

Venous Thromboembolism (VTE)

Prevention protocol for adult patients

Version 1.4

11 March 2024

Aim and scope:

To standardize Venous Thromboembolism (VTE) risk assessment that delivers decision support to the point of care and standardize the clinical practice for VTE prevention to reduce morbidity and mortality related to thrombosis. The VTE prevention protocol developed to cover all related clinical specialties.

Targeted end users:

This protocol intended to be used by the physicians and other Health Care Providers working at MOH hospitals.

Targeted population:

All adult patients admitted to MOH hospitals.

Level of Evidence:

Review of best practice and expert opinion.

Disclaimer:

This living guidance is subject to updates with new emerging data or within 2 years. The task force members have no conflict of interest. This protocol is not attached to any funding.

Scoring

VTE prevention protocols selected VTE and bleeding risk assessment based on:

- Modified Caprini tool for all cases except obstetric.
- Royal College of Obstetrics & Gynecology (RCOG) VTE and bleeding risk assessment tool for Obstetric cases only (Antenatal & Postnatal)

Modified Caprini

RISK FACTORS			
1 score for each ☐ Age 41-60 years ☐ BMI > 25 Kg/m² ☐ Minor surgery ☐ Swollen legs (current) ☐ Varicose veins ☐ Major Surgery (in the past month) ☐ lung disease (e.g., emphysema or COPD) ☐ Currently on bed rest or restricted mobility ☐ History of Inflammatory bowel disease ☐ Acute myocardial infarction ☐ Congestive heart failure (<1 month) ☐ Sepsis/ Pneumonia (<1 month)/ ☐ History of unexplained or recurrent spontaneous abortion (>3) ☐ Pregnant or post-partum (<1 month) ☐ Oral contraceptives or hormone replacement	2 score for each ☐ Age: 61-74 years ☐ Arthroscopic Surgery ☐ Laparoscopy Surgery (>45 min) ☐ Major open Surgery (>45 min) ☐ Cancer (current or previous) ☐ Immobilizing Plaster cast ☐ Bed bound for more than 72hrs ☐ Central venous access	3 score for each ☐ Age ≥ 75 years ☐ History of DVT/PE ☐ Family history of VTE ☐ Factor V Leiden ☐ Prothrombin 20210A ☐ Lupus anticoagulant ☐ Anticardiolipin antibodies ☐ Elevated serum homocysteine ☐ Heparin-induced thrombocytopenia ☐ Other congenital or acquired thrombophilia	5 score for each ☐ Hip, pelvis or leg fracture (within the past month) ☐ Stroke (within past month) ☐ Multiple trauma (within past month) ☐ Elective major lower extremity arthroplasty ☐ Acute Spinal cord injury – paralysis (within the past month)

Based on the calculation of scores from the selected risk factors the patient should fall in one of the following risk levels:

RISK LEVEL			
If total scores equal to 0 or 1: Low risk	If total scores equal to 2: Moderate risk	If total scores equal to 3 or 4: High risk	If total scores equal to or more than 5: Highest risk

VTE prophylaxis based on Modified Caprini risk levels

I- For all MEDICAL and GENERAL SURGICAL conditions:

Category	Supportive Care	Pharmacotherapy	Precautions
• Low Risk	• Encourage ambulation if not restricted	• No thromboprophylaxis required	
• Moderate Risk	• Encourage ambulation if not restricted • Offer mechanical prophylaxis if pharmacological prophylaxis contraindicated	• Enoxaparin 40 mg SC once daily OR • Unfractionated Heparin 5000 Units SC BID or TID OR • Fondaparinux dose 2.5 mg SC q24h	If CrCl < 30ml/min, Enoxaparin 30 mg subcutaneously once daily and avoid Fondaparinux
• High Risk	• Encourage ambulation if not restricted with or without mechanical prophylaxis	• Enoxaparin 40mg SC once daily OR • Unfractionated Heparin 5000 Units SC TID OR • Fondaparinux dose 2.5 mg SC q24h	If CrCl < 30ml/min, Enoxaparin 30 mg subcutaneously once daily and avoid Fondaparinux
• Highest Risk	• Encourage ambulation if not restricted with mechanical prophylaxis	• Enoxaparin 40mg SC once daily OR • Unfractionated Heparin 5000 Units SC TID OR • Fondaparinux dose 2.5 mg SC q24h	If CrCl < 30ml/min, Enoxaparin 30 mg subcutaneously once daily and avoid Fondaparinux

Prophylactic Dose Anticoagulation based on BMI and CrCl:

CrCl (ml/min)	BMI (Kg/m ²)	Enoxaparin	Fondaparinux	Unfractionated heparin
>30	<40	40 mg SC q24h	2.5 mg SC q24h	5000 units SC q8-12h
	>40	40 mg SC q12h	5 mg SC q24h	7500 units SC q8h
<30	<40	7500 units SC q8h		
	>40	UFH 7500 units SC q8h		

Special consideration:

Oncology cases:

- Start prophylaxis early administration (postoperative, within 12 hours) or late administration (postoperative, after 12 hours) of antithrombotic prophylaxis in major surgical patients including cancer depending on bleeding risk
- Duration of anticoagulant for abdominal cancer surgery or previous VTE is **30 days**

Critical cases:

- For patient admitted to critical care units, routine assessment for VTE & bleeding risk is recommended and routine thrombo-prophylaxis is administered for at risk patients.
- For critical care patients who are at high-risk of bleeding, we recommend the optimal use of mechanical thromboprophylaxis with IPC at least until the bleeding risk decreases. When the high bleeding risk decreases.
- When the high bleeding risk decreases, we recommend that pharmacologic thromboprophylaxis be substituted for or added to the mechanical thromboprophylaxis.

II- ORTHOPEDIC Surgery:

Category	Supportive Care	Pharmacotherapy	Precautions
A. Elective hip replacement			
For patient undergoing elective total hip replacement (THR)		Recommended thromboprophylaxis either: a. LMWH: - At a usual high-risk dose 40 mg SC q24h initiated 12 h before surgery OR - At a usual high-risk dose 30 mg SC q24h initiated 12 to 24 h after surgery OR b. Fondaparinux dose 2.5 mg SC q24h initiated 6-8 hr after surgery OR c. Apixaban 2.5 mg twice daily initiated 12-24 hr after surgery OR d. Adjusted-dose VKA (Warfarin) started preoperatively the evening of the surgical day (INR target 2.5, INR range: 2.0 – 3.0 for 35 days)	
For patient undergoing THR who have a high risk of bleeding	Optimal use of a mechanical method with IPC	When the high bleeding risk decreases, pharmacologic thromboprophylaxis be substituted for or added to the mechanical thromboprophylaxis	Patients placed on mechanical prophylaxis after surgery because of a high risk of bleeding should have their risk of bleeding consistently reassessed, with pharmacologic prophylaxis started as soon as the bleeding risk is decreased
B. Elective Knee Replacement			
For patient undergoing total knee replacement (TKR)		Recommended thromboprophylaxis either: a. LMWH: - At a usual high-risk dose 30 mg SC q24h initiated 12 to 24 h after surgery OR b. Fondaparinux dose 2.5 mg SC q24h initiated 6-8 hr after surgery OR c. Apixaban 2.5 mg twice daily initiated 12-24 hr after surgery OR d. Adjusted-dose VKA (Warfarin) started preoperatively of the evening of the surgical day (INR target 2.5, INR range: 2.0 – 3.0 for 35 days)	
For patient undergoing TKR who have a high risk of bleeding	Optimal use of a mechanical method with IPC	When the high bleeding risk decreases, pharmacologic thromboprophylaxis be substituted for or added to the mechanical thromboprophylaxis to extend pharmacological prophylaxis beyond 10 days after discharge	

Category	Supportive Care	Pharmacotherapy	Precautions
C. Hip Fracture Surgery (HFS)			
For patient undergoing HFS		Routine thromboprophylaxis minimum 10 days up to 35 days is recommended: a. Fondaparinux 2.5 mg SC q24h initiated 6-8h after surgery OR b. LMWH 30mg SC q12h initiated 12-24hr after surgery OR c. Adjusted dose VKA (Warfarin) preoperatively (INR target. 2.5. INR range. 2.0 to 3.0)	
D. Elective Spine Surgery			
• Low risk	Encourage ambulation	No thromboprophylaxis required	
• Moderate Risk such as: - Advanced age - Malignancy - Neurological deficit - Previous VT - An anterior surgical approach	Optimal use of peri-operative IPC	The recommended thromboprophylaxis options: a. Enoxaparin 40 mg SC once daily OR b. Unfractionated Heparin 5000 Units SC or TID	VTE prophylaxis after elective spinal surgery can typically be initiated 12-24 hours postoperatively. Prophylaxis may need to be delayed if the surgical site remains open
• Highest Risk	Optimal use of a mechanical method (i.e. GCS and/or IPC)	The recommended thromboprophylaxis is one of the pharmacological thromboprophylaxis options combined with mechanical method: a. Enoxaparin 40 mg SC once daily OR b. Unfractionated Heparin 5000 Units SC or TID	
E. Knee arthroscopy			
• Low risk	Encourage ambulation	No thromboprophylaxis required	
• High risk (multiple risk factors or following a complicated procedure)	Early mobilization	The recommended thromboprophylaxis is one of the pharmacological thromboprophylaxis options combined with mechanical method: LMWH minimum of 10 days. a. Enoxaparin 40 mg SC once daily OR b. Unfractionated Heparin 5000 Units SC or TID	
F. Isolated Lower Extremity Injuries Distal to the Knee			
For patient with Isolated Lower Extremity Injuries Distal to the Knee		Routine use of thromboprophylaxis is NOT suggested	

III. UROLOGIC Surgery:

Category	Supportive Care	Pharmacotherapy	Precautions
For patient undergoing transurethral or other low risk procedures	Early mobilization	The recommendation is against the use of thromboprophylaxis	
For patient undergoing major open urologic procedures		The recommendation is to use routine thromboprophylaxis with: Pharmacological prophylaxis alone: a. Enoxaparin 40 mg SC once daily OR b. Unfractionated Heparin 5000 Units SC TID OR Pharmacological plus mechanical prophylaxis	Patients with very high risk for bleeding, we recommend the optimal use of mechanical thromboprophylaxis with GCS and/or IPC at least until the bleeding risk decreases. When the high bleeding risk decreases, we recommend pharmacologic thrombo-prophylaxis substituted for or added to the mechanical thrombo-prophylaxis.

IV. LAPAROSCOPIC Surgery:

Category	Supportive Care	Pharmacotherapy	Precautions
For patient undergoing entirely laparoscopic procedures who don't have additional risk factors	Early mobilization	The recommendation is against the use of thromboprophylaxis	
For patient undergoing entirely laparoscopic procedures who don't have additional risk factors	Optimal use of a mechanical method (i.e., GCS and/or IPC)	The recommendation is the use of routine thromboprophylaxis with either: Pharmacological prophylaxis alone: a. Enoxaparin 40 mg SC once daily OR b. Unfractionated Heparin 5000 Units SC TID OR Pharmacological plus mechanical prophylaxis	

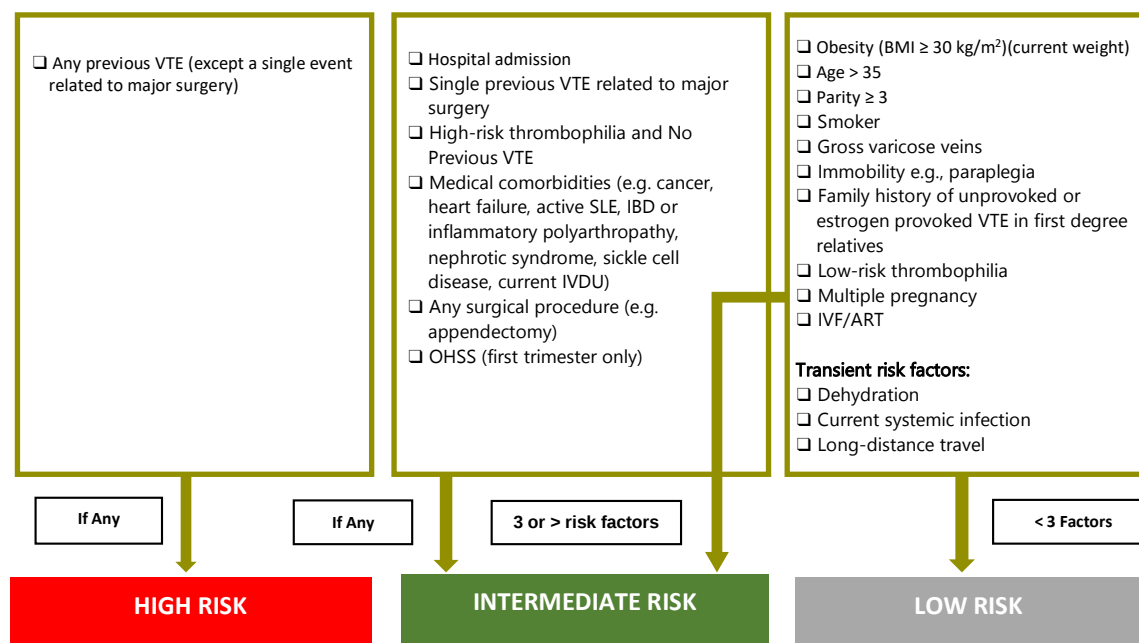
V. BARIATRIC Surgery:

Category	Supportive Care	Pharmacotherapy	Precautions
For patient undergoing inpatient bariatric surgery	Optimal use of a mechanical method (i.e., GCS and/or IPC)	The recommendation is the use of routine thromboprophylaxis with either: Pharmacological prophylaxis alone: a. Enoxaparin 40 mg SC once daily OR b. Unfractionated Heparin 5000 Units SC TID	

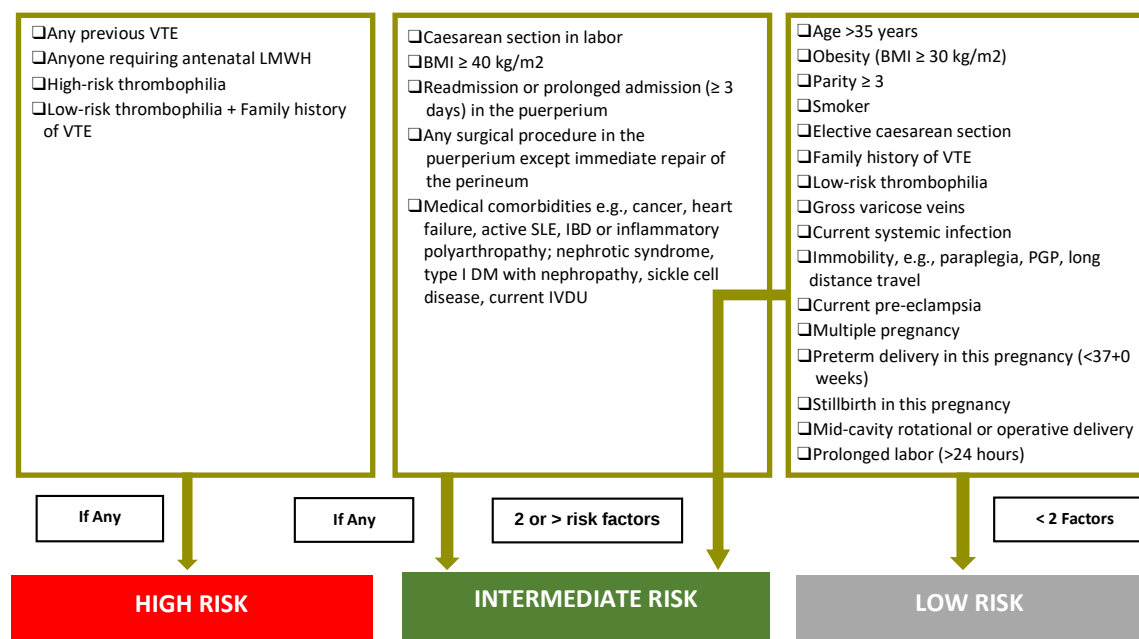
Category	Supportive Care	Pharmacotherapy	Precautions
		OR Pharmacological plus mechanical prophylaxis	

RCOG VTE risk factors (refer to RCOG risk factor calculator):

VI. ANTENATAL:



VII. POSTNATAL:



VTE Prophylaxis based on RCOG risk levels

Risk factors in pregnancy and the puerperium	
Pre-existing risk factors	Score
Previous VTE (except a single event related to major surgery)	4
Previous VTE provoked by major surgery	3
Known high-risk thrombophilia	3
Medical comorbidities e.g., cancer, heart failure; active systemic lupus erythematosus, inflammatory polyarthropathy or inflammatory bowel disease; nephrotic syndrome; type I diabetes mellitus with nephropathy; sickle cell disease; current intravenous drug user	3
Family history of unprovoked or estrogen related VTE in first-degree relative	1
Known low-risk thrombophilia (no VTE)	1a
Age (> 35 years)	1
Obesity (body mass index [BMI] 30.0 kg/m ² or higher) either pre pregnancy or in early pregnancy	1 or 2b
Parity ≥ 3	1
Smoker	1
Gross varicose veins	1

Obstetric risk factors	Score
Previous VTE (except a single event related to major surgery)	4
Previous VTE provoked by major surgery	3
Known high-risk thrombophilia	3
Medical comorbidities e.g., cancer, heart failure; active systemic lupus erythematosus, inflammatory polyarthropathy or inflammatory bowel disease; nephrotic syndrome; type I diabetes mellitus with nephropathy; sickle cell disease; current intravenous drug user	3
Pre-eclampsia in current pregnancy	1
ART/IVF (antenatal only)	1
Multiple pregnancy	1
Caesarean section in labor	2
Elective caesarean section	1
Mid-cavity or rotational operative delivery	1
Prolonged labor (> 24 hours)	1
PPH (> 1 liter or transfusion)	1
Preterm birth < 37+0 weeks in current pregnancy	1
Stillbirth in current pregnancy	1

Transient risk factors	Score
Any surgical procedure in pregnancy or puerperium except immediate repair of the 3 perineal, e.g., appendicectomy, postpartum sterilization	3
Hyperemesis	4
OHSS (first trimester only)	1
Current systemic infection	1
Immobility, dehydration	1

- If total score ≥ 4 antenatally, consider thromboprophylaxis from the first trimester. ^[1]_{SEP}
- If total score 3 antenatally, consider thromboprophylaxis from 28 weeks. ^[1]_{SEP}
- If total score ≥ 2 postnatally, consider thromboprophylaxis for at least 10 days. ^[1]_{SEP}

- If admitted to hospital antenatally consider thromboprophylaxis. ^[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100]
- If prolonged admission (≥ 3 days) or readmission to hospital within the puerperium, consider thromboprophylaxis.

VTE prophylaxis for OBSTETRICS (Ante and Post-natal):

- Pharmacological thromboprophylaxis should be avoided, discontinued or postponed in women at risk of bleeding after careful consideration of the balance of risks of bleeding and thrombosis.
- LMWH is safe and easy to use postpartum and has the advantage of not requiring monitoring.
- For those women receiving LMWH antenatally (and therefore for 6 weeks postpartum) or for those requiring 10 days' postpartum thromboprophylaxis, it is the agent of choice.
- Experience of LMWH in the puerperium reports no problems during breastfeeding

Category	Supportive Care	Pharmacotherapy	Precautions												
<u>Low Risk</u>	- Early mobilization & avoid dehydration	- No thromboprophylaxis required													
<u>Moderate Risk</u>	- Encourage ambulation - Intermittent pneumatic compression or Graduated compression stockings	The recommendation is the use of <u>routine</u> thromboprophylaxis with either: a. Enoxaparin SC once daily according to current weight as the following: <table><tr><td>Weight</td><td>Enoxaparin</td></tr><tr><td>< 50 kg</td><td>□20 mg daily</td></tr><tr><td>50–90 kg</td><td>□40 mg daily</td></tr><tr><td>91–130 kg</td><td>□60 mg daily</td></tr><tr><td>131–170 kg</td><td>□80 mg daily</td></tr><tr><td>> 170 kg</td><td>□0.6 mg/kg/ day</td></tr></table> OR b. Unfractionated Heparin 5000 Units SC BID or TID Antenatal prophylaxis from 28 weeks in pregnancy.	Weight	Enoxaparin	< 50 kg	□20 mg daily	50–90 kg	□40 mg daily	91–130 kg	□60 mg daily	131–170 kg	□80 mg daily	> 170 kg	□0.6 mg/kg/ day	
Weight	Enoxaparin														
< 50 kg	□20 mg daily														
50–90 kg	□40 mg daily														
91–130 kg	□60 mg daily														
131–170 kg	□80 mg daily														
> 170 kg	□0.6 mg/kg/ day														
<u>High Risk</u>	- Encourage ambulation - Intermittent pneumatic compression or Graduated compression stockings	The recommendation is the use of <u>routine</u> thromboprophylaxis with either: a. Enoxaparin SC once daily according to current weight as the following: <table><tr><td>Weight</td><td>Enoxaparin</td></tr><tr><td>< 50 kg</td><td>□20 mg daily</td></tr><tr><td>50–90 kg</td><td>□40 mg daily</td></tr><tr><td>91–130 kg</td><td>□60 mg daily</td></tr><tr><td>131–170 kg</td><td>□80 mg daily</td></tr><tr><td>> 170 kg</td><td>□0.6 mg/kg/ day</td></tr></table> OR b. Unfractionated Heparin 5000 Units SC BID Antenatal prophylaxis from first trimester.	Weight	Enoxaparin	< 50 kg	□20 mg daily	50–90 kg	□40 mg daily	91–130 kg	□60 mg daily	131–170 kg	□80 mg daily	> 170 kg	□0.6 mg/kg/ day	
Weight	Enoxaparin														
< 50 kg	□20 mg daily														
50–90 kg	□40 mg daily														
91–130 kg	□60 mg daily														
131–170 kg	□80 mg daily														
> 170 kg	□0.6 mg/kg/ day														

Medication Related Information				
Medication	Contraindication	Major Drug Interactions	Required dose adjustment	Pregnancy
Unfractionated Heparin (UFH)	- Severe thrombocytopenia - Uncontrolled active bleeding; except when due to DIC	Apixaban Dabigatran Endoxaban Mifepristone Rivaroxaban Streptokinase Urokinase	Renal impairment: No specific recommendations are available Hepatic impairment: No specific recommendations are available Geriatric: No adjustment necessary; however, a higher incidence of bleeding has been reported in patients over 60 years of age, especially women, therefore lower doses of heparin may be indicated in these patients.	Fetal risk cannot be ruled out
Enoxaparin	- Active major bleeding - History of immune-mediated heparin-induced thrombocytopenia within the past 100 days or in presence of circulating antibodies - Hypersensitivity to benzyl alcohol (present in multi-dose formulation) - Hypersensitivity to enoxaparin sodium, heparin, or pork products	Apixaban Dabigatran Endoxaban Mifepristone Rivaroxaban Urokinase	Renal impairment (CrCl 30 to 80 mL/min): No adjustment necessary. Renal impairment (CrCl less than 30 mL/min): Unfractionated heparin recommended instead of low-molecular-weight heparin (LMWH); if LMWH is used, reduce usual recommended dose by 50%. Renal impairment (CrCl less than 30 mL/min) in prevention of DVT following abdominal surgery: 30 mg subQ once daily. Renal impairment (CrCl less than 30 mL/min) in prevention of DVT following hip or knee replacement surgery: 30 mg subQ once daily. Renal impairment (CrCl less than 30 mL/min) in prevention of DVT in medical patients during acute illness: 30 mg subQ once daily.	Fetal risk cannot be ruled out
Warfarin	- Blood dyscrasias - Cerebral aneurysms - CNS hemorrhage - Dissecting aorta - Eclampsia, preeclampsia, threatened abortion - Gastrointestinal, genitourinary, or respiratory tract ulcerations or overt bleeding - Hemorrhagic tendencies - Hypersensitivity to warfarin or any component of the product - Major regional or lumbar block anesthesia - Malignant hypertension - Pericarditis and pericardial effusion - Pregnancy, except in pregnant women with mechanical heart valves, who are at high risk of thromboembolism - Recent or potential surgery of central nervous system or eye - Recent or potential traumatic surgery resulting in large open surface - Spinal puncture and other procedures with potential for uncontrollable bleeding - Unsupervised and potentially noncompliant patients	Tamoxifen Streptokinase Urokinase Allopurinol Amiodarone Barbiturates Cholestyramine resin	Renal impairment: No adjustment necessary; monitor INR more frequently in patients with compromised renal function to maintain INR within the therapeutic range Geriatric: Consider using lower initial and maintenance dosage Pregnancy, mechanical valve: Warfarin to goal INR plus aspirin 75 mg to 100 mg/day during second and third trimesters; during first trimester, warfarin may be continued in patients who can achieve therapeutic INR with doses of 5 mg/day or less. Frequent monitoring required. Discontinue warfarin and initiate continuous infusion unfractionated heparin prior to planned vaginal delivery (guideline dosing)	Contraindicated

Medication Related Information

Medication	Contraindication	Major Drug Interactions	Required dose adjustment	Pregnancy
Fondaparinux	- Contraindicated in patients with a CrCl < 30 mL/min/1.73 m² Body weight less than 50 kg in VTE prophylaxis - Active major bleeding - Thrombocytopenia associated with positive in vitro test for antiplatelet antibody in the presence of fondaparinux sodium - History of serious hypersensitivity reaction (eg, angioedema, anaphylactoid or anaphylactic reactions)	Apixaban Dabigatran Endoxaban Mifepristone Rivaroxaban	Renal impairment (CrCl 30 to 50 mL/min): Use with caution; may cause prolonged anticoagulation. Hepatic impairment (mild to moderate): No dosage adjustment required; however, observe closely for signs/symptoms of bleeding. Geriatric: Pay particular attention to dosing directions and concomitant medications (especially anti-platelet medication). Hemodiafiltration in patients with heparin-induced thrombocytopenia: Initiate at 0.03 mg/kg post dialysis body weight, administered via the efferent line of the dialyzer; titrate in increments of 0.01 mg/kg post dialysis body weight based on post dialysis anti-Xa activity.	Fetal risk cannot be ruled out
Apixaban	- Contraindicated in patients with a CrCl < 25 mL/min/1.73 m² SCr > 2.5 mg/dL - Active pathological bleeding - Severe hypersensitivity (eg, anaphylactic reactions) to apixaban	Rifampin, phenytoin, carbamazepine, St. John's wort) protease inhibitors, itraconazole, ketoconazole	50% dose reduction if receiving 5 or 10 mg twice daily with strong CYP3A4 and P-gp inhibitor (e.g., protease inhibitors, itraconazole, ketoconazole, conivaptan)	Fetal risk cannot be ruled out

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MRN: [] [] [] [] [] [] [] [] [] [] رقم الملف الطبي

ID/PP .NO: [] [] [] [] [] [] [] [] رقم اثبات الهوية /جواز الاسم :

NAME of Patient: _____ الجنسية:

NATIONALITY: _____

AGE: [] YEARS سنة [] MONTHS شهر [] DAYS يوم _____ العمر:

DATE OF BIRTH: 20 ____/____/____ هـ ____/____/____ تاريخ الميلاد

GENDER: [] Male [] Female انثى [] ذكر الجنس:

Note: (To be assessed for all adult (≥ 18 years) patients during admission and repeated if patients' condition changed)

☐ Admission ☐ Post-surgical procedure ☐ Change in condition ☐ Other

Risk Factor Score =1	Risk Factor Score = 2	Risk Factor Score = 3
① Age 41 to 60 years ① Medical patient at bed rest (e.g: Sick cell disease, dehydration, diabetes, etc) ① Minor surgery planned ① History of prior major surgery (< 1 month) ① Varicose veins ① History of inflammatory bowel disease ① Swollen legs (current) ① Obesity (BMI > 25) ① Acute myocardial infarction ① Congestive heart failure (< 1 month) ① Sepsis(< 1 month) ① Serious lung disease incl. pneumonia (< 1 month) ① Abnormal pulmonary function (COPD) ① Oral contraceptives or hormone replacement therapy ① Pregnancy or postpartum (<u>refer to antenatal and postnatal VTE prophylaxis forms</u>) ① History of unexplained stillborn infant, recurrent spontaneous abortion (≥ 3), premature birth with toxemia or growth restricted infant	② Age 61- 74 years ② Arthroscopic surgery ② Malignancy (present or previous) ② Major surgery (> 45 minutes) under G.A. ② Laparoscopic surgery(> 45 minutes) ② Patient confined to bed (> 72 hours) ② Immobilizing plaster cast for lower limbs (< 1 month) ② Central venous access	③ Age ≥ 75 years ③ Personal history of DVT/PE ③ Family history of thrombosis ③ Positive Factor V Leiden ③ Elevated serum homocysteine ③ Positive lupus anticoagulant ③ Elevated anticardiolipin antibodies ③ Positive prothrombin 20210A ③ Heparin-induced thrombocytopenia (HIT) ③ Other congenital or acquired thrombophilia : Protein C, Protein S, Antithrombin III
		Risk Factor Score = 5 ⑤ Elective Knee or Hip Arthroplasty ⑤ Hip and / or Pelvis fracture (< 1 month) ⑤ Stroke(< 1 month) ⑤ Multiple trauma(< 1 month) ⑤ Acute spinal cord (paralysis), (< 1 month)

:Total Risk Factor Score

Contraindications	Warnings/Precaution
☐ Patient on therapeutic doses of: Heparin / Enoxaparin / Fondaparinux / Warfarin / Rivaroxaban / Dabigatran / Apixaban	☐ History of gastrointestinal bleed or Hemorrhagic stroke
☐ Hypersensitivity to low molecular weight heparin, unfractionated heparin, (including heparin-induced thrombocytopenia)	☐ Renal failure with Creatinine clearance less than 30 ml/min (for Enoxaparin-modify the dose)
☐ Active bleeding / Fall Patients	☐ Coagulopathy (high aPTT, PT/INR ≥ 1.5)
☐ Uncontrolled HTN (SBP >185 and/or DBP >110 mmHg)	☐ Clinically significant thrombocytopenia (Platelet count less than 50)
☐ Epidural anesthesia (within last 12 hours or planned within next 12 hours)	☐ Recent intraocular surgery or intracranial surgery
If the patient has any of the above or contra indicated to anticoagulation, order Mechanical Prophylaxis	
☐ Sequential Compression Device (SCD)[first priority] ☐ Properly fitted graduated elastic compression stockings (ECS) (15-30mmHg) ☐ Both	

GDOH- MRA-COR-IP(VTE)-073 AVTE

STEP 3 : MANDATORY to Select One or More of the Risk level and Treatment Options

Risk Score	Risk Level	Pharmacologic	Mechanical Device
1-0	☐ Low	☐ Early ambulation	
2	☐ Moderate	LMWH*: (CrCl > 30mL/min) ☐ Enoxaparin 40 mg subcutaneously once daily LMWH: (CrCl < 30mL/min) ☐ Enoxaparin 30 mg subcutaneously once daily LMWH: If BMI ≥ 40: ☐ Enoxaparin 60 mg subcutaneously once daily OR ☐ Enoxaparin 40 mg subcutaneously BID ☐ Heparin 5000 units subcutaneously every 12 hrs. ☐ Fondaparinux dose 2.5 mg SC q24h (HIT or Allergy) avoid if CrCl < 30ml/min	
4-3	☐ High	LMWH*: (CrCl > 30mL/min) ☐ Enoxaparin 40 mg subcutaneously once daily LMWH: (CrCl < 30mL/min) ☐ Enoxaparin 30 mg subcutaneously once daily LMWH: If BMI ≥ 40: ☐ Enoxaparin 60 mg subcutaneously once daily OR ☐ Enoxaparin 40 mg subcutaneously BID ☐ Heparin 5000 units subcutaneously every 8 hrs. ☐ Fondaparinux dose 2.5 mg SC q24h (HIT or Allergy) avoid if CrCl < 30ml/min	
or more 5	☐ Highest	LMWH*: (CrCl > 30mL/min) ☐ Enoxaparin 40 mg subcutaneously once daily LMWH: (CrCl < 30mL/min) ☐ Enoxaparin 30 mg subcutaneously once daily LMWH: If BMI ≥ 40: ☐ Enoxaparin 60 mg subcutaneously once daily OR ☐ Enoxaparin 40 mg subcutaneously BID ☐ Heparin 5000 units subcutaneously every 8 hrs. ☐ Fondaparinux dose 2.5 mg SC q24h (HIT or Allergy) avoid If CrCl < 30ml/min	☐ Plus: SCD

***The recommended LMWH could be used as alternative according to hospital formulary**

In Oncology-surgery, Orthopedic (TKR,THR,HFS), abdominal surgery and Bariatric surgery: consider extended- prophylaxis after discharge (4-5 weeks): Enoxaparin or DOAC

☐ No orders for prophylaxis, Reason:

This is a general guideline and the physician's clinical judgment may override it.

If the patient's condition changes or if there is a procedure with bleeding risk, the risk stratification must be revised using a new form by the Primary Team

Labs: Check baseline CBC and at least every 72 hours thereafter. Notify physician if platelet count less than 100,000 or drop by 50% from baseline

Nurse interventions

- ☐ The nurse notified the physician to fill out the form
- ☐ Providing VTE mechanical prophylaxis devices.
- ☐ The nurse provided patient/family education (the patient received his/her injection by him/her-self.
- ☐ The patient receive only education about administration.
- ☐ The nurse applies prevention measures (non-pharmacologic measures): ☐ Assist in early mobilization. ☐ teaching foot-leg exercises.
- ☐ Compression/elastic stockings

Nurse'/Midwifery Name and Stamp:

Date, Time and Signature: _____

- ☐ Patient educated by pharmacist (medication information: indication, duration, frequency, important for adherence, suspected side effect...etc.
- ☐ Patient educated by health educator

Main Responsible Physician's Name and Stamp: _____ Date, Time and Signature: _____

NAME of Patient: _____

الاسم MRN:

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الملف الطبي

Unfractionated Heparin: Indications

- ☐ Around the time of delivery in women at very high risk of thrombosis (when there may be reluctance to use LMWH in case regional anesthetic techniques are required)
- ☐ In women at increased risk of hemorrhage
- ☐ The required interval between a prophylactic dose of unfractionated heparin and regional analgesia or anesthesia is less (4 hours) than with LMWH (12 hours)

- ✓ This is a general guideline and the physician's clinical judgment may override it.
- ✓ If the patient's condition changes or if there is a procedure with bleeding risk, the risk stratification must be revised using a new form by the Primary Team
- ✓ Labs: Check baseline CBC and at least every 72 hours thereafter. Notify physician if platelet count less than 100,000 or drop by 50% from baseline, or renal impairment (CrCl < 30mL/min)

Admission Date & time

Physicians Name: _____

Signature: _____

Date & time : _____

Nurse interventions:

- ☐ The nurse notified the physician to fill out the form
- ☐ Providing VTE mechanical prophylaxis devices.
- ☐ The nurse provided patient/family education (the patient received his/her injection by him/her-self.
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 - ☐ Compression/elastic stockings

Nurse'/Midwifery Name and Stamp: _____

Date, Time and

Signature: _____

- ☐ Patient educated by pharmacist (medication information: indication, duration, frequency, important for adherence, suspected side effect...etc.
- ☐ Patient educated by health educator

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MRN: رقم الملف الطبي

NAME of Patient: _____ الاسم :

NATIONALITY: _____ الجنسية:

AGE: YEARS سنة MONTHS شهر DAYS يوم العمر : _____

DATE OF BIRTH: 20____/____/____ هـ ____/____/____ تاريخ الميلاد

GENDER: ☐ Male ☐ Female انثى ☐ ذكر الجنس :

(to be assessed after delivery and repeated during obstetrics clinic visit or if re-admitted)

- ☐ Cesarean section in labor
- ☐ BMI ≥ 40 kg/m²
- ☐ Readmission or prolonged admission (≥ 3 days) in the puerperium
- ☐ Any surgical procedure in the puerperium except immediate repair of the perineum
- ☐ Medical comorbidities e.g., cancer, heart failure, active systemic lupus erythematosus, irritable bowel disease or inflammatory polyarthropathy; nephrotic syndrome, type I DM with nephropathy, sickle cell disease
- ☐ Current IV Drug user

- ☐ Age >35 years
- ☐ Obesity (BMI ≥ 30 kg/m²)
- ☐ Parity ≥ 3
- ☐ Smoker
- ☐ Elective caesarean section
- ☐ Family history of VTE
- ☐ Low-risk thrombophilia
- ☐ Gross varicose veins
- ☐ Current systemic infection
- ☐ Immobility, e.g., paraplegia, pelvic girdle pain, long distance travel
- ☐ Current pre-eclampsia
- ☐ Multiple pregnancy
- ☐ Preterm delivery in this pregnancy (<37+0 weeks)
- ☐ Stillbirth in this pregnancy
- ☐ Mid-cavity rotational or operative delivery
- ☐ Prolonged labour (>24 hours)
- ☐ Postpartum Hemorrhage >1 liter or blood transfusion

If

Two or more risk factors

At least 6 weeks' postnatal prophylactic LMWH

At least 10 days 'postnatal prophylactic LMWH

Note: If persisting or > 3 risk factors consider extending thromboprophylaxis with LMWH

(Fewer than two risk factors)

Early mobilization and avoidance of dehydration

*The recommended LMWH could be used as alternative according to hospital formulary

Weight	Enoxaparin	Tinzaparin (75 u/kg/day)	CrCl	☐ Known bleeding disorder ☐ Active bleeding ☐ Thrombocytopenia (platelet count < 50,000) ☐ Acute stroke in previous 4 weeks (hemorrhagic or ischemic) ☐ Uncontrolled hypertension ☐ Severe renal disease (glomerular filtration rate [GFR] < 30 ml/min/1.73 m ²) ☐ Severe liver disease (prothrombin time above normal range or known varices)
< 50 kg	☐ 20 mg daily	☐ 3500 units daily	CrCl > 30 ml/min Enoxaparin dose based to wight. CrCl < 30 ml/min Heparin 5000 IU subcutaneously of unfractionated heparin could be used and repeated every 12 hours until LMWH can be resumed after delivery.	
50–90 kg	☐ 40 mg daily	☐ 4500 units daily		
91–130 kg	☐ 60 mg daily	☐ 7000 units daily		
131–170 kg	☐ 80 mg daily	☐ 9000 units daily		
> 170 kg	☐ 0.6 mg/kg/day	☐ 75 u/kg/day		
High prophylactic dose for women weighing 50–90 kg	☐ 40 mg 12 hourly	☐ 4500 units 12 hourly		

- ☐ Use Sequential Compression Device (SCD) [first priority]
- ☐ Properly fitted graduated compression stockings (15-30mmHg)

Contraindications of SCD: Gangrene; Recent Skin Graft; Suspected existing Deep Venous Thrombosis

- ☐ Previous VTE + Anti phospholipid syndrome (APS): High dose. (The same dose of LMWH but TWICE daily)
- ☐ Previous VTE + Anti Thrombin deficiency: High dose. (The same dose of LMWH but TWICE daily)
- ☐ Recurrent VTE (2 or more): High dose. (The same dose of LMWH but TWICE daily)

NAME of Patient: _____

الاسم MRN: _____

رقم الملف الطبي

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Admission Date& time

Physicians Name: _____

Signature: _____

Date & time : _____

Nurse interventions:

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