Thromboprophylaxis and Anticoagulation Management during Pregnancy

Type: Guideline
Issued by: Maternity Quality Committee
Applicable to: Women’s Health
Lead DHB: Hutt Valley District Health Board
HDSS Certification Standard: 1.0
Contact person: Meera Sood

Principles:

Hutt Maternity are committed to meeting our obligations under Te Tiriti o Waitangi. We continue to develop our relationship with the Māori Health Unit and their involvement has been sought out and their views embedded in our policy.

Purpose:

To facilitate thrombotic risk assessment for all pregnant women and provide recommendations for appropriate prophylaxis. The guideline advises management of patients already on long-term anticoagulation, including those with mechanical heart valves. Advice is also provided on the management of anticoagulation around the use of regional anaesthesia and care for delivery.

Scope:

All HVDHB Obstetricians, Lead Maternity Carers, Haematologists, Obstetric Anaesthetists, and Physicians and Cardiologists involved in the care of people who are pregnant.

Definitions:

LMWH - Low molecular weight heparin
Thrombophilia - is an abnormality of blood coagulation that increases the risk of thrombosis.
UFH - Unfractionated heparin
VTE - Venous thromboembolism
Obstetric referral Guidelines (Section 88) considerations

As per the Ministry of Health 2012 Obstetric Referral Guidelines:

<table>
<thead>
<tr>
<th>Code</th>
<th>Condition</th>
<th>Description</th>
<th>Referral category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1001</td>
<td>Anaesthetic difficulties</td>
<td>Previous failure or complication (eg. difficult intubation, failed epidural, severe needle phobia)</td>
<td>Consultation</td>
</tr>
<tr>
<td>1005</td>
<td>Thrombophilia including antiphospholipid syndrome</td>
<td>On warfarin, previous obstetric complications or maternal thrombosis</td>
<td>Transfer</td>
</tr>
<tr>
<td>1006</td>
<td>Thrombophilia including antiphospholipid syndrome</td>
<td>No previous obstetric complications or maternal thrombosis</td>
<td>Consultation</td>
</tr>
<tr>
<td>1008</td>
<td>Cardiac valve disease</td>
<td>Mitral/aortic regurgitation</td>
<td>Consultation</td>
</tr>
<tr>
<td>1009</td>
<td>Cardiac valve disease</td>
<td>Mitral/aortic stenosis</td>
<td>Transfer</td>
</tr>
<tr>
<td>1011</td>
<td>Cardiac valve replacement</td>
<td></td>
<td>Transfer</td>
</tr>
<tr>
<td>1040</td>
<td>Thromboembolism</td>
<td>Emergency eg, previous deep vein thrombosis, pulmonary embolism</td>
<td>Transfer</td>
</tr>
<tr>
<td>1041</td>
<td>Thrombophilia</td>
<td></td>
<td>Consultation</td>
</tr>
<tr>
<td>1050</td>
<td>Ateriovenous malformation, cerebrovascular accident, transient ischaemic attacks</td>
<td></td>
<td>Consultation</td>
</tr>
<tr>
<td>5009</td>
<td>Epidural</td>
<td></td>
<td>Consultation</td>
</tr>
</tbody>
</table>

Guideline Content

All women should undergo a documented VTE risk assessment in early pregnancy or pre-pregnancy and again immediately post-partum. The assessment should also be repeated with any change in condition during the pregnancy.

The VTE risk should be discussed with the patient and the reasons for treatment explained.

Women on long-term anticoagulation should be counselled about potential maternal and fetal risks associated with various anticoagulation regimen.
Antenatal thromboprophylaxis risk assessment and management

- **Mechanical heart**
- **Previous VTE + high risk thrombophilia**
  - Recurrent VTE
  - On long term anticoagulation (excl mechanical heart valves)
- **Previous unprovoked or oestrogen related VTE**
- **Previous VTE + low risk thrombophilia**

**HIGH RISK**

- Switch to therapeutic dose enoxaparin - 1mg/kg BD + 150mg aspirin OD as soon as pregnancy is confirmed
- Requires antenatal prophylaxis with LMWH - see dosing below

**HIGH RISK**

- Requires therapeutic dose enoxaparin - 1mg/kg BD as soon as pregnancy is confirmed.
- Anti-Xa monitoring required - peak level 3-5 days after first dose then monthly. Take sample 4 hours post enoxaparin dose.
  - Target range: 0.5-1.2 IU

**HIGH RISK**

- Requires therapeutic dose enoxaparin - 1mg/kg BD as soon as pregnancy is confirmed.
- Anti-Xa monitoring not required routinely unless complicating factors present (i.e. extremes in weight, renal disease)

**High risk thrombophilia** - antithrombin III (refer to Haematology as soon as possible), protein C or S deficiency, antiphospholipid syndrome, homozygous factor V leiden or homozygous prothrombin gene mutation.

**Low risk thrombophilia** - heterozygous factor V leiden or prothrombin gene mutation or antiphospholipid antibodies. (see appendix one for absolute risk)

*Refer to CCDHB “Enoxaparin treatment” Protocol if eGFR < 60mls/min and for anti-xa dose titrations*
Antenatal thromboprophylaxis risk assessment and management

Hospital admission
Single previous provoked VTE (not oestrogen related)
High risk thrombophilia +no VTE
Medical co-morbidities*
Any surgical procedure immobility

INTERMEDIATE RISK
Consider antenatal prophylaxis with LMWH from first trimester

Four or more risk factors:
LMWH prophylaxis from first trimester

Three risk factors:
LMWH prophylaxis from 28 weeks

Less than three risk factors:
Mobilisation and adequate hydration

Prophylactic dose LMWH
Weight >120kg: 60mg enoxaparin OD
Weight 50-120kg: 40mg enoxaparin OD
Weight <50kg or eGFR <30mls/min: 20mg enoxaparin OD
Anti-Xa testing not required

Obesity (BMI >30kg/m2)
Age >35yrs
Parity >/3
Smoker
Gross varicose veins
Current pre-eclampsia
Family history of unprovoked or oestrogen-provoked VTE in first degree relative
Low risk thrombophilia
Multiple pregnancy
Transient risk factors ie. Long haul travel, dehydration/hyperemesis

(See appendix two for odds ratios)

*Medical co-morbidities eg, Cancer, heart failure, active SLE, IBD/inflammatory polyarthropy, nephrotic syndrome, type 1 DM with nephropathy, sickle cell disease, current IVDU.
Regional Anaesthesia

In order to allow for the use of regional analgesia or anaesthesia and minimise the risk of epidural haematoma anticoagulants should be managed as per the table below.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Acceptable time after drug for block performance</th>
<th>Administration of drug while epidural catheter in place</th>
<th>Acceptable time after block performance or epidural catheter removal for next drug dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV UFH</td>
<td>4 hrs or normal aPTT</td>
<td>Not recommended</td>
<td>4 hrs</td>
</tr>
<tr>
<td>LMWH sc prophylaxis</td>
<td>12hrs</td>
<td>Caution</td>
<td>4 hrs</td>
</tr>
<tr>
<td>LMWH sc therapeutic</td>
<td>24hrs</td>
<td>Not recommended</td>
<td>4 hrs</td>
</tr>
</tbody>
</table>

Care for Delivery

Mechanical prosthetic heart valves and high risk patients flowchart 1

36 hours prior to planned delivery
- last dose of LMWH

24 hours prior
- Give IV UFH bolus and commence infusion as per CCDHB protocol.

Peri-delivery
- Induction of labour-stop IV UFH when labour established,
- Caesarean section (CS) -stop IV UFH 4 hrs prior to neuraxial catheter placement.

Postpartum (if no bleeding concerns)
- Restart IV UFH 4-6 hrs post vaginal delivery or 6-12 hrs post CS,
- Commence at half the recommended infusion rate for first six hours then increase to full rate for at least 72 hrs,
- After this time IV UFH could be replaced with therapeutic dose LMWH until INR is within range,
- Restart warfarin day 2-3.
Antenatal instructions for everyone on antenatal anticoagulation (not undergoing regional anaesthesia):

People on LMWH should be advised not to inject any further LMWH if they have any vaginal bleeding or once labour begins.

Where delivery is planned therapeutic dose LMWH should be discontinued for 24 hours prior and prophylactic dose 12 hours prior.

Resuming anticoagulation after birth

- The first thromboprophylactic dose of LMWH should be given as soon as possible after birth (if no postpartum haemorrhage or regional anaesthetic used)

- For people at high-risk of haemorrhage that require heparin treatment manage with IV UFH until the haemorrhage risk has decreased

- Give therapeutic UFH or LMWH no sooner than 4-6 hours after vaginal birth, and no sooner than 6-12 hrs after caesarean birth

- Pneumatic compression devices (TEDS) should be left in place until mobile and anticoagulation restarted

- For those on long-term anticoagulation (over 6 weeks postpartum), bridge heparin to warfarin five days after birth. Warfarin may need to be started later in women with increased risk of postpartum haemorrhage.

- Warfarin and LMWH is safe to use in breastfeeding

Oral thrombin and Xa inhibitors

- Non-vitamin K antagonist anticoagulants should be avoided during pregnancy and are not currently recommended in women who are breastfeeding.
Postnatal assessment and management:

**HIGH RISK**
- Restart IV UFH or previous antenatal dose of LMWH ≥ 4-6 hrs post vaginal delivery
- OR ≥ 6-12 hrs post caesarean section.

**LOW RISK**
- Early mobilization and avoidance of dehydration

**INTERMEDIATE RISK**
- At least 7 days postnatal LMWH or until mobile.
- Consider extending prophylaxis if persisting or > 3 risk factors

**LOW RISK**
- Continue LMWH for 5-7 days post partum then restart usual anticoagulation

**HIGH RISK**
- Continue antenatal LMWH does for at least 6 weeks.

**LOW RISK**
- Therapeutic anticoagulation for at least 6 weeks (minimum total duration of 3 months)

**LOW RISK**
- Give first prophylactic does of LMWH as soon as possible post delivery.
- Weight >120kg: 60mg enoxaparin OD
- Weight 50-120kg: 40mg enoxaparin OD
- Weight <50kg or eGFR < 30mls/min: 20mg enoxaparin OD

**LOW RISK**
- Continue antenatal LMWH does for at least 6 weeks.

**LOW RISK**
- Continue antenatal LMWH does for at least 6 weeks.

**LOW RISK**
- PPH > 1 litre or blood transfusion

**LOW RISK**
- Long term steroid therapy

**LOW RISK**
- Medical co-morbidities

**LOW RISK**
- Surgical procedure in puerperium (except immediate repair of perineum)

**LOW RISK**
- Readmission or prolonged admission (≥ 3 days)

**LOW RISK**
- OBstetric co-morbidities

**LOW RISK**
- Preterm delivery (< 37 weeks)

**LOW RISK**
- Stillbirth

**LOW RISK**
- Mild cavity rotational or operative delivery

**LOW RISK**
- Prolonged labour (> 24 hrs)

**LOW RISK**
- Current systemic infection

**LOW RISK**
- Immobility

**LOW RISK**
- Current pre-eclampsia

**LOW RISK**
- Multiple pregnancy

**LOW RISK**
- Family history of VTE

**LOW RISK**
- Low risk thrombophilia

**LOW RISK**
- BMI ≥ 40kg/m²

**LOW RISK**
- Family history of VTE

**LOW RISK**
- High risk thrombophilia

**LOW RISK**
- Caesarean section in labour

**LOW RISK**
- Acute VTE during pregnancy

**LOW RISK**
- Patient on long term anticoagulation (see flowchart above for high risk patients)

**LOW RISK**
- Patient receiving antenatal LMWH

**LOW RISK**
- High risk thrombophilia

**LOW RISK**
- Low risk thrombophilia and family history of VTE

**LOW RISK**
- Caesarean section in labour BMI ≥ 40kg/m²

**LOW RISK**
- Readmission or prolonged admission (≥ 3 days)

**LOW RISK**
- Surgical procedure in puerperium (except immediate repair of perineum)

**LOW RISK**
- Medical co-morbidities
References:


Informed Consent:

The right of a consumer to make an informed choice and give informed consent, including the right to refuse medical treatment, is enshrined in law and in the Code of Health and Disability Consumers’ Rights in New Zealand. This means that a woman can choose to decline treatment, referral to another practitioner, or transfer of clinical responsibility. If this occurs follow the process map on page 18 of the Referral Guidelines (Ministry of Health, 2012).
## Appendix 1: Clinical Risk Factors for Pregnancy associated VTE:

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Adjusted OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous VTE</td>
<td>24.8</td>
</tr>
<tr>
<td>Age &gt;35</td>
<td>1.4-1.7</td>
</tr>
<tr>
<td>Obesity (BMI&gt;30kg/m2)</td>
<td>1.7-5.3</td>
</tr>
<tr>
<td>Active medical illness</td>
<td>2.1-8.7</td>
</tr>
<tr>
<td>Smoking</td>
<td>1.7-3.4</td>
</tr>
<tr>
<td>Family history VTE</td>
<td>2.9-4.1</td>
</tr>
<tr>
<td>Immobility</td>
<td>7.7-10.1</td>
</tr>
<tr>
<td>Varicose veins</td>
<td>2.4</td>
</tr>
<tr>
<td>Multiparity (&gt;2)</td>
<td>1.6-2.9</td>
</tr>
<tr>
<td>Multiple pregnancy</td>
<td>1.6-4.2</td>
</tr>
<tr>
<td>Pre-eclampsia</td>
<td>3.0-5.8</td>
</tr>
<tr>
<td>Assisted reproduction technique</td>
<td>2.6-4.3</td>
</tr>
<tr>
<td>Hyperemesis</td>
<td>2.5</td>
</tr>
<tr>
<td>Additional post-partum risk factors:</td>
<td></td>
</tr>
<tr>
<td>Planned caesarean section</td>
<td>1.3-2.7</td>
</tr>
<tr>
<td>Emergency caesarean section</td>
<td>2.7-4.0</td>
</tr>
<tr>
<td>Placental abruption</td>
<td>2.5-16.6</td>
</tr>
<tr>
<td>Postpartum infection</td>
<td>4.1-20.2</td>
</tr>
<tr>
<td>Postpartum haemorrhage</td>
<td>1.3-12.0</td>
</tr>
</tbody>
</table>

## Appendix 2: Absolute risk of Pregnancy associated VTE with hereditary thrombophilias

<table>
<thead>
<tr>
<th>Thrombophilia</th>
<th>Unselected patients‡</th>
<th>With family history‡</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Significant</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antithrombin deficiency</td>
<td>0.3–4%</td>
<td>3.0–18.0%</td>
</tr>
<tr>
<td>FVL homozygous</td>
<td>1.3–2.3%</td>
<td>9–17.0%</td>
</tr>
<tr>
<td>FVL/prothrombin mutation compound</td>
<td>5.20%§</td>
<td>1.8–5.5%</td>
</tr>
<tr>
<td>heterozygous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein C deficiency</td>
<td>0.5–1.8%</td>
<td>1.7–5.0%</td>
</tr>
<tr>
<td>Protein S deficiency</td>
<td>0.1–1.0%</td>
<td>2.0–6.6%</td>
</tr>
<tr>
<td><strong>Weak</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FVL heterozygous</td>
<td>0.2–0.5%</td>
<td>1.5–3.9%</td>
</tr>
<tr>
<td>Prothrombin mutation heterozygous</td>
<td>0.2–0.4%</td>
<td>1–2.8%</td>
</tr>
<tr>
<td>Family history of VTE with thrombophilia: unaffected controls</td>
<td></td>
<td>0.4–1.4%</td>
</tr>
</tbody>
</table>

†Derived from case–control data assuming incidence of VTE is 1 in 1500 pregnancies (0.07%).
‡Data from family studies of first-degree relatives with VTE excluding probands.
§Single study only.
FVL: factor V Leiden.