxis (SCDs)

Monitoring: DIC screen, CBC, creatinine daily (daily laboratory studies are recommended for this level given concern for potential hemorrhagic risk in certain patients with COVID 19)

LEVEL 3/HIGH RISK (COVID 19 confirmed; ICU patient AND/OR D-dimer >2,500 ng/mL; documented acute PE/DVT, OR high clinical suspicion for VTE, OR progressive organ failure with clinical concern for possible microvascular thromboses)

Enoxaparin 1 mg/kg Q12H (therapeutic dosing) PREFERRED REGIMEN unless*:



1. Renal Failure (CrCl <30mL/min): Heparin infusion 80 U/kg bolus followed by 18 U/kg/hr. (no bolus if patient was already on a different therapeutic anticoagulant)
Target heparin level 0.5-0.7 U/mL (upper therapeutic range)
2. For patients with a high clinical suspicion for PE but unable to obtain a CTA chest, consider: 1) obtaining LE duplex and if positive for DVT, treat with full dose LMWH, or 2) obtain an echo and if evidence of RV strain, treat with full dose LMWH.

Monitoring: DIC screen, CBC, creatinine daily

LEVEL 4/ Chronic Anticoagulation Indicated (COVID confirmed; chronic indication for anticoagulant therapy, such as history of VTE, AFIB, prosthetic cardiac valves):

LOW RISK (LEVEL 1 above): acceptable to continue home anticoagulant

INTERMEDIATE/HIGH RISK (LEVEL 2/3 above) OR if patient on COVID therapy that interacts with home anticoagulant: switch to LMWH.

DE-ESCALATION: Anticoagulation can be stepped down as a patient's clinical status improves for patients in Levels 2-3, as D-dimer decreases and with transfer out of the ICU.

Example: If the patient has no documented VTE but considered LEVEL 2 because she was initially in the ICU, the patient could be switched to prophylactic dosing (LEVEL 1) upon transfer out of the ICU. Similarly, if LEVEL 2 due to elevated D dimer, one could de-escalate DVT prophylaxis to LEVEL 1 when D-dimer decreases if patient's clinical picture is improving.

Of note, patients who are LEVEL 3 and documented VTE should remain on anticoagulation for at least 3 months, but can be switched to an oral anticoagulant at discharge.

DISCHARGE (Based on highest "level" achieved during hospitalization):

LEVEL 1: no DVT prophylaxis on discharge unless prolonged course of relative immobility anticipated (e.g., discharge to a skilled nursing facility or rehabilitation center)

LEVEL 2: consider 7-14 day course of prophylactic-dose anticoagulation at discharge for patients discharged to home, or up to 30 days if prolonged immobility anticipated (e.g., discharge to a skilled nursing facility or rehabilitation center)

LEVEL 3 (documented VTE, or strongly suspected VTE): 3-month course of therapeutic anticoagulation (apixaban 5mg BID suggested) for documented VTE, and consider a similar course of therapy for patients strongly suspected of having sustained a VTE but not documented by imaging studies.

NOTES



- *History of HIT: consult hematology to review available data and discuss VTE prophylaxis options. Considerations include: fondaparinux or direct thrombin inhibitors
- Currently, TPA is not recommended in COVID-19 patients.
- Patients who need to be on Unfractionated Heparin (instead of LMWH) should have their anticoagulation monitored with Heparin Levels (anti-factor Xa test, as opposed to aPTT) given that that aPTTs may be less reliable in severely ill COVID 19 patients.
- With concern for possible “heparin resistance”, consider checking an antithrombin level and consulting Hematology
- Weight based enoxaparin doses (0.5mg/kg & 1mg/kg) should be rounded to the nearest 10mg dose increment.
- Imaging studies should be limited to patients in whom a thromboembolic event is clinically suspected, and not used to screen patients for occult thromboembolism.

Resources:

COVID-19 Drug/Anticoagulant Interactions: <https://www.covid19-druginteractions.org/>
(University of Liverpool)

Questions:

Duke University Hospital:

Anticoagulation Pharmacist pager:	919-970-2388
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Thomas L. Ortel (Hem Faculty) pager:	919-970-5341

Duke Raleigh Hospital:

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Janet Arnold (Supervisor-Hematology, Coagulation, Urinalysis)	919-954-3684
Dr. Maggie Stoecker (Pathologist)	919-954-3684
Dr. Michael Spiritos (Hematology) pager	919-970-6177

Duke Regional Hospital:

Contact floor pharmacist or the main pharmacy	919-470-4168
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