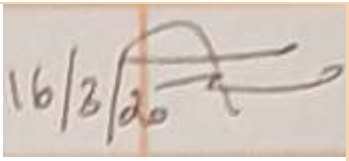
Sultanate of Oman

Ministry of Health

Directorate general of Khoula hospital

Department of Obstetrics & Gynecology

Institution Name: Directorate General of Khoula Hospital					
Document Title: Guidelines of Management of thrombosis and thromboprohylaxis in pregnancy and postpartum					
Approval Process					
	Name	Title	Institution	Date	Signature
Written by	Dr. Muna Al Zadjali	Consultant, Obs & Gyne	DGKH		
Reviewed by	Reviewers' signatures in the next page				
Validated by	Ms. Salama Al-Hajri	HoD of Accreditation	DGKH		
	Dr. Said Al-Mughairi	Director of Quality Management & Patient Safety	DGKH		
Approved by	Dr. Abdulla Al-Harthi	Director Generel	DGKH		

Location of original copy: Directorate of Obstetrics &gynecology

Distribution to: Quality Management & Patient safety Directorate & Khoula shared file

Reviewers List:

S.No	NAME	TITLE	DATE	SIGNATURE
1.	Dr. Said AL Kindi	SpecialistA, General Medicine- (Thrombosis & Hemostasis)		
2.	Dr Mohamed Al Zaabi	HOD Hematology & Blood Bank		
3.	Dr. Mohammed Al-Yahmadi	HOD of NICU		
4.	Dr. Ahmed Al Habsi	Consultant Radiologist		
5.	Dr. Mohammed Zahiruddin	Hospital Expert		

Contents Table:

Acronyms: 1

١. Introduction 2

2. Scope 2

3. Purpose 2

4. Guidelines 3

5. Risk assessment 3

6. Antenatal care 4

7. Intrapartum 6

8. Postpartum care 8

9. Management of acute VTE in pregnancy. 9

10.Treatment of VTE in pregnancy..... 10

10. Management of massive PE in pregnancy: 12

11- Responsibilities……..……..…....13

12 References ……..……..……14

13 Appendices……..……..……15

Acronyms:

VTE	Venous Thrombo-Embolism
LMWH	Lower molecular weight heparin
UFH	Unfractionated Heparin
APS	Antiphospholipid syndrome
DVT	Deep vein thrombosis
PE	Pulmonary Embolism
SCD	Sickle Cell Disease
ECG	Electrocardiogram
CXR	Chest X Ray
CTPA	Computerized tomography pulmonary angiogram
VQ scan	Ventilation/perfusion lung scan
IVC	Inferior Vena Cava
THU	Thrombosis & Hemostasis Unit
INR	International Normalized Ratio
PV	Polycythemia Vera
ET	Essential Thrombocythemia
MRI/MRV	Magnetic Resonance Imaging/ Magnetic Resonance Venography
o.d	Once a day
b.d	Twice a day
PNH	Paraxysmal Nocturnal Haemoglobinuria
IVF	Intravenous Fluid
CrCl	Creatinine Clearance

Guidelines of Management of thrombosis and thromboprohylaxis in pregnancy and postpartum

1. Introduction

Venous thromboembolism (VTE) is a leading cause of direct maternal death in Oman. Majority of maternal deaths were due to VTE during pregnancy and up to 6 weeks after pregnancy. Venous thromboembolism VTE (PE or DVT) can occur 50% antenatally and 50% postnatally. Of the women who died antenatally, 50% died in the first trimester, 25% in the second trimester and 25%in the third trimester. Of the women who had postnatal events, 50% had been delivered by caesarean section. In addition, 85% who died had at least one identifiable risk factor for VTE, highlighting importance of prevention. Fifty four percent of the women were overweight or obese. The relative risk of VTE postpartum is fivefold higher compared to antepartum.

2. Scope

These are Guidelines of Directorate General of Khoula Hospital applies to all doctors, midwives and nurses working in Obstetrics and Gynecology Department for VTE risk assessment in antenatal and postnatal women in addition to management of thrombosis and thromboprophylaxis in pregnancy and puerperium.

3. Purpose

The purposes of these Guidelines are:

3.1. To effectively and correctly assess the women's risk for VTE.

3.2. To prescribe thromboprohylaxis to pregnant women based on internationally approved scoring systems to reduce the risk of VTE.

4. Guidelines:

4.1. All pregnant women should be assessed using the antenatal VTE risk assessment form **(see appendix 1)** at the following times:

4.1.1. Booking (OPDs).

4.1.2. On each admission (ward)

4.1.3. With the development of other intercurrent clinical variable listed in the scoring system.

4.1.4. Post-delivery (before transfer home/to the ward).

4.2. Risk assessment and agents of choice:

4.2.1. Any women with a previous VTE that was oestrogen related (pregnancy or oral contraceptives) must be offered prophylaxis with LMWH throughout the antenatal period and for 6 weeks postnatally.

4.2.2. Any women with antenatal risk assessment score of ≥4 using the attached tool **(see appendix2)** should be considered for prophylaxis with LMWH throughout the antenatal period and for 6 weeks postnatally.

4.2.3. Any women with antenatal score of 3 should be considered for prophylactic LMWH from 28 weeks and for 6 weeks postnatally.

4.2.4. Any women with antenatal score of 2 should be considered for prophylactic LMWH for 10 days postpartum.

4.2.5. Women admitted to hospital when pregnant with first trimester risk factors such as hyperemesis gravidarum or ovarian hyperstimulation syndrome or are admitted with immobility should be offered thromboprophylaxis while an in-patient.

4.2.6. For patients with an identifiable bleeding risk, the balance of risks of bleeding and clotting should be considered and a decision for prophylaxis or not is made by a specialized doctor in Thrombosis & Haemostais Unit (THU) or a consultant obstetrician/gynaecologist.

4.2.7. VTE risk assessment should be performed in each women at booking visit, on admission and at least once following delivery and should be documented in her notes

before discharge and women who score ≥ 2 should be considered for LMWH for 10 days after delivery.

4.2.8. Pharmacological agents of choice are LMWH. The formulation of choice is prefilled syringe preparation and the agent options are either enoxaparin or tinzaparin.

4.2.9. Unfractionated heparin (UFH) is used only in special cases of renal failure which should be considered after consulting Thrombosis & Hemostasis Unit.

4.2.10. Tinzaparin can also be used for special cases of patients with renal failure, consult with THU for its use.

4.2.11. The dose of enoxaparin is based on booking weight. See table in **appendix 4**.

4.3. Antenatal Care

4.3.1. Previous VTE

A. For women who have a history of VTE that was unprovoked or was associated with a hormonal risk factor, antepartum prophylaxis is recommended throughout pregnancy and for 6 weeks postpartum.

B. For women who have a history of single previous VTE such as temporary provoking factors related to major surgery and no other risk factors, antepartum

prophylaxis can be considered from 28 weeks of pregnancy and for 6 weeks postpartum.

C. For women who have a history of VTE, postpartum prophylaxis is recommended.

4.3.2. Women with previous recurrent VTE should be referred to THU for consideration of either higher dosing regimens or alternative regimen anticoagulation.

4.3.3. Shifting from warfarin to LMWH or UFH should be commenced as soon as pregnancy is confirmed and preferably before week 6 of pregnancy.

4.3.4. Women with **asymptomatic heritable thrombophilia** such as antithrombin deficiency, protein S, protein C deficiency and homozygous factor V or homozygous prothrombin gene mutation, antenatal thromboprohylaxis should be considered from 28 weeks and for 6 weeks postpartum.

4.3.5. Women with asymptomatic low risk thrombophilia such as hetrozygous factor V Leiden or heterozygous prothrombin gene mutation or antiphospholipid antibodies are considered as risk factor and LMWH **not recommended** unless there are two or more other risk factors exist.

4.3.6. VTE associated with acquired thrombophilias ; PV, ET or antiphospholipid syndrome (APS):

A. Women with APS and prior thrombosis should be offered antenatal thromboprohylaxis as soon as pregnancy is confirmed and for 6 weeks post-partum.

B. Presence of persistent antiphospholipid antibodies alone without clinical thrombosis or fetal loss do not routinely require LMWH and aspirin and can be managed with aspirin alone. These cases may require 10 days prophylaxis postpartum and it is strongly advised to do risk stratification of additional factors to define need for antepartum versus postpartum and the duration of prophylaxis.

C. Combining LMWH with low dose aspirin is recommended for women with APS unless contraindicated and this is particularly used to improve the chances of birth rate in women with recurrent fetal loss rather than prevention of thrombosis.

4.3.7. VTE associated with acquired thrombophilias of ET or PV or PNH

A. ET or PV or PNH with prior vascular events are eligible for combination of aspirin and LMWH during pregnancy and 6 weeks postpartum. Their risk of bleeding should be assessed with liaison with THU.

B. PNH patients with prior thrombosis should receive anticoagulation during pregnancy and 6 weeks postpartum. Consideration of treatment with ecluzimab should be discussed by multidisciplinary team of obstetrician, haematologist and Thrombosis & Hemostasis unit.

4.3.8. First trimester risk factors:

A. Women admitted with hyperemesis should be considered for thromboprophylaxis with LMWH and discontinue when hyperemesis resolves.

B. Women admitted for ovarian hyperstimulation syndrome should be considered for thromboprohylaxis with LMWH.

C. Women with IVF pregnancy and three other risk factors should be considered for thromboprohylaxis with LMWH starting in the first trimester and throughout pregnancy and postpartum.

4.3.9. Sickle cell disease (SCD):

A. SCD patients who had prior VTE regardless of provocation are offered thromboprophylaxis as soon as pregnancy is confirmed and until 6 weeks postpartum period.

B. LMWH should be offered during hospital admissions and continued post discharge if ≥ 2 admissions with painful crisis or a single admission with sepsis or acute chest syndrome.

C. SCD women with low platelet, who qualify for prophylaxis should be referreded to THU for prophylaxis threshold.

4.4. Intrapartum care

4.4.1. Women receiving prophylactic or therapeutic doses of LMWH, the dose of LMWH should be withheld if the woman goes into labour or if she develops any vaginal bleeding.

4.4.2. Women receiving therapeutic doses of LMWH, scheduled delivery is recommended with approximately 24 hour discontinuation of the last therapeutic LMWH and 12 hours of the last prophylactic dose.

4.4.3. Women receiving prophylactic doses do not need scheduled induced delivery compared with allowing spontaneous labour without specific discontinuation time frame. A notable exception is the consideration of neuraxial anasthesia, which is subject to patient anasthesia preference, should allow for consideration of a scheduled delivery.

4.4.4. If labour has not commenced by 12 hours after the prescription of dinopristone then LMWH should be given. Similarly, if caesarean section has not occurred by 12

hours after the scheduled time, LMWH should be given and the procedure re-scheduled.

4.4.5. Patients with Renal impairment:

A. Refer to haematologist for dose modification of LMWH according to CrCl.

4.5. Regional anaesthesia

4.5.1. If women on prophylactic LMWH, to minimise or avoid the risk of epidural haematoma, please adhere to the following:

A. regional techniques ideally should not be used until 12 hours elapse after the last prophylactic dose of LMWH.

B. LMWH should not be given for at least four hours after the epidural catheter has been inserted or removed.

C. The cannula should not be inserted or removed within 10-12 hours of the most recent injection.

4.5.2. The women on therapeutic LMWH and presenting in labour, regional techniques should not be employed for at least 24 hours after the last dose of LMWH.

A. LMWH should not be given after use of spinal anaesthesia or the catheter should not be removed within 12 hours of the most recent injection.

B. For delivery by elective caesarean section, the women should receive a prophylactic dose of LMWH on the day before delivery. However, on the day of delivery, the morning dose should be omitted.

4.6. After delivery

4.6.1. The first prophylactic dose of LMWH should be given as soon as possible and within 6-8 hours after delivery (taking into account the need to wait 4 hours after removal of the epidural catheter or post spinal anaesthesia).

4.6.2. Women with very high risk of thrombosis such as antiphospholipid syndrome with previous thrombosis or history of recurrent thrombosis should be referred to THU for alternative stringent prophylaxis schedules.

4.6.3. Women at higher risk of bleeding:

4.6.4. Women at high risk of haemorrhage, such as with hereditary bleeding disorder, those with major antepartum haemorrhage, coagulopathy, progressive wound haematoma, suspected intra-abdominal bleeding and postpartum haemorrhage may be managed with mechanical prophylactic methods such as graduated stocking, or intermittent pneumatic compression devices.

4.6.5. Thromboprophylaxis should be started as soon as the immediate risk of haemorrhage is reduced.

4.7. Postpartum Care:

4.7.1. All women should have a documented postpartum VTE risk assessment (see the tool in **appendix 3**).

4.7.2. Women already on antenatal thromboprohylaxis should continue for 6 weeks postpartum regardless the mode of delivery.

4.7.3. Women taking long term warfarin prior to pregnancy should have a plan for restarting warfarin made antenatally and documented in clinical notes.

4.7.4. Women with family history of VTE and identified thrombophilia should be considered for 6 weeks postnatal LMWH.

4.7.5. All women with class3 obesity (BMI≥40) should be considered for LMWH for 10 days after delivery.

4.7.6. Women who score ≥2 using the postnatal assessment tool should be considered for prophylactic doses for 20 days after delivery according to their booking weight.

4.7.7. All women who had emergency caesarean section should be considered for LMWH for 10 days after delivery.

4.7.8. Those having an elective caesarean section should have LMWH for 10 days after delivery if they have any additional risk factor.

4.7.9. In women who have additional persistent (lasting more than 10 days postpartum) risk factor such as prolonged admission, wound infection or require surgery in puerperium, LMWH should be extended for up to 6 weeks or until the additional risk factor is no longer present.

4.7.10. The women should be trained on how to inject LMWH herself.

4.8. Management of acute thrombosis in pregnancy

4.8.1. **Deep Vein Thrombosis (DVT):**

A. Clinical features are particularly unreliable in pregnancy. 80% of DVT in pregnancy are on the left and 70% are iliofemoral (which are more prone to lead to pulmonary embolism (PE) and post thrombotic syndrome).

B. Any women with signs and symptoms suggestive of VTE should have compression duplex ultrasound performed expeditiously and treatment dose LMWH administered until the diagnosis is excluded.

C. If ultrasound is negative and there is a low level of clinical suspicion, anticoagulant treatment should be discontinued. If ultrasound is negative and a high level of clinical suspicion exists, anticoagulant treatment can be discontinued but serial ultrasound should be repeated on day 3 or 7.

D. When iliac vein thrombosis (back pain and swelling of the entire leg), MRI/MRV should be considered.

E. The initial management of DVT should include leg elevation and a graduated elastic compression stocking applied to reduce oedema if this does not induce pain. Mobilization with graduated elastic compression stockings should be encouraged.

F. Consideration should be given to the use of a temporary Inferior Vena Cava (IVC) filter in the peripartum period for patients with recent (2 weeks) extensive (iliofemoral) VTE to reduce the risk of PE.

G. Other than peripartum, IVC filter should be considered in patients with recent VTE (1 month) who have contraindication of anticoagulation.

H. IVC filter consideration for recurrent VTE despite adequate anticoagulation is not offered indiscriminately and should be referred to THU.

4.8.2. Pulmonary Embolism(PE):

A. Unexplained shortness of breath, and or pleuritic chest pain especially of sudden onset must be investigated as PE in pregnancy. Dizziness, collapse and tachycardia can also be a features of PE. Women present with symptoms or signs of an acute PE should have an ECG and a chest X-ray (CXR).

B. Bilateral compression duplex ultrasound should be performed in all suspected cases of PE. If the results are positive, VTE is confirmed and there is no need to pursue further testing. If the result is negative, X-Ray is used to guide further confirmatory test.

C. When the chest X- ray is abnormal CTPA, is recommended.

D. CTPA should be avoided in women with renal impairment or a history of contrast allergy.

iv. Where X-Ray is normal, VQ scan is preferred considering the radiation burden of CTPA for the active breast tissue of the pregnant women. In all perspectives, concerns of fetal radiation is secondary to women radiation.

v. Where CTPA is normal but the clinical suspicion of PE remains, anticoagulant treatment should be continued until PE is definitively excluded.

vi. D- Dimer level is increased in some normal women in pregnancy and preeclampsia patients, for that it **should not** be done during pregnancy, but very high D-Dimer result should not be attributed solely to pregnancy (especially in the first trimester) and these women should be managed with a high index of suspicion for VTE.

vii. Presence of hemodynamic instability strongly indicate CTPA and additional right ventricular assessment such as urgent echo.

4.9. **Treatment of VTE in pregnancy**:

4.9.1. In clinically suspected DVT or PE treatment, LMWH should be commenced immediately until the diagnosis is excluded by imaging.

4.9.2. Before anticoagulant therapy is commenced, blood should be taken for a full blood count, coagulation screen and electrolyte and liver function tests.

4.9.3. LMWH should be given in doses titrated against the women's booking weight. Women should be reweighed if there appears to be a significant discrepancy between booking weight and current appearance.

4.9.4. Patients should be trained in how to self-administer subcutaneous injections during their inpatient stay.

4.9.5. In case of DVT, the leg should be elevated and a graduated elastic compression stocking applied to reduce oedema, mobilization with graduated elastic compression stoking should be encouraged.

4.9.6. The treatment dose of enoxaparin is 100 IU/kg/BD (twice daily) subcutaneously in women with normal renal function. Therapeutic dose LMWH should be given throughout pregnancy (see appendix 5).

4.9.7. In breastfeeding women who is receiving anticoagulant therapy, using UFH, LMWH, warfarin, fondaparinux are all safe options.

4.9.8. Anticoagulation is continued for at least 6 weeks postpartum if three months mark is met during pregnancy, and at least 3 month postpartum if three months not met during pregnancy.

4.9.9. Routine measurement of peak anti-Xa is not recommended. Patients with extremes of weight should be referred to THU.

4.9.10. When VTE occurs at term, consideration should be given to the use of intravenous UFH as it has a short half-life and the effect can be reversed with protamine sulphate.

4.9.11. Conversion from LMWH to warfarin should be delayed till surgical hemostasis is secured and lochia indicates low possibility of haemorrhage.

Warfarin is started when the patient is eating well. INR should be checked on day 3 of warfarin

treatment and then daily until INR 2-3. LMWH can be stopped when required INR is reached (2-3).

4.9.12. Women discharged on warfarin must have an appointment at anticoagulant clinic within 1-2 weeks of discharge from hospital.

4.10. **Management of massive PE in pregnancy**

4.10.1. Massive PE by definition occurs when a patient is haemodynamically compromised by PE (blood pressure of 90/50 mmHg or lower). Collapsed shocked patients need to be assessed by team of experienced clinicians, including the on call consultant obstetrician and a decision should be on an individual basis whether women receive UFH, thrombolytic therapy or thoracotomy and surgical embolectomy and make the necessary arrangement for a transfer to tertiary hospital.

4.10.2. Management should involve a multidisciplinary resuscitation team including an urgent portable echocardiogram or CTPA within 1 hour of presentation should be arranged. If massive PE is confirmed, immediate thrombolysis should be considered. If the women is not suitable for thrombolysis or is moribund, a discussion with the cardiothoracic surgeon at tertiary hospital with a view to urgent thoracotomy should be undertaken.

4.10.3. UFH as opposed to LMWH is the preferred anticoagulant in massive PE with cardiovascular compromise. Follow the UFH infusion guidelines for systemic anticoagulant, with strict a PTT every 6 hours for 48-72 hours.

4.10.4. Physician, intensivist, obstetrician, haematologist and radiologist should be consulted for further opinion/ plan.

5. **Responsibilities**:

5.1. **HoD of Obstetrics & Gynecology shall**:

5.1.1. Ensure all doctors are aware about these guidelines.

5.2. **All obstetrics & gynecology doctors shall**:

5.2.1. Aware and adhere to these guidelines.

5.3. **HoD of internal Medicine shall**:

5.3.1. Ensure all doctors are aware about thses guidelines.

5.4. **Director of Radiology shall**:

5.4.1. Ensure all radiographer are aware and adhere to these guidelines.

5.4.2. Ensure all radiographers are aware about neurology Imaging.

6. References:

Title	Author	Year of publication
American Society of Hematology 2018 guidelines for management of venous thromboembolism: venous thromboembolism in the context of pregnancy	Bates. et al	September 2018
Guidelines on use of vena cava filters	British Committee for Standards in Haematology: Writing group: T. P. Baglin J. Brush M. Streiff	2006
Thromoembolic disease in pregnancy and the puerperium: Acute management of VTE	RCOG green top guideline	April 2015
Reducing the risk of venous thromboembolism during pregnancy and the puerperium	RCOG Green top guideline	April 2015
Thromboprohylaxis in pregnancy	Guy and St Thomas NHS hospital clinical guideline	2016
Handbook of Obstetric Medicine, Thromboemolic disease 5th edition	Catherine Nelson-Piercy.	4th edition2014
Royal Berkshire NHS hospital clinical guideline, VTE assessment and prophylaxis in pregnancy		2017

7. Attachments:

7.1. Risk assessment Tool for Venous Thromboembolism (VTE).

7.2. Venous Thromboembolism (VTE) Risk Assessment Antenatal Assessment.

7.3. Venous Thromboembolism (VTE) Risk Assessment Postnatal Assessment.

7.4. Treatment Doses of Enoxaparin.

Appendix 1

Risk Assessment Tool for Venous Thromboembolism (VTE)

Pre-existing Risk Factors for VTE

Pre-existing Risk Factors	Score	Tick Risk Assessment at Booking	Tick Risk Assessment[a] during Antenatal	Tick Risk Assessment
Previous VTE (except a single event related to major surgery)	4			
Previous VTE provoked by major surgery	3			
Asymptomatic high-risk thrombophilia (e.g. antithrombin, protein C or S de ciency or those with more than one thrombophilic defect (including homozygous factor V Leiden, homozygous prothrombin gene mutation and compound heterozygotes)	3			
Medical comorbidities e.g. cancer, heart failure, active systemic lupus erythematosus, in ammatory polyarthropathy or in ammatory bowel disease; nephrotic syndrome; type I diabetes mellitus with nephropathy; sickle cell disease ; current intravenous drug user	3			
Family history of unprovoked or estrongen-related VTE in first- degree relative	1			
symptomatic low-risk thrombophilia (e.g. Heterozygosity for factor V Leiden or prothrombin gene mutation or antiphospholipid antibodies)	1 [b]			
AGE (>35 years)	1			
Obesity	1or 2[c]			
Parity ≥ 3	1			
Smoker	1			
Gross varicose veins	1			
Obstetric Risk Factors				
Pre-eclampsia in current pregnancy	1			
ART/IVF (antenatal only)	1			
Multiple pregnancy	1			
Caesarean section in labour	2			
Elective caesarean section				
Mid-cavity or rotational operative delivery	1			
Prolonged labour (>24 hours)	1			
PPH (> 1 litre or transfusion)	1			
Preterm birth < 37+0 weeks in current pregnancy	1			
Stillbirth in current pregnancy	1			
Transient Risk Factors				
Any surgical procedure in pregnancy or puerperium except immediate repair of the perineum, e.g. appendicectomy, postpartum sterilisation.	3			
Hyperemesis	3			
OHSS (rst trimester only)	4			
Current systemic infection	1			
Immobility, dehydration	1			

[a]LMWH thropmboprophylaxis should usually be given during antenatal admissions, regadless of risk score, uless there is a speci c contra-indication. If [b]known low risk thromophilia is in a woman with family history of VTE in a rst-degree relative, then postpartum LMWH should be continued for 6 weeks.
[c]BMI ≥ 30 =1 ; BMI ≥ 40=2 Abbreviations: ART:assisted reproductive technology , IVF: in vitro fertilisation , OHSS: ovarian hyperstimulation syndrome

Appendix 2

سلطنة عمان
وزارة الصحة
SULTANATE OF OMAN
MINISTRY OF HEALTH

VENOUS THROMBOEMBOLISM (VTE) RISK ASSESSMENT
ANTENATAL ASSESSMENT

HIGH RISK

- Any previous VTE (except a single evevnt related to major surgery).

→ **HIGH RISK**
Requires ANTENATAL thromboprophylaxis and early ANC referral

INTEMEDIATE RISK

- Hospital admission
- Single previous VTE related to major surgery
- High-risk thrombophilia+no VTE
  - Antithrombin deficiency
  - Protein C deficiency
  - Protein S deficiency
- More than 1 thrombophilia
- Medical co-morbidities
  - Cancer
  - Heart failure
  - Active SLE
  - Inflammatory bowel disease
  - Nephrotic syndrome
  - Type 1 Diabetes with nephropathy
  - Sickle cell disease
  - Current IVDU
- Any surgical procedure during pregnancy
- OHSS (first trimester only).

→ **INTERMEDIATE RISK**
Consider antenatal thromboprophylaxis

CUMULATIVE RISK
Score 1 for each factor - Total score= ☐

- BMI > 30kg/m²
- BMI > 40kg/m² (=2risk factors)
- Age > 35
- Parity > =3
- Smoker
- Gross Varicose veins
- Current pre-eclampsia
- Immobility (paraplegia, PGP)
- Family history of unprovoked or estrogen-provoked VTE in 1st degree relative
- Multiple pregnancy
- IVF/ART
- Low-risk thrombophilia
- Transient risk factors
  - Dehydration/Hyperemesis
  - Current systemic infection
  - Long-distance travel

→ **>= 4 RISK FACTORS**
Thromboprophylaxis from 1st trimester

→ **3 RISK FACTORS**
Thromboprophylaxis from 28 weeks

→ **< = 2 RISK FACTORS: LOWER RISK**
Mobilisation and avoidance of dehydration

Early pregnancy weight	Prophylactic dose of enoxaparin
< 50 kg	20mg daily
50 - 90 kg	40mg daily
91 - 131 kg	60mg daily
131 - 170 kg	80mg daily
>170 kg	0.6mg/kg/day

For women with an identified bleeding risk, discuss the balance of bleeding and clotting with consultant obstetrician & haematologist.

Appendix 3

سلطنة عمان
وزارة الصحة
SULTANATE OF OMAN
MINISTRY OF HEALTH

VENOUS THROMBOEMBOLISM (VTE) RISK ASSESSMENT

POSTNATAL ASSESSMENT

HIGH RISK

- Any previous VTE
- Anyone requiring antenatal LMWH
- **High risk thrombophilia**
  - Antithrombin de ciency
  - Protein C de ciency
  - Protein S de ciency
- Low risk thrombophilia + Family history

→ **HIGH RISK**
AT least 6 weeks postnatal thromboprophylaxis

INTEMEDIATE RISK

- Caesarean section in labour
- BMI >40 kg/m^2
- Readmission in puerperium
- Prolonged admission ≥ 3 days
- Any surgical procedure in the puerperium except immediate repair of the perineum
- **Medical co-morbidities**
  - Cancer
  - Heart failure
  - SLE
  - In ammatory bowel disease
  - Nephrotic syndrome
  - Type 1 DM with nephropathy
  - Sickle cell disease
  - Current IVDU

→ **INTERMEDIATE RISK**
At least 10 days postnatal thromboprophylaxis
If persisting or >3 factors consider extending thromboprophylaxis

CUMULATIVE RISK

Score 1 for each factor - Total score= ☐

- Age>35
- BMI 30-40 kg/m^2
- Parity ≥3
- Smoker
- Elective Caesarean Section
- Gross Varicose veins
- Current pre-eclampsia
- Immobility (paraplegia, PGP, long-distance travel)
- Family history of VTE in 1 st degree relative
- Multiple pregnancy
- Low-risk thrombophilia
- Preterm delivery<37 weeks in this pregnanct
- Stillbirth in this pregnancy
- Mid-cavity or rotational operative delivery
- Legs in lithotomy >1 hr
- Prolonged labour>24 hours
- PPH 1 litre or blood transfusion

→ **≥2 RISK FACTORS**

→ **≤1 RISK FACTOR: LOWER RISK**
Early mobilisation and avoidance of dehydration

Early pregnancy weight	Prophylactic dose of enoxaparin
< 50 kg	20mg daily
50 - 90 kg	40mg daily
91 - 131 kg	60mg daily
131 - 170 kg	80mg daily
> 170 kg	0.6mg/kg/day

Prepared by: Dr. Muna Al Zadjali

Appendix 4

Treatment doses of Enoxaparin:

Weight	Enoxaparin (1 mg/kg/daily)
<50 kg	4000 IU/ kg b.d. or 6000 IU/ kg o.d.
50–69kg	6000 IU/ kg b.d. or 9000 IU/ kg o.d.
70–89kg	8000 IU/ kg b.d. or 12000 IU/ kg o.d.
>90 kg	1000 IU/ kg b.d. or 15000 IU/ kg o.d.