

VTE Prevention Protocol

for In-Patients aged 16 or Over with COVID-19 or Medical Conditions

All hospitalized patients are at increased risk for VTE. VTE is associated with increased morbidity and mortality. Appropriate VTE prevention reduces risk for patients at high risk of VTE.

Assess all patients as soon as possible (within 14 hours) after the decision to admit. Reassess at consultant review and if clinical condition changes.

Step 1: VTE risk assessment VTE risk factors	Padua score	VTE risk factors continued	Padua score
Confirmed or presumed COVID-19		At risk, proceed to step 2	
Medical in-patient without a COVID-19 diagnosis		Assess according to Padua Prediction Score (below)	
Immobility expected for at least 3 days (confined to bed +/- bathroom)	3	Active cancer or treatment (chemo- or radiotherapy within 6 months or metastases)	3
Previous DVT/PE	3	Thrombophilia	3
Trauma and/or surgery in previous 30 days	2	Ischaemic stroke (discuss with stroke team) or Acute MI	1
Heart and/or respiratory failure	1	Aged 70 or over	1
Taking oestrogen-containing contraceptive or oral HRT	1	Acute infection or Acute or chronic rheumatologic disorder	1
BMI 30 or greater (obese)	1	Pregnant or up to 6 weeks post-partum*	4*

Patients with COVID-19: all patients are at risk of VTE; proceed to step 2.

Medical patients: Padua Prediction Score 4 or greater = at risk of VTE; proceed to step 2.

Padua Prediction Score 3 or less = at low risk of VTE; no prophylaxis required.

***Pregnant or post-partum: Medical admission = at risk of VTE, proceed to step 2. Maternity = follow maternity guidance.**

Step 2: Bleeding risk assessment. Any risk factor below = contra-indication to low molecular weight heparin (LMWH) or heparin

Active bleeding	On anticoagulant at therapeutic levels/dose, e.g. warfarin, dabigatran, rivaroxaban, edoxaban, apixaban, heparin, enoxaparin: No additional prophylaxis except while anticoagulant held
Platelets less than $50 \times 10^9/L$	Undergoing procedure with high bleeding risk, e.g. neurosurgery, spinal or eye surgery
Bleeding disorder, e.g. haemophilia, Von Willebrand's	History of Heparin-Induced Thrombocytopenia (HIT): Contact haematology or pharmacy
Acquired bleeding disorder e.g. liver failure with PT over 15	Other bleeding risk: if risk of VTE outweighs bleeding risk, consider pharmacological prophylaxis.
Acute stroke (discuss with stroke team)	If risk of bleeding outweighs risk of VTE, consider mechanical VTE prophylaxis
Blood pressure 230 systolic or 120 diastolic or greater	Note: Dual antiplatelet therapy does not preclude prophylactic dose LMWH. There is a lack of data to support therapeutic dose LMWH in patients with COVID-19 who are receiving dual antiplatelet therapy: Consider prophylactic-intensity anticoagulation as an alternative
Epidural or spinal or lumbar puncture in last 4 hours or expected in next 12 hours	

Step 3: Recommended VTE prevention (or anticoagulation as a "therapeutic" strategy for COVID-19). These recommendations should not be used to guide care for patients with acute venous thromboembolism.

All patients	Adequate hydration, early mobilisation			
Pharmacological	Weight 50-100 kg and GFR over 30 mL/min	Weight 101-150 kg	Weight less than 50 kg	GFR less than 30 mL/min
Prophylactic intensity anticoagulation: All COVID-19 patients not on therapeutic anticoagulation or Medical patients with Padua score ≥ 4 And No C/I to heparin	Tinzaparin 4500 units once daily or Enoxaparin 40 mg once daily	Tinzaparin 4500 units bd or Enoxaparin 40 mg bd	Tinzaparin 3500 units once daily or Enoxaparin 20mg once daily	Heparin 5000 units twice daily or Tinzaparin 3500 units daily (caution) or enoxaparin 20 mg daily (contra-indicated in GFR less than 15 mL/min)
Therapeutic-intensity LMWH* may be considered in patients admitted to hospital because of moderate COVID-19** AND who have a low bleeding risk This also applies to patients admitted for another reason but who progress to develop moderate COVID-19	Tinzaparin 175 units / kg once daily or Enoxaparin 1 mg/kg twice daily or 1.5 mg/kg once daily ** Moderate COVID-19 is defined as follows: admission to hospital ward level of care (ie, not to ICU), not already mechanically ventilated, and not imminently requiring mechanical ventilation or critical care. We suggest that this therapeutic strategy be limited to patients who have oxygen saturations of $\leq 93\%$ on room air due to COVID-19, or who require low-flow oxygen via nasal prongs or face mask to maintain normal oxygen saturations. The evidence supports prophylactic intensity LMWH for all other patients with COVID-19 (unless contra-indicated), including those with severe COVID-19		Data supporting the use of therapeutic-intensity anticoagulation for patients with COVID-19 and renal impairment are lacking. We suggest against therapeutic anticoagulation (in the absence of a VTE event), if GFR is less than 30ml/min. Consider prophylactic-intensity LMWH instead.	

Mechanical

COVID-19 patient or High-risk medical patient (score 4 or greater) with contra-indication to heparins	Mechanical compression: Anti-embolism stockings* +/- intermittent pneumatic compression devices (IPCD)/ foot pumps * Do not use in suspected or proven peripheral arterial disease, severe dermatitis, massive leg oedema, leg deformity preventing correct fit, peripheral neuropathy, recent skin graft, allergy to fabric or acute stroke. Use caution and clinical judgement if applying stockings over venous ulcers or wounds. Use IPCD if available, particularly in COVID-19 or acute stroke.
Low-risk medical (score 3 or lower)	No heparin or low molecular weight heparin = No mechanical compression

Duration: local decision; e.g. until low-risk for VTE or until discharged. May consider prolonged prophylaxis on a case-by-case basis.

Step 4: Inform the patient about the signs and symptoms of VTE. Prescribe appropriate prophylaxis.

Step 5: As part of the discharge plan, give patients (and family members/carers if appropriate) verbal information and the VTE patient alert card. Give those discharged with prophylaxis information about its importance and how to use it effectively and safely and notify their GP.