

Thromboprophylaxis in COVID-19

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Patients with COVID-19 can develop a prothrombotic state that may complicate their illness. Specialty organizations and expert groups agree that patients with COVID-19 need anticoagulation, though the exact dosing and duration remains a matter of debate.

The Acute Medicine COVID Workgroup has updated recommendations concerning VTE prophylaxis and anticoagulation choice in patients with COVID-19. Changes have been implemented to coincide with the latest high-quality evidence available.

- In non-ICU level patients with an expected hospital length of stay >72 hours, there is evidence to suggest benefit outweighs risk of treatment dose anticoagulation for VTE prophylaxis.
- In ICU level patients evidence suggests against the use of empiric treatment anticoagulation for VTE prophylaxis outside of a high suspicion of or confirmed VTE.

Inpatient Management

Standard Prophylaxis

D-Dimer < 1.0 mg/L OR ICU admission	CrCL ≥ 30 mL/min	BMI < 40 kg/m ² : enoxaparin 40 mg subcutaneous daily BMI ≥ 40 kg/m ² : enoxaparin 40 mg subcutaneous BID
	CrCL < 30 mL/min	BMI < 40 kg/m ² : heparin 5000 units subcutaneous TID BMI ≥ 40 kg/m ² : heparin 7500 units subcutaneous TID

Empiric Treatment Dose Anticoagulation

Consider calculating pre-test probability for DVT with IMPROVE VTE score or Wells' score and order US to rule out DVT

Contradictions include: dual antiplatelet therapy, recent stroke (within 3 months), or active bleeding

D-dimer ≥ 1.0 mg/L in non-ICU patients OR High suspicion of VTE	CrCL ≥ 30 mL/min	enoxaparin 1mg/kg subcutaneous BID
	CrCL < 30 mL/min	heparin Infusion

Literature Review and Evidence

Multiple guidelines including the NIH, WHO, ACC, ISTH, and ASH recommend VTE prophylaxis for hospitalized patients with COVID-19 if not contraindicated. VTE prophylaxis has been shown to reduce the risk of mortality in patients hospitalized with COVID-19.^{8,9}

Because of the severity of coagulopathy in critically ill COVID-19 patients and reports of high rates of VTE despite routine prophylaxis, a more aggressive anticoagulation strategy using therapeutic dosages of anticoagulated have been studied. The available evidence to inform the clinical management of COVID-19 associated coagulopathy is continuously evolving.^{1,2,3,4,5,6,7}

Several retrospective studies suggested that treatment with high-intensity prophylactic anticoagulation or therapeutic anticoagulation may be associated with lower mortality compared with standard VTE prophylaxis.^{9, 10, 14, 15}

Results from the prospective multiplatform adaptive-design trial that include REMAP-CAP, ATTAC, and ACTIV-4a investigators evaluated therapeutic-dose anticoagulation versus standard thromboprophylaxis in hospitalized patients with COVID-19.

- In the noncritically ill patient population, the initial strategy of therapeutic-dose anticoagulation increased the probability of survival to hospital discharge, and reduced use of cardiovascular or respiratory support as compared to standard thromboprophylaxis.¹³
- In the critically ill patient population, the initial strategy of therapeutic-dose anticoagulation did not have an impact on probability of survival to hospital discharge or organ support.¹⁴



Discharge VTE Prophylaxis

Based on the MICHELLE trial (Ramacciotti, et. al., 2022 Lancet) we recommend considering post discharge VTE chemoprophylaxis for discharges at high-risk of subsequent VTE when bleeding risk can be minimized

- High-risk may be defined by an elevated IMPROVE VTE score or a high d-dimer with other risk factors
 - IMPROVE VTE score ≥ 4 , OR
 - IMPROVE VTE score 2-3 and D-dimer > 1 mg/L (FEU)
- Bleeding risk may be defined by an elevated HAS BLED score .

If a provider chooses to prescribe VTE prophylaxis on discharge we recommend:

- Rivaroxaban (Xarelto) 10 mg daily for 35 days
 - *Copay cards are available in outpatient pharmacy*

IMPROVE VTE Score and Risk Factors

Risk Factor	IMPROVE VTE Score
Previous VTE	+3
Known thrombophilia	+2
Current lower-limb paralysis	+2
Current cancer	+2
Immobilized > 7 days	+1
ICU Stay	+1
Age > 60	+1



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COVID-19 WORKGROUP FOR THE ACUTE MEDICINE CLINICAL PRACTICE COUNCIL

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Revision History

This document is active and further recommendations are forthcoming. It will be updated as additions develop.

Revision	Description of Changes	Approvals	Date
1.0	Initial Document	Clinical Leadership Council	4/8/2021
2.0	Updated d-dimer reference range	Acute Medicine Clinical Practice Council	09/02/2021
3.0	Changed dosing options	Acute Medicine Clinical Practice Council	9/10/2021
4.0	Added discharge prophylaxis recommendation based on MICHELLE trial	Acute Medicine Clinical Practice Council	01/12/2022
5.0	Added IMPROVE VTE score criteria	Acute Medicine Clinical Practice Council	02/12/2022