VTE Assessment and Prophylaxis in pregnant and postnatal women (GL891)

Approval

<table>
<thead>
<tr>
<th>Approval Group</th>
<th>Job Title, Chair of Committee</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternity &amp; Children's Services Clinical Governance Committee</td>
<td>Chair, Maternity Clinical Governance Committee</td>
<td>7th June 2019</td>
</tr>
</tbody>
</table>

Change History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Author, job title</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2</td>
<td>Feb 2018</td>
<td>Mable Pereira (Consultant Obs &amp; Gynae)</td>
<td>Pg 4 BMI &gt;40kg/m2 (= 2 risk factors) added Pg 10 – VTE risk assessment AN updated</td>
</tr>
<tr>
<td>7.3</td>
<td>Aug 2018</td>
<td>C Bell (Snr MW Del Suite), J Dhami (Obs &amp; Gynae Consultant)</td>
<td>Pg 5 – criteria added to include use of FlowtronsPg 11- PN assessment form amended to include criteria for use of Flowtrons</td>
</tr>
<tr>
<td>7.4</td>
<td>Mar 2019</td>
<td>Mable Pereira (Consultant Obs &amp; Gynae)</td>
<td>Live change to amend wording on PN risk assessment to clarify &amp; note that CMW staff will complete the VTE assessment on CMIS and page 13 in the PI notes</td>
</tr>
<tr>
<td>8.0</td>
<td>May 2019</td>
<td>Mable Pereira (Consultant Obs &amp; Gynae)</td>
<td>Reviewed, no changes</td>
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Author: Mable Pereira (Consultant Obs & Gynae) Date: June 2019 Job Title: Consultant Obs & Gynae Review Date: June 2021 Policy Lead: Group Director Urgent Care Version: V8.0 ratified 7/6/19 Location: Policy hub/ Clinical/ Maternity/ Medical conditions & complications/ GL891
Overview: Thromboembolism remains the third highest cause of direct death in the latest confidential enquiry (CMACE 2011). The most important risk factors are high BMI and caesarean delivery.

Pulmonary embolism remains a leading direct cause of maternal death in the UK. In the CMACE report “Saving Mother’s Lives 2006-2008”, there were 18 deaths, a sharp decline from the 45 deaths in the 2003-2005 report. 89% and 79% of these women respectively had identifiable risk factors, as did 70% of the UK Obstetric Surveillance System (UKOSS) cohort of fatal and non-fatal antenatal PE’s.

The relative risk of VTE in pregnancy is increased 4-6-fold, with a further increase in risk postpartum, however the absolute incidence of VTE in pregnancy and the puerperium is low, with an overall incidence of 1-2 per 1000.

Many fatal VTE events occur in the first trimester so prophylaxis, if required, should begin in early pregnancy.

Risk Assessment

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

- At booking
- On each admission
- With the development of other inter current problems
- Post-delivery (before transfer home/to the ward)

This will be documented on the appropriate risk assessment proforma (see VTE risk assessment form page 10/11). Community staff will complete the VTE assessment on CMIS and page 13 in the PI notes.
**Antenatal Prophylaxis**

Prophylaxis with antenatal LMWH (Tinzaparin) is required in the following situations:

1. Women with any **previous VTE** (except a single event related to major surgery) are considered **high risk** and require antenatal prophylaxis throughout pregnancy and for 6 weeks post-partum. These patients should be referred to Miss Surabhi Bisht’s Tuesday pm antenatal clinic.

2. Antenatal prophylaxis should be considered in those patients deemed to be at **intermediate risk**. This includes patients with the following risk factors:

   - Hospital admission
   - Single previous VTE related to major surgery
   - **High-risk thrombophilia + no VTE**
     - Anti-thrombin 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)

3. Patients with 4 or more cumulative risk factors require thromboprophylaxis from the first trimester.

4. Patients with 3 cumulative risk factors require thromboprophylaxis from 28 weeks.

5. Patients with fewer than 3 cumulative risk factors are at lower risk and require mobilisation and avoidance of dehydration only.
The cumulative risk factors are:

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

**Low molecular weight heparin**

The dose of Tinzaparin is based on booking weight:

<table>
<thead>
<tr>
<th>Weight</th>
<th>Tinzaparin</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50kg</td>
<td>3500 units daily</td>
</tr>
<tr>
<td>50-90kg</td>
<td>4500 units daily</td>
</tr>
<tr>
<td>91-130kg</td>
<td>7000 units once daily*</td>
</tr>
<tr>
<td>131-170kg</td>
<td>9000 units once daily*</td>
</tr>
<tr>
<td>&gt;171kg</td>
<td>75u /kg/day</td>
</tr>
</tbody>
</table>

*May be given in divided doses

In women identified as having a bleeding risk, the balance of bleeding and clotting should be discussed with the consultant obstetrician and haematologist.

Heparin induced osteopenia is a risk with prolonged use. Bone loss is similar to that experienced during a six month period of breast feeding.
Management for delivery

- Women once in established labour should be advised not to inject any further heparin.
- If a woman on thromboprophylaxis is admitted for a planned delivery, she must be told to stop treatment 24 hours before admission.
- Regional anaesthetics should not be given to a woman until
  - at least 12 hours after the last dose of prophylactic low molecular heparin
  - 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.
- Thromboprophylactic doses of low molecular weight heparin should be given 3 hours after operative delivery (or 4 hours after regional anaesthetic techniques).

Postpartum prophylaxis

Risk management for all cases is mandatory.

The completion of the postnatal venous thromboembolism guideline (VTE) assessment should be completed on page 3 of the Postnatal Records for mother (Community staff will complete the VTE assessment on CMIS and page 13 in the PI notes). This should happen as soon after delivery as possible and definitely within the first six hours. Each of the following risk factors is listed and should be marked with a tick if present. The number of ticks will help classify the patient into three different categories (low, intermediate and high risk).

Reassessment should occur if the clinical picture changes in the postnatal period, for example a mid-cavity delivery with no other risk factors has a pph on the ward of over 1 litre. To do this reassessment use the Postnatal Venous Thromboembolism VTE Risk assessment (RBFT) which can be found under Stationery /Risk Assessments on the Trust website.

Please note that;

- **Elective cases** should have Flowtrons as mechanical management until commencement of Tinzaparin or mobilisation (whichever comes first).
- **Emergency cases** that already have TEDs on should then go to Tinzaparin post op if required. **Emergency cases** with no TEDs on should have Flowtrons in theatre and then go on to Tinzaparin.
• Women with reasons for delayed administration of Tinzaparin (e.g. uterine tamponade) should have Flowtrons until Tinzaparin commences.

TED’s and Flowtrons MUST NOT be used together – using the above criteria choose one or the other.

**Risk assessment scoring system:**

<table>
<thead>
<tr>
<th>PERSONAL HISTORY</th>
<th>MEDICAL HISTORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &gt;35 years</td>
<td>Previous DVT/PE (Recurrent/ unprovoked/ oestrogen-related)</td>
</tr>
<tr>
<td>Parity ≥ 3</td>
<td>Previous DVT/PE (Provoked)</td>
</tr>
<tr>
<td>BMI 30 - 40</td>
<td>Thrombophilia Group 1 (Antithrombin deficiency; FVL homozygous; &gt;1 thrombophilic defect; Antiphospholipid syndrome)</td>
</tr>
<tr>
<td>BMI &gt;40 (= 2 risk factors)</td>
<td>Thrombophilia Group 2 (FVL heterozygous; Protein C/S deficiency ;Prothrombin gene)</td>
</tr>
<tr>
<td>Immobility e.g. Wheelchair bound</td>
<td>SLE/ Sickle cell disease</td>
</tr>
<tr>
<td>Smoking</td>
<td>Nephrotic syndrome (proteinuria &gt;3g/day)</td>
</tr>
<tr>
<td>Family history VTE (1st degree relative)</td>
<td>Inflammatory bowel disease</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CURRENT PREGNANCY</th>
<th>DELIVERY</th>
</tr>
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<tbody>
<tr>
<td>Dehydration</td>
<td>Prolonged labour (&gt;24 hours)</td>
</tr>
<tr>
<td>Severe PET</td>
<td>Mid-cavity or rotational forceps</td>
</tr>
<tr>
<td>Multiple pregnancy or IVF</td>
<td>Legs in lithotomy &gt;1hr</td>
</tr>
<tr>
<td>Severe systemic infection</td>
<td>Caesarean section: elective or emergency</td>
</tr>
<tr>
<td>Immobility</td>
<td>EUA/ERPC</td>
</tr>
<tr>
<td>VTE in current pregnancy</td>
<td>1º / 2º PPH (&gt;1litre or blood transfusion)</td>
</tr>
</tbody>
</table>
Management plan:

**HIGH RISK (3 risk factors or greater)**
- Consider PN LMWH for 10 days (e.g. EI LSCS + additional risk factors) or 6 weeks (at least six weeks if previous VTE; VTE in current pregnancy; on AN LMWH; Thrombophilia Group 1; or Thrombophilia Group 2 with a family history)

**INTERMEDIATE RISK (2 risk factors)**
- Consider PN LMWH for 10 days (especially BMI >40; Em LSCS; Thrombophilia Group 2; medical co-morbidities; prolonged hospital admission)

**LOWER RISK (fewer than two risk factors)**
- No LMWH required
- Early mobilisation and avoidance of dehydration is required

**Timing of administration of thromboprophylaxis**
Postpartum thrombophylaxis should be given as soon as possible after delivery but should be withheld for 4-6 hours after insertion or removal of epidural catheter. Any low molecular weight heparin can be used: tinzaparin and clexane are the two most commonly prescribed.

Refer to the following tables for guidance on dosage according to patient’s postnatal weight (weight at booking should guide if current weight not known).

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<thead>
<tr>
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<td>&gt;171kg</td>
<td>75u /kg/day</td>
</tr>
</tbody>
</table>

In exceptional cases clotting should be monitored with APTT - discuss with Haematologists.

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Author: Mable Pereira (Consultant Obs & Gynae)  
Date: June 2019

Job Title: Consultant Obs & Gynae  
Review Date: June 2021

Policy Lead: Group Director Urgent Care  
Version: V8.0 ratified 7/6/19

Location: Policy hub/ Clinical/ Maternity/ Medical conditions & complications/ GL891
References:


Audit standards:

1. All women will have a VTE risk assessment done at booking (new sets of antenatal notes, booking from Sept 2011) by fully completing the antenatal boxes in VTE risk assessment form or at first antenatal clinic visit (old set of antenatal notes). The appropriate actions will be carried out following the risk assessment.

2. All women admitted to maternity (inpatient) will have a VTE risk assessment done per admissions by fully completing the relevant boxes (antenatal / delivery) in VTE risk assessment form. The appropriate actions will be carried out following the risk assessment.

3. All women who require thromboprophylaxis or treatment for a diagnosis of VTE will have an individual management plan documented in the maternal health care record.

4. All women who had thromboprophylaxis in the antenatal period will be advised to stop it 24 hours before admission for planned deliveries.
Appendix 1a – VTE Risk assessment form (Antenatal)

NAME:
HOSPITAL NUMBER:
DATE OF BIRTH:

(Affix addressograph)

VENOUS THROMBOEMBOLISM (VTE) RISK ASSESSMENT

ANTENATAL ASSESSMENT

HIGH RISK
- Any previous VTE (except a single event related to major surgery)

HIGH RISK
Requires ANTENATAL thromboprophylaxis and referral to Tuesday pm ANC

INTERMEDIATE 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 risk factor - Total score =

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

Assessment at booking
Date ____________________
Sign ____________________

Assessments must be made on each admission or with any change in the clinical picture
1. Sign ____________________
2. Sign ____________________
3. Sign ____________________
4. Sign ____________________
5. Sign ____________________
6. Sign ____________________

TINzaparin DOSES
- <50kg 3500 units daily
- 50-90kg 4500 units daily
- 91-130kg 7000 units daily
- 131-170kg 9000 units daily
- >170kg 75 units/kg/day
*May be given in divided doses

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

Author: Mable Pereira (February 2018)
Appendix 1b – VTE Risk assessment form (Postnatal)

VENOUS THROMBOEMBOLISM (VTE) RISK ASSESSMENT

POSTNATAL ASSESSMENT

HIGH RISK
- Any previous VTE
- Anyone requiring antenatal LMWH
- High risk thrombophilia
  - Anti-thrombin deficiency
  - Protein C deficiency
  - Protein S deficiency
- Low risk thrombophilia + Family history

INTERMEDIATE RISK
- Caesarean section in labour
- BMI > 40kg/m²
- 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
  - Inflammatory bowel disease
  - Nephrotic syndrome
  - Type 1 DM with nephropathy
  - Sickle cell disease
  - Current IVDU

CUMULATIVE RISK
Score 1 for each risk factor - Total score =
- Age > 35
- BMI 30-40kg/m²
- Parity > = 3
- Smoker
- Elective Caesarean Section
- Gross Varicose veins
- Current pre-eclampsia
- Immobility (paraplegia, PGP, long-distance travel)
- Family history of VTE in 1st degree relative
- Multiple pregnancy
- Low-risk thrombophilia
- Preterm delivery <37 weeks in this pregnancy
- Stillbirth in this pregnancy
- Mid-cavity or rotational operative delivery
- Legs in lithotomy >1hr
- Prolonged labour >24 hours
- PPH >1 litre or blood transfusion

Assessment post-delivery Date Sign

TINZAPARIN DOSES
- <60kg: 3500 units daily
- 50-90kg: 4500 units daily
- 91-130kg: 7000 units daily
- 131-170kg: 9000 units daily
- >170kg: 75 units/kg/day

References:
*PCCO Green-top Guideline No 37a Reducing the risk of venous thromboembolism during pregnancy and the puerperium

Author: Mable Pereira (March 2019)