### 1. COVID-associated coagulopathy and venous thromboembolism risk

- Most common pattern of coagulopathy is elevated fibrinogen & D-dimer, indicative of inflammation.
- Higher D-dimer and fibrinogen levels are associated with multi-organ dysfunction & worse prognosis (1).
- Overt DIC is rare, with median onset 4 days into hospitalization (2).
- Incidence of thrombosis in ICU patients may exceed 20%-40% even in patients on varying levels of prophylactic anticoagulation (3).

### 2. Initial considerations

- Labs on admission: CBC w/ diff, aPTT, PT/INR, fibrinogen, D-dimer.
- Repeat labs (every 2-3 days): CBC, aPTT, PT/INR, fibrinogen, D-dimer.
- Assess contraindications: All inpatients should receive prophylactic anticoagulation unless contraindications (platelets <25,000, fibrinogen <100 or high bleeding risk).
- For patients on therapeutic anticoagulation at baseline (for VTE, AF, prosthetic valves, etc.): Continue anticoagulation unless contraindications.
  - If on warfarin or DOACs, consider switching to enoxaparin or unfractionated heparin (UFH) infusion, especially if severe illness.

### 3. Venous thromboembolism prophylaxis

<table>
<thead>
<tr>
<th>Standard prophylaxis dosing</th>
<th>Enoxaparin 40 mg SQ Qdaily</th>
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</thead>
<tbody>
<tr>
<td>BMI/Weight &gt;40/&gt;120kg</td>
<td>Enoxaparin 40 mg SQ BID</td>
</tr>
<tr>
<td>CrCl 15-30mL/min</td>
<td>Enoxaparin 30 mg SQ Qdaily</td>
</tr>
<tr>
<td>CrCl &lt;15mL/min (or RRT)</td>
<td>UFH 5000 units SQ q8 hours</td>
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<tr>
<td>Monitoring</td>
<td>Enoxaparin: If baseline elevated aPTT, obese, underweight, or CrCl&lt;30, check peak anti-Xa level 4-6 hours after 3rd-4th dose to ensure appropriate dose (goal 0.2-0.5)</td>
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### 4. Venous thromboembolism diagnostic evaluation and treatment

- D-dimer interpretation:
  - Elevated or rising D-dimer should not trigger evaluation or treatment for VTE unless other clinical signs/symptoms.
  - A D-dimer below the upper limit of normal can still be used to rule out VTE.
- If standard CTPE/DVT U/S/TTE cannot be obtained, reasonable to rely on diagnostic modalities that minimize risk of infectious spread, e.g.:
  - Provider-performed point of care U/S (POCUS) for DVT
  - Technician-performed DVT U/S (even if concern for PE)
  - Provider-performed POC TTE to assess for signs of right heart strain from PE
- Initiation of empiric, therapeutic anticoagulation without confirmed or high clinical suspicion of DVT/PE is controversial.
  - Our interpretation of current data is that risks outweigh benefits outside an RCT.
  - Same logic applies to empiric tPA for ARDS.
  - If persistent clotting of lines and/or worsening clinical course, therapeutic anticoagulation may be considered via multidisciplinary discussion.

#### Therapeutic dosing

<table>
<thead>
<tr>
<th>CrCl &gt;30mL/min</th>
<th>Enoxaparin 1mg/kg SQ BID</th>
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</thead>
<tbody>
<tr>
<td>CrCl &lt;30mL/min</td>
<td>UFH infusion</td>
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</table>

| Monitoring | Check concurrent anti-Xa level and aPTT at baseline and during the initial 12 hours of the infusion to ensure correlation (therapeutic goal 0.3-0.7). Assuming values correlate, use aPTT for ongoing monitoring. |
| Duration   | 3 months for provoked VTE unless ongoing indications |