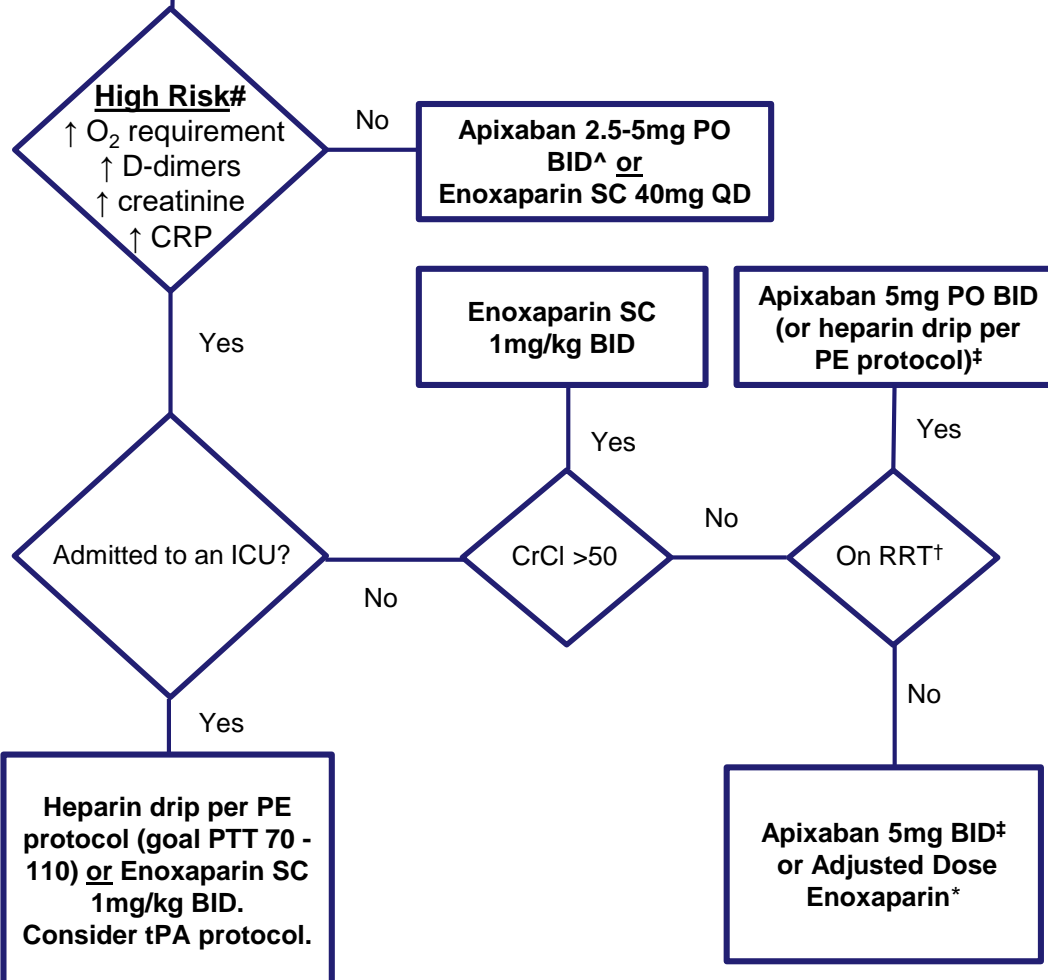


# Mount Sinai COVID-19 Anticoagulation Algorithm

Version 1.1 (April 9, 2020)

Admitted patients with moderate or severe COVID-19



**Inclusion:** All admitted patients with moderate or severe COVID-19  
**Exclusion:** High risk of bleeding as judged by treating physician

Obtain at baseline and daily:  
 - CBC, PT/PTT, D-dimer

**Hold anticoagulation if:**  
 - Platelet count <50,000; INR>1.5  
 - Evidence of current or recent bleeding  
**If patients take AC at home:**  
 - May switch to therapeutic enoxaparin or heparin (as per algorithm) for the duration of hospitalization, unless contraindicated  
**Rivaroxaban may be used in place of Apixaban at any indication**

**Discharged COVID-19 patient on therapeutic anticoagulation while hospitalized**

**Consider Prophylactic AC for 2 weeks post discharge (Apixaban 5mg PO BID for 2 wks)**

#High Risk: No precise metrics exist. Consider exam (eg O<sub>2</sub> sat<90%, RR >24), ↑O<sub>2</sub> requirement (eg, ≥4L NC), labs (eg, ↑d-dimers, C-reactive protein)  
 ^Efficacy and dose not established; prophylactic or treatment doses acceptable

†RRT – Renal Replacement Therapy  
 ‡ If ≥80 years of age or weight ≤60 kg, reduce apixaban to 2.5 mg BID  
 \* If CrCl <30: enoxaparin 0.5mg/kg BID with anti-Xa level after 3rd dose

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## Definition of high risk for progression to ICU

- There is insufficient evidence to precisely define “high-risk” or provide specific cut-off values for individual factors
- Clinicians should consider a combination of exam findings (e.g, labored breathing, RR >24, decreased O<sub>2</sub> sat<90%), increased O<sub>2</sub> requirement (eg, ≥4L NC), and lab biomarkers (eg, elevated CRP, elevated creatinine, rising d-dimer >1.0).

## Rationale for early anticoagulation

- Pathophysiology of COVID-19 associated respiratory disease is consistent with pulmonary vascular thromboemboli with increased dead space ventilation
- Autopsy studies have demonstrated venous thromboembolism in deceased coronavirus patients<sup>1</sup>
- Early anticoagulation is necessary to prevent propagation of microthrombi at disease presentation
- Anticoagulation may be associated with decreased mortality<sup>2</sup>

## Rationale for choice of anticoagulant

- Heparins bind tightly to COVID-19 spike proteins<sup>3,4</sup>
- Heparins also downregulate IL-6 and directly dampen immune activation<sup>5</sup>
- DOACs do not appear to have these anti-inflammatory properties
- Rivaroxaban can be used in place of Apixaban in this algorithm

## References

1. Xiang-Hua et al. Am J Respir Crit Care Med, 182 (3), 436-7. PMID: 20675682
2. Tang et al. J Thromb Haemost 2020 Mar 27. PMID: 32220112
3. Belouzard et al. Proc Natl Acad Sci, 2009 106 (14), 5871-6. PMID: 19321428
4. de Haan et al. J Virol. 2005 Nov; 79(22): 14451–14456. PMID: 16254381
5. Mummery et al. J Immunol, 2000. 165 (10), 5671-9. PMID: 1106792