



Anticoagulation Recommendations

The knowledge of the venous thromboembolic complications associated with coronavirus disease 2019 (COVID-19) remain limited. As thrombosis providers, our knowledge and opinion can inform the practice about prevention, diagnosis, and management of VTE. The survey below will discuss how your hospital is preventing VTE in patients with COVID-19 and if patients have experienced bleeding or thrombotic complications.

Although you will not get personal benefit from taking part in this survey, your responses will help inform the global community about current practice patterns. Of course, you have a choice about whether or not to complete the survey, but if you do participate, you are free to skip any questions or discontinue at any time.

Your response to the survey is anonymous which means no names will appear or be used on research documents, or be used in presentations or publications. The research team will not know that any information you provided came from you.

The survey will take about 5-10 minutes to complete.

If you have questions about the study, please feel free to ask; my contact information is given below. If you have questions about your rights as a research participant or want to report any problems or complaints, you can call the Medical College of Wisconsin/Froedtert Hospital Research Subject Advocate at (414) 456-8844.

Sincerely,
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1. Check all of the patient groups with COVID-19 that anticoagulant prophylaxis is being recommended at your institution. (check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> No anticoagulant prophylaxis recommended | <input type="checkbox"/> Fulfills criteria for prophylaxis based on my institution's VTE guideline |
| <input type="checkbox"/> All patients with COVID-19 (outpatients and inpatients) | <input type="checkbox"/> D-dimer or other inflammatory marker elevation |
| <input type="checkbox"/> Hospitalized COVID-19 patients | <input type="checkbox"/> Intensive Care Unit |
| <input type="checkbox"/> Other (please specify) | |



2. Check all of the prophylactic anticoagulation regimens you are recommending in COVID-19 patients (do not consider heparin induced thrombocytopenia or adjustments for renal function, check all that apply)

- Prophylactic fixed dose low molecular weight heparin
- Weight adjusted low molecular weight heparin
- Prophylactic fixed dose unfractionated heparin
- Weight adjusted unfractionated heparin
- Fondaparinux 2.5 mg daily
- Direct oral anticoagulant
- Aspirin
- Other (list here)

3. In which patient populations are you recommending extended VTE prophylaxis (i.e. after hospital discharge, check all that apply)

- I am not recommending VTE prophylaxis after hospital discharge
- ICU patients
- All hospitalized patients
- Based upon age (note age cut off under other)
- D-dimer >2X upper limit of normal
- History of VTE
- History of Cancer
- Combination of risk factors used in clinical trials (e.g. MARINER, APEX, etc)
- Obesity
- Pregnancy
- Other (please list)



4. Which prophylactic anticoagulant are you recommending for extended VTE prophylaxis? (check all that apply)

- Apixaban
- Rivaroxaban
- Betrixaban
- Low molecular weight heparin
- Yes, other anticoagulant (list here)

5. In which patient populations are you recommending escalation to intermediate dose anticoagulation?
(check all that apply)

- None
- All hospitalized patients
- Intensive Care Unit
- Elevated SOFA score (note level under other)
- Elevated Sepsis Induced Coagulopathy Score (note level under other)
- Elevated DIC Score (note level under other)
- D-dimer 2-3X Upper limit normal
- D-dimer 4-5X Upper limit normal
- D-dimer >6X Upper limit normal
- Elevated Fibrinogen (note level under other)
- Elevated Ferritin (note level under other)
- Rising High-sensitivity troponin (note level under other)
- Obese patients
- Additional VTE risk factor (i.e. Cancer, prior VTE)
- Other (list here)



6. Check all of the intermediate dose anticoagulation regimens you are recommending in COVID-19 patients
(do not consider heparin induced thrombocytopenia or adjustments for renal function, check all that apply)

- Low Molecular Weight Heparin
- Unfractionated Heparin
- Fondaparinux
- Other (list here)

7. In which patient populations are you recommending escalation to therapeutic dose anticoagulation? (do not consider patients taking anticoagulation prior to admission, check all that apply)

- New diagnosis of VTE/atrial fibrillation
- High clinical suspicion of VTE but unable to undertake diagnostic testing
- All hospitalized patients
- Intensive Care Unit
- Elevated SOFA score (note level under other)
- Elevated Sepsis Induced Coagulopathy Score (note level under other)
- Elevated DIC Score (note level under other)
- D-dimer 2-3X Upper limit of normal
- D-dimer 4-5X Upper limit of normal
- D-dimer >6X Upper limit of normal
- Elevated Fibrinogen (note level under other)
- Rising Ferritin (note level under other)
- Rising High-sensitivity troponin (note level under other)
- Obesity
- Additional VTE risk factor (i.e. Cancer, previous VTE)
- None
- Other (list here)

8. Check all of the therapeutic anticoagulation regimens you are recommending in COVID-19 patients (do not consider heparin induced thrombocytopenia or adjustments for renal function, check all that apply)

- Low Molecular Weight Heparin
- Unfractionated Heparin
- Fondaparinux
- Other (list here)
- Direct oral anticoagulant
- Vitamin K antagonist
- IV direct thrombin inhibitor (i.e. bivalirudin or argatroban)

9. In which COVID-19 patients does your hospital perform compression ultrasound to evaluate for deep vein thrombosis? (check all that apply)

- All patients upon hospital admission
- All ICU patients
- Only patients with clinical symptoms of deep vein thrombosis (extremity swelling, line malfunction)
- Based on D-dimer results
- Ultrasound not possible because of patient isolation
- Other (list here)

10. How are you diagnosing venous thromboembolism in COVID-19 patients if you are unable to obtain CTPA /VQ scan or compression ultrasound ? (check all that apply)

- Clinical scoring tools (e.g. Wells score)
- Increased D-dimer elevation
- Unilateral extremity swelling
- Require Prone positioning
- IV line malfunction
- Change in dead space fraction during mechanical ventilation
- Worsening respiratory status (oxygenation, respiratory rate)
- Right heart strain on bedside echocardiogram
- Hemodynamic decompensation (hypotension, tachycardia)
- Other (list here)

11. Which of the following tests are you getting at baseline in COVID-19 patients? (check all that apply)

- CBC
- Ferritin
- Basic metabolic panel
- C-reactive protein
- Complete metabolic panel
- Sedimentation rate (ESR)
- D-dimer
- Procalcitonin
- Creatinine kinase (CPK)
- Lactate dehydrogenase
- PT/INR
- Lactate/lactic acid
- aPTT
- IL-6
- Fibrinogen
- ADAMTS-13
- Thromboelastography (TEG) or ROTEM
- von Willebrand factor activity
- Antithrombin activity
- Antiphospholipid antibodies
- Other (list here)

12. Which of the following tests are you monitoring in COVID-19 patients 3 or more times a week? (check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> CBC | <input type="checkbox"/> Ferritin |
| <input type="checkbox"/> Basic metabolic panel | <input type="checkbox"/> C-reactive protein |
| <input type="checkbox"/> Complete metabolic panel | <input type="checkbox"/> Sedimentation rate (ESR) |
| <input type="checkbox"/> D-dimer | <input type="checkbox"/> Procalcitonin |
| <input type="checkbox"/> Creatinine kinase (CPK) | <input type="checkbox"/> Lactate dehydrogenase |
| <input type="checkbox"/> PT/INR | <input type="checkbox"/> Lactate/lactic acid |
| <input type="checkbox"/> aPTT | <input type="checkbox"/> IL-6 |
| <input type="checkbox"/> Fibrinogen | <input type="checkbox"/> ADAMTS-13 |
| <input type="checkbox"/> Thromboelastography (TEG) or ROTEM | <input type="checkbox"/> von Willebrand factor activity |
| <input type="checkbox"/> Antithrombin activity | |
| <input type="checkbox"/> Other (list here) | |

13. Which bleeding complications have your patients with COVID-19 experienced? (check all that apply)

- None of my patients have had bleeding
- Minor bleeding
- Clinically relevant non-major bleeding (i.e. requires intervention)
- Major bleeding (i.e. transfusion of 2 units PRBC, critical site, fatal bleeding)



14. In what sites have bleeding occurred? (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Mucous membranes (i.e. epistaxis, gum bleeding) | <input type="checkbox"/> Genitourinary (i.e. hematuria, vaginal bleeding) |
| <input type="checkbox"/> Skin (i.e. bruising or line related) | <input type="checkbox"/> Intracranial or intraspinal |
| <input type="checkbox"/> Lungs (i.e. hemoptysis or alveolar hemorrhage) | <input type="checkbox"/> Retroperitoneal |
| <input type="checkbox"/> Gastrointestinal (i.e. hematemesis, melena, hematochezia) | |
| <input type="checkbox"/> Other (list here) | |

15. At what dose of anticoagulation have bleeding complications occurred? (check all that apply)

- No anticoagulation
- Prophylactic dose
- Intermediate dose
- Therapeutic dose

16. Which thrombotic complications have occurred in your COVID-19 patients? (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> None of my patients have had thrombosis | <input type="checkbox"/> Dialysis or Continuous Renal Replacement Therapy |
| <input type="checkbox"/> Pulmonary embolism | <input type="checkbox"/> Mechanical circulatory support (i.e. ECMO, VAD) |
| <input type="checkbox"/> Lower extremity deep vein thrombosis | <input type="checkbox"/> Myocardial infarction |
| <input type="checkbox"/> Upper extremity deep vein thrombosis | <input type="checkbox"/> Ischemic stroke |
| <input type="checkbox"/> Superficial vein thrombosis | <input type="checkbox"/> Peripheral artery embolus |
| <input type="checkbox"/> Intracardiac thrombosis | <input type="checkbox"/> Sudden death with concern for thrombosis |
| <input type="checkbox"/> Splanchnic vein thrombosis | <input type="checkbox"/> High clinical suspicion for VTE but unable to undertake diagnostic testing |
| <input type="checkbox"/> Cerebral vein thrombosis | |
| <input type="checkbox"/> Other (list here) | |



17. What is the approximate incidence of VTE in all hospitalized COVID-19 patients at your institution?

- 1-5%
- 6-10%
- 11-15%
- 16-20%
- 21-30%
- 31-40%
- 41-50%
- >50%
- I don't know

18. What is the approximate incidence of VTE in ICU patients with COVID-19 at your institution?

- 1-5%
- 6-10%
- 11-15%
- 16-20%
- 21-30%
- 31-40%
- 41-50%
- >50%
- I don't know

19. At what dose of anticoagulation have thrombotic complications occurred? (check all that apply)

- No anticoagulation
- Prophylactic dose
- Intermediate dose
- Therapeutic dose

20. Have you adopted any other practices related to the evaluation or treatment of COVID-19 patients for hematological issues?

21. How many COVID-19 patients have been admitted to your hospital?

- <100
- 100-250
- 251-500
- 501-1000
- 1001-3000
- >3000
- I don't know

22. How many COVID-19 patients have you taken care of personally or been consulted on?

- <10
- 11-25
- 26-50
- 51-100
- 101-250
- 251-500
- >500

23. In what country do you practice?



24. What region of the United States do you practice?

- Northeast
- Southeast
- Midwest
- Other (please specify)
- South
- Northwest
- Southwest

25. How many years have you been in practice?

- < 5 years
- 5-10 years
- 11-15 years
- 16-20 years
- 21-25 years
- 26-30 years
- 31-35 years
- >35 years

26. What types of patients do you see?

- Pediatrics
- Adults
- Both Pediatrics and Adults

27. What is your specialty? (check all that apply)

- Hematology
- Medical Oncology
- Vascular Medicine
- Cardiology
- Pulmonary/Critical Care/Intensivist
- General Internal Medicine/Hospitalist
- General Pediatrics

28. What is the name of your hospital? (this is so we can identify experience within or between institutions)