

# Thromboprophylaxis in the Antenatal and Postpartum Period Guideline

## Guideline information

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### Summary of document:

This guideline is to help health care professionals identify women who have an increased risk of thromboembolism in the antepartum and postpartum period, and to offer appropriate thromboprophylaxis to reduce their risk of Venous Thromboembolism (VTE).

The guidance uses the term “woman” (pronouns she or her) to describe individuals whose sex assigned at birth was female, whether they identify as female, male or non-binary. It is important to acknowledge it is not only people who identify as women for whom it is necessary to access women’s health and reproductive services. Therefore, this should include people who do not identify themselves as women but who are pregnant or have recently given birth. Obstetric and midwifery services and delivery of care must therefore be appropriate, inclusive, and sensitive to the needs of those individuals whose gender identity does not align with the sex that they were assigned at birth.

### Scope:

This guideline is for the use of HDD health care professionals who provide care to the pregnant and postpartum woman who are at increased risk of thrombosis.

The guidance uses the term “woman” (pronouns she or her) or Mother to describe individuals whose sex assigned at birth was female, whether they identify as female, male or non-binary. It is important to acknowledge it is not only people who identify as women for whom it is necessary to access women’s

health and reproductive services. Therefore, this should include people who do not identify themselves as women but who are pregnant or have recently given birth. Obstetric and midwifery services and delivery of care must therefore be appropriate, inclusive and sensitive to the needs of those individuals whose gender identity does not align with the sex that they were assigned at birth.

To be read in conjunction with:

[457A - Diagnosis and Management of Venous Thromboembolism: Deep Vein Thrombosis \(DVT\) Procedure](#) –opens in new tab

[457B - Diagnosis and Management of Venous Thromboembolism: Pulmonary Embolism \(PE\) Procedure](#) –opens in a new tab

[1120 Thromboprophylaxis Policy \(Based on the All Wales Policy\)](#) –opens in new tab

[Thrombosis and Embolism during Pregnancy and the Puerperium: Acute Management \(Green-top Guideline No. 37b\) | RCOG](#) –opens in a new tab

[Reducing the Risk of Thrombosis and Embolism during Pregnancy and the Puerperium \(Green-top Guideline No. 37a\) | RCOG](#) –opens in a new tab

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## Scope

This guideline is for the use of HDD health care professionals who provide care of the pregnant and postpartum women who are at increased risk of thrombosis.

## Aim

The aim of this document is to advise and support health care professionals to identify women who have an increased risk of thromboembolism, such as pulmonary embolism (PE) and deep vein thrombosis (DVT) in the antepartum and postpartum period.

## Objectives

The aim of this document will be achieved by the following objectives:

Undertaking effective risk assessments and initiation of low weight molecular heparin (LWMH when indicated to reduce the risks of pregnant and postpartum women experiencing preventable thrombosis).

## Background

Thrombosis and thromboembolism remain the leading cause of maternal morbidity and mortality maternal death in the UK in 2020-22 during or up to six weeks after the end of pregnancy, MBRACCE-UK. Pregnancy itself predisposes women to VTE and although the absolute risk of VTE in pregnancy is low (1-2 per 1000) [RCOG 2015], the individual likelihood of thromboembolism during pregnancy and the puerperium is influenced by a wide range of factors. The likelihood of VTE can be mitigated by offering women at increased risk thromboprophylaxis.

Factors that increase the risk include pre-existing medical conditions, or circumstances, factors specific to pregnancy and birth. Additionally, some risk factors (transient risk factors) may develop and/or resolve during a pregnancy. Therefore, ongoing assessment of all women from early pregnancy into the puerperium is an essential part of universal care, leading to timely identification of risk factors and provision of pharmacological prophylaxis (low molecular weight heparin – LMWH) for women at increased risk.

This is an abbreviated guide and should be used in conjunction with the main guideline produced by the Royal College of Obstetricians and Gynaecologists (RCOG) No 37a: Reducing the Risk of Venous Thromboembolism during Pregnancy and the Puerperium. [Reducing the Risk of Thrombosis and Embolism during Pregnancy and the Puerperium \(Green-top Guideline No. 37a\) | RCOG](#) –opens in a new tab

High-risk patients or those with thrombophilia should be managed by a multi-disciplinary team that includes input from a haematologist with an interest in obstetrics.

## Risk Factors

The risk factors for VTE in pregnancy and post-partum (RCOG GTG No 37a)

| Risk factors for venous thromboembolism in pregnancy and the puerperium  |  |  |
|--|--|--|
| Pre-existing   | Previous VTE   |  |
|  | Thrombophilia  | Heritable Antithrombin deficiency Protein C deficiency Protein S deficiency Factor V Leiden Prothrombin gene mutation  |
|  |  | Acquired Antiphospholipid antibodies Persistent lupus anticoagulant and/or persistent moderate/high titre anticardiolipin antibodies and/or $\beta 2$ -glycoprotein 1 antibodies |
|  | Medical comorbidities e.g. cancer; heart failure; active SLE, active inflammatory polyarthropathy or active IBD; nephrotic syndrome; type I diabetes mellitus with nephropathy; sickle cell disease; current intravenous drug user |  |
|  | Age $\geq 35$ years old  |  |
|  | Obesity (BMI $\geq 30$ kg/m <sup>2</sup> ) either pre- pregnancy or in early pregnancy   |  |
|  | Parity $\geq 3$ (a woman becomes para 3 after her third delivery)  |  |
|  | Smoking  |  |
|  | Gross varicose veins (symptomatic or above knee or with associated phlebitis, oedema/skin changes)   |  |
|  | Paraplegia   |  |
| Obstetric risk factors   | Multiple pregnancy Current pre-eclampsia   |  |
|  | Prolonged labour (> 24 hours)<br>Mid-cavity or rotational operative delivery<br>Stillbirth<br>Preterm birth<br>Postpartum haemorrhage (> 1 litre/requiring transfusion)  |  |
| New onset/transient<br>These risk factors are potentially reversible and may develop at later stages in gestation than the initial risk assessment or may resolve and therefore what is important is an ongoing individual risk assessment | Any surgical procedure in pregnancy or puerperium except immediate repair of the perineum, e.g. appendicectomy, postpartum sterilisation Bone fracture   |  |
|  | Hyperemesis, dehydration   |  |
|  | Ovarian hyperstimulation syndrome (first trimester only)   | Assisted reproductive technology (ART), in vitro fertilisation (IVF)   |
|  | Admission or immobility ( $\geq 3$ days' bed rest)   | e.g. pelvic girdle pain restricting mobility   |
|  | Current systemic infection (requiring intravenous antibiotics or admission to hospital)  | e.g. pneumonia, pyelonephritis, postpartum wound infection   |
|  | Long-distance travel (> 4 hours)   |  |

## Admission to Hospital

Admission to hospital during pregnancy is associated with an 18-fold increased risk of first VTE compared with time outside hospital and the risk remains increased after discharge, being six-fold higher in the 28 days after discharge. The risk is higher in the third trimester and in women over 35 years old. The risk of VTE during hospitalisation and after discharge are four fold higher for admissions lasting less than 3 days but 12-fold higher if 3 days or longer.

An individual assessment of thrombotic risk should be undertaken at each and every antenatal and postnatal hospital admission.

Early assessment is important in view of the increased thrombotic risks associated with complications in the first trimester e.g. hyperemesis gravidarum where odds ratio for VTE was 2.5.

## Risk Assessment

All women will be assessed using the maternity VTE risk assessment proforma for the risk of VTE at the following times:

- At booking by community midwife and repeated following the dating scan or at the initial consultant appointment (if required) ([Appendix 1](#))
- At each antenatal inpatient admission ([Appendix 2](#))
- If antenatal admission  $\geq 24$  hours.
- At 28 weeks' gestation (appendix 3)
- With the development of other inter pregnancy/current problems (i.e. pre-eclampsia, hyperemesis gravidarum)
- Post-birth in the labour ward /birth setting prior to transfer to the ward /and transfer home ([Appendix 4](#))
- During any postnatal readmission ([Appendix 4](#))

These assessments should be documented (including date, score and whether LMWH is required) on the appropriate risk assessment proforma found in both the antenatal handheld records and postnatal handheld notes.

## Antenatal/ Prenatal Management

### Antenatal scoring

(See [Appendix 1.](#))

- If total score  $\geq 4$  antenatally, regarded as high risk and recommend thromboprophylaxis from the first trimester.
- If total score 3 antenatally, consider thromboprophylaxis from 28 weeks or Anti embolic stockings if LMWH is contraindicated.
- If admitted to hospital antenatally consider thromboprophylaxis.
- If prolonged admission ( $\geq 3$  days) or readmission to hospital within the puerperium consider thromboprophylaxis.

For patients with an identified bleeding risk, the balance of risks of bleeding and thrombosis should be discussed in consultation with a haematologist with expertise in thrombosis and bleeding in pregnancy.

Women who require prophylaxis from confirmation of pregnancy should have an early pregnancy scan to confirm viability and pregnancy location before subsequent initiation of prophylactic LMWH.

## Management of women WITH history of previous VTE

Antenatal thromboprophylaxis for those with a history of previous VTE **should begin as early in pregnancy as practical**. They should be advised how to gain early access to appropriate care.

- Women with previous VTE associated with antithrombin deficiency (who will often be on long term oral anticoagulation) should be offered thromboprophylaxis with higher dose LMWH (either 50%, 75% or full treatment dose) antenatally and for 6 weeks postpartum or until returned to oral anticoagulant therapy after delivery.
- Women with VTE associated with antiphospholipid syndrome with recurrent VTE (who will often be on long-term oral anticoagulation) should be offered thromboprophylaxis with higher dose LMWH (either 50%, 75% or full treatment dose) antenatally and for 6 weeks postpartum or until returned to oral anticoagulant therapy after delivery. These women require specialist management by experts in haemostasis and in pregnancy.
- Women in whom the original VTE was unprovoked/idiopathic or related to oestrogen (oestrogen-containing contraception/pregnancy) or related to a transient risk factor other than major surgery or who have other risk factors should be offered thromboprophylaxis with LMWH throughout the antenatal period.
- Women with previous VTE should be offered pre-pregnancy counselling and a prospective management plan for thromboprophylaxis in pregnancy made. Those who become pregnant before receiving such counselling should be referred at the earliest opportunity in pregnancy to a clinician with expertise in thrombosis in pregnancy.
- Women with previous VTE (except those with a single previous VTE related to major surgery and no other risk factors) should be offered thromboprophylaxis with LMWH throughout the antenatal period.
- In women in whom the original VTE was provoked by major surgery from which they have recovered and who have no other risk factors, thromboprophylaxis with LMWH can be withheld antenatally until 28 weeks provided no additional risk factors are present (in which case they should be offered LMWH). They require close surveillance for the development of other risk factors.

## Antenatal Thromboprophylaxis for women WITHOUT history of previous VTE.

- Women with thrombophilia, without previous VTE, should be stratified according to both the level of risk associated with their thrombophilia and the presence or absence of a family history or other risk factors.

- Women without previous VTE and without first trimester risk factors or admission to hospital, but with **four other risk factors** should be considered for antenatal prophylaxis throughout pregnancy.
- Women without previous VTE and without first trimester risk factors or admission to hospital, but with **three other risk factors**, can start antenatal prophylaxis at 28 weeks of gestation

## First Trimester Risk Factors

Consider Thromboprophylaxis LMWH if:

- Admitted with Hyperemesis gravidarum (HG). LMWH may be discontinued when the HG has resolved
- Admitted with ovarian hyper stimulation syndrome - LMWH used in the first trimester.
- **IVF pregnancy and three other risk factors** LMWH starting in the first trimester.

## Thromboprophylactic doses for antenatal and postnatal LMWH

Drug dose calculation is based on booking weight and LMWH of choice in HDUHB is Enoxaparin

| Weight   | Enoxaparin     | Dalteparin          | Tinzaparin<br>(75 units/kg/day) |
|--|----------------|---------------------|---------------------------------|
| <50kg  | 20mg daily     | 2500 units daily    | 3500 units daily                |
| 50-90kg  | 40mg daily     | 5000 units daily    | 4500 units daily                |
| 91-130kg   | 60mg daily *   | 7500 units daily    | 7000 units daily*               |
| 131-170kg  | 80mg daily*    | 10000 units daily   | 9000 units daily*               |
| <b>High prophylactic dose for women weighing 50-90kg</b> | 40mg 12 hourly | 5000units 12 hourly | 4500 Units 12 hourly            |

\*May be given in divided doses.

## Contraindications to LMWH use.

- Known bleeding disorder (e.g. haemophilia, von Willebrand's disease or acquired coagulopathy)
- Active antenatal or postpartum bleeding
- Women considered at increased risk of major haemorrhage (e.g. placenta praevia)
- Thrombocytopenia (platelet count < 75 × 10<sup>9</sup>/l)
- Acute stroke in previous 4 weeks (haemorrhagic or ischaemic)
- Severe liver disease (prothrombin time above normal range or known varices)
- Uncontrolled hypertension (blood pressure > 200 mmHg systolic or > 120 mmHg diastolic).
- Severe renal disease (glomerular filtration rate [GFR] < 30 ml/minute/1.73m<sup>2</sup>) (Doses of LMWH should be reduced in women with renal impairment.)
- **Women at high risk of haemorrhage with risk factors** including major antepartum haemorrhage, coagulopathy, progressive wound haematoma, suspected intra-abdominal

bleeding and postpartum haemorrhage may be managed with anti-embolism stockings (AES), foot impulse devices or intermittent pneumatic compression devices. Unfractionated heparin (UFT) may also be considered.

- Women with previous or current allergic reactions to LMWH should be offered an alternative preparation or alternative form of prophylaxis.

## Advice for woman

Advise woman that if a dose is missed, have the injection as soon as possible and then take another injection 24 hours later.

## Management for Delivery

- Women using LMWH should be advised they should not inject any further LMWH if:
  - If they have any vaginal bleeding OR
  - If they think that labour has begun.

Then contact the hospital/Triage for advice and on admission require review by an obstetrician and reassessed with further dose prescribed alongside an ongoing plan of care documented.

- Women receiving antenatal LMWH having an elective caesarean section should receive a thromboprophylactic dose of LMWH on the day prior to delivery. On the day of delivery, any morning dose should be omitted and the operation performed that morning
- Regional anaesthetics should not be given to a woman until at least 12 hours after the last dose of prophylactic LMWH or at least 24 hours after the last dose of therapeutic low molecular heparin.
- Epidural catheters should not be removed within 12 hours of the most recent injection.

## Postnatal Management

Reassess using the Postnatal Risk Assessment and Management ([appendix 4](#))

- Where indicated, thromboprophylaxis should be started or reinstated as soon as the immediate risk of haemorrhage is reduced.
- Thromboprophylaxis doses of LMWH should be given between 4 - 6 hours after operative delivery.
- Postnatal thromboprophylaxis for women who received antenatal LWMH should have a postnatal plan documented by an obstetrician in the antenatal handheld record.
- All women need immediate rescoring following delivery and score should be documented in the postnatal handheld record.
- All women requiring LWMH should have it prescribed prior to transfer to the ward to avoid any delay in administration.
- A scoring of risk factors should be undertaken following the development of any complications such as a secondary PPH, postnatal pre-eclampsia, infection, or increased immobility.

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

## References

Mother and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK. (MBRRACE-UK). October 2024 Update

[Maternal mortality 2020-2022 | MBRRACE-UK | NPEU](#)

RCOG (2015) Guideline Reducing the Risk of Venous Thromboembolism during Pregnancy and the puerperium. *Green-top Guideline No.37a*. Available at

<https://www.rcog.org.uk/globalassets/documents/guidelines/gtg-37a.pdf>

RCOG patient information

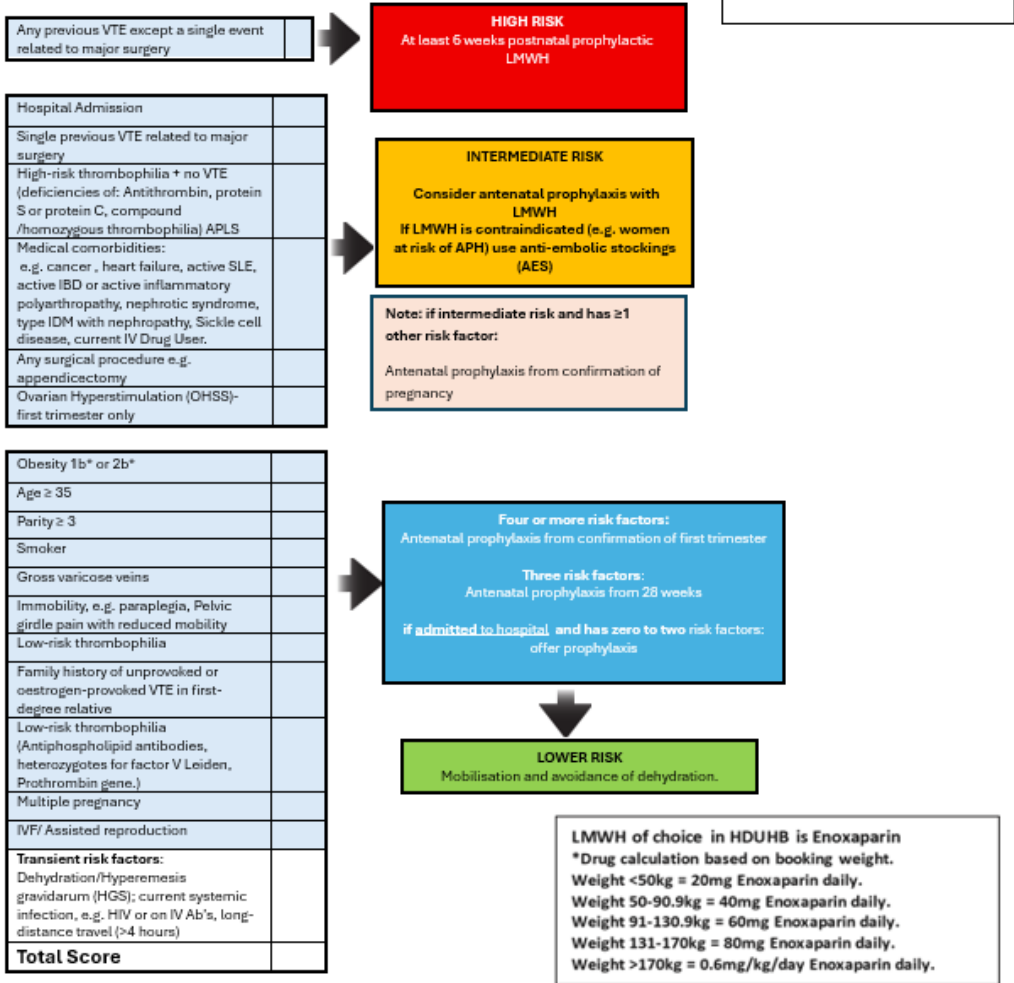
[pi-reducing-the-risk-of-vt-in-pregnancy.pdf](#)

# Appendix 1. Antenatal Risk Assessment at Booking .



## Risk Assessment and management of Venous Thrombosis

### Antenatal Assessment (to be completed at booking)



\* 1b BMI≥30 =1 risk factor, \*2b BMI ≥40= 2 risk factors.

\*\* If the known low-risk thrombophilia is in a woman with a family history of VTE in a first-degree relative postpartum thromboprophylaxis should be continued for 6 weeks.

| Risk assessment at 28 weeks (please tick) ✓/✗: | High   | Intermediate | Lower       |
|--|--------|--------------|-------------|
| Assessed by:                                   | Print: | Date:        | Designation |

**Risk Assessments are to be completed at booking, at 28 weeks, intrapartum and immediately postpartum. Repeat risk assessment if admitted to hospital for any reasons or develops another intercurrent condition.**

## Appendix 2. Antenatal Risk Assessment when admitted as antenatal inpatient or any developing or change of risk factors at any time during pregnancy.



### Risk Assessment and management of Venous Thrombosis

#### Antenatal Inpatient Assessment

Patient Addressograph label:

Repeat risk assessment if admitted to hospital for any reasons or develops another intercurrent condition.

| Reassess risk at all antenatal inpatient admissions   | Date: Gestation | Date: Gestation | Date: Gestation | Date: Gestation |
|---|-----------------|-----------------|-----------------|-----------------|
| Any previous VTE except a single event related to major surgery   |                 |                 |                 |                 |
| Hospital admission  |                 |                 |                 |                 |
| Single previous VTE related to major surgery  |                 |                 |                 |                 |
| High-risk thrombophilia + no VTE (deficiencies of: Antithrombin, protein S or protein C, compound /homozygous thrombophilia) APLS   |                 |                 |                 |                 |
| Medical comorbidities: e.g. cancer, heart failure, active SLE, active IBD or active inflammatory polyarthropathy, nephrotic syndrome, type IDM with nephropathy, Sickle cell disease, current IV Drug User. |                 |                 |                 |                 |
| Any surgical procedure e.g. appendicectomy  |                 |                 |                 |                 |
| Ovarian Hyperstimulation (OHSS) first trimester only.   |                 |                 |                 |                 |
| Obesity 1b* or 2b*  |                 |                 |                 |                 |
| Age ≥ 35  |                 |                 |                 |                 |
| Parity ≥ 3  |                 |                 |                 |                 |
| Smoker  |                 |                 |                 |                 |
| Gross varicose veins  |                 |                 |                 |                 |
| Current pre-eclampsia   |                 |                 |                 |                 |
| Immobility, e.g. paraplegia, PGP, bedbound.   |                 |                 |                 |                 |
| Family history of unprovoked or oestrogen-provoked VTE in first-degree relative   |                 |                 |                 |                 |
| Low-risk thrombophilia ** (Antiphospholipid antibodies, heterozygotes for factor V Leiden, Prothrombin gene.)   |                 |                 |                 |                 |
| Multiple pregnancy  |                 |                 |                 |                 |
| IVF/Assisted Reproduction   |                 |                 |                 |                 |
| Transient risk factors: Dehydration/Hyperemesis gravidarum (HGS); current systemic infection; long-distance travel (>4 hours)   |                 |                 |                 |                 |
| Signature   |                 |                 |                 |                 |

**HIGH RISK**  
Requires antenatal prophylaxis with LMWH  
Refer to consultant Haematologist

**INTERMEDIATE RISK**  
Consider antenatal prophylaxis with LMWH  
If LMWH is contraindicated (e.g. women at risk of APH) use anti-embolic antenatal stockings (TEDS)

**NOTE: If Intermediate risk and has ≥1 other risk factor:**  
Antenatal prophylaxis from confirmation of pregnancy

**Four or more risk factors:**  
Antenatal prophylaxis from confirmation of first trimester  
  
**Three risk factors:**  
Antenatal prophylaxis from 28 weeks  
  
if admitted to hospital ≥ 24 hours and has Zero to two risk factors : offer prophylaxis

**IF LOWER RISK i.e. 0-2 risk factors**  
Mobilisation and avoidance of dehydration

LMWH of choice in HDUHB is Enoxaparin  
\*Drug calculation based on booking weight.  
Weight <50kg = 20mg Enoxaparin daily.  
Weight 50-90.9kg = 40mg Enoxaparin daily.  
Weight 91-130.9kg = 60mg Enoxaparin daily.  
Weight 131-170kg = 80mg Enoxaparin daily.  
Weight >170kg = 0.6mg/kg/day Enoxaparin daily.

**Reassess risk at all antenatal inpatient admissions**

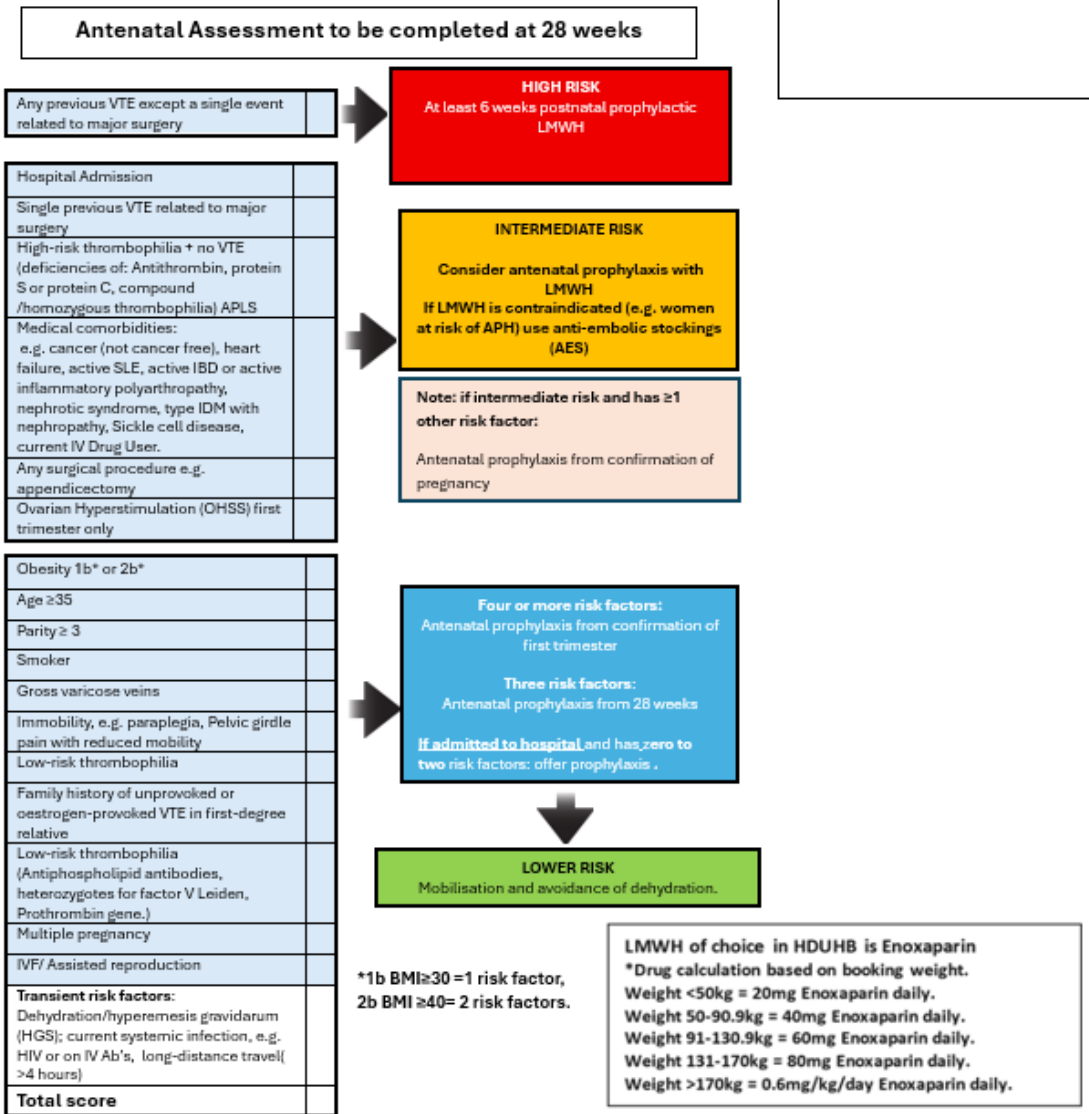
Date: Gestation    Date: Gestation    Date: Gestation    Date: Gestation

\*1b BMI ≥ 3 = 1 risk factor, 2b BMI ≥ 40 = 2 risk factors  
\*\* If the known low-risk thrombophilia is in a woman with a family history of VTE in a first-degree relative postpartum thromboprophylaxis should be continued for 6 weeks

# Appendix 3. Antenatal Risk Assessment at 28 weeks and contraindications to Low Molecular Weight Heparin (LMWH) use.



## Risk Assessment and management of Venous Thombosis



Patient Addressograph label:

\*\* If the known low-risk thrombophilia is in a woman with a family history of VTE in a first-degree relative postpartum thromboprophylaxis should be continued for 6 weeks.

|   |        |              |             |
|---|--------|--------------|-------------|
| <b>Risk assessment at 28 weeks (please tick)√:</b>  | High   | Intermediate | Lower       |
| Assessed by:  | Print: | Date:        | Designation |
| <b>Risk Assessments to be completed at booking, at 28 weeks, intrapartum and immediately postpartum. Repeat risk assessment if admitted to hospital for any reasons or develops another intercurrent condition.</b> |        |              |             |

