WELSH GUIDELINES - VTE Risk Assessment, Prophylaxis, and Treatment in Pregnancy and Puerperium

REF: CTMObs 130

Venous Thrombo Embolism (VTE)

Risk Assessment, Prophylaxis, and Treatment in Pregnancy and Puerperium

Initiated By	Cwm Taf Morgannwg University Health Board Obstetrics and Gynaecology Directorate
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CHANGE HISTORY

Version	Date	Author Job Title	Reasoning
1.0	January 2024	Miss Tehmina Riaz Speciality Doctor	New CTMUHB Guideline (replaces previous CTUHB and ABMUHB guidance)

AUTHORSHIP, RESPONSIBILITY AND REVIEW

Author	Miss Tehmina Riaz	Ratification Date	February 2024
Job Title	Speciality Doctor	Review Date	Three years from date of approval or earlier if national guidelines change
Service Group	Children and Families	Clinical Director	Mr Mohamed Elnasharty
Service Lead		Directorate Manager	

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BACKGROUND

Guideline Definition

Clinical guidelines are systemically developed statements that assist clinicians and patients in making decisions about appropriate treatments for specific conditions.

They allow deviation from a prescribed pathway according to the individual circumstances and where reasons can be clearly demonstrated and documented.

Introduction

Thrombosis and thromboembolism remains the leading direct cause of maternal death at a rate of 1.4 per 100,000 maternities1. Maternal morbidity rates are higher and also include deep vein thrombosis (DVT)2.

Purpose: This guideline outlines risk assessment and prophylaxis for pregnant and post-partum women at risk of VTE, as well as acute management once a VTE event occurs.

Scope: This policy applies to all women who are currently pregnant and those who have delivered recently (within three months post-delivery).

Roles and Responsibilities:

In seeking further advice on any uncertainties contained in this document, or if you feel that there is new or more updated advice it is your responsibility to contact the guideline author or Approval Group manager so that any amendments can be made.

The guideline Approval Group is responsible for disseminating this guideline to all appropriate staff.

The guideline author or a named alternative is responsible for updating the guideline with any amendments that they become aware of or are highlighted to them.

All health professionals are responsible to ensure that the guideline is utilised effectively, and to ensure that they are competent and compassionate in the implementation of it.

Training Requirements

There is a need for all new staff in Obstetrics and Gynaecology (Midwifery and Medical Staff) to be provided with an update at induction.

Monitoring of Compliance

- By audit of risk assessment and prescribing of thrombo-prophylaxis.
- All HAT events are monitored by the Anti-Coagulation Committee and lessons learnt.
- The Governance Department will collate any complaints and distribute to the relevant individuals for comments, and share any learning points.
- The Service Lead will oversee any governance issues, make relevant recommendations to the directorate, and advise the Clinical Director or the directorate of any matters that require implementation.
- The Health Board reserves the right, without notice, to amend any monitoring requirements in order to meet any statutory obligations or the needs of the organisation

Risk Assessment:

All women should have a documented risk assessment using the CTMUHB Maternity VTE risk assessment tool (Appendix 1) as early in pregnancy as possible. This replaces the All Wales Hand-held notes assessment on page 10 and should be stapled onto page 10. The numerical score dictates the need for thromboprophylaxis. See flow-chart 1 below for management of midwifery-led and consultant led care. Women also need a fresh Risk Assessment on each admission to hospital and after delivery.

Where a need for thromboprophylaxis is identified, this should be discussed with the woman, and if she consents to the treatment, this should be prescribed on the outpatient prescription form (Appendix 2). This will allow pharmacy to dispense for the remainder of the pregnancy and puerperium. Women can be shown how to administer Low Molecular Weight Heparin (LMWH) through the Antenatal Clinic and Day Assessment Unit (ADAU). It also important to recognise that LMWH is porcine in origin (derived from pigs) and this may be relevant for certain women for dietary or religious beliefs.

Pre-Pregnancy Counselling

Women who have had a previous VTE should have pre-pregnancy counselling and plan for thromboprophylaxis during pregnancy made. Refer women in PCH/RGH to Mrs Helen Marx, to Mr Pembridge in YCR and to Mrs Liza Mukhopadhyay in the POWH.

Women on oral anti-coagulants pre-pregnancy need to be switched onto LMWH as early as possible by the GP and referred to the local Medical antenatal clinic.

Over two thirds of lethal VTE events were in women who were overweight or obese. Measures to manage weight should be explored at each opportunity.

Combined care with Haematology

Refer to haematology for advice in complex cases e.g. previous or recurrent VTE, allergy to LMWH, thrombophilia, etc. For POW and NPTH women, take advice from the on-call Haematology for Swansea Bay through switch-board or email Dr Ann Benton. For PCH/RGH contact Haematology Consultants Dr Hanadi Ezminga or Dr Waleed Bashi for advice.

Early pregnancy admissions

Women admitted in early pregnancy on gynaecology wards, medical and surgical wards need to be assessed in the same manner. Sometimes the gestation is too early for booking measurements of BMI and this should be done at admission to determine risk score and dose of thrombo-prophylaxis. Women with hyperemesis are at a higher risk and women undergoing surgical management of miscarriage or ectopic pregnancy require at least 10 days of thrombo-prophylaxis, unless contra-indicated.

Admission during antenatal period

Risk assess at admission

Admitting midwife and physician to check VTE risk and consider prophylaxis, unless contra-indicated. Consultant ward round in the morning to double-check need for prophylaxis and risk assessment form in notes.

Spontaneous labour

Women who are suspected to be in labour and who are on prophylactic or therapeutic dose of LMWH are advised to avoid the next injection and inform labour ward. A plan of care regarding withholding of LMWH should be in patient's notes prior to an elective procedures and made in conjunction with Obstetrician and Anaesthetist. Dehydration should be avoided especially in labour - special attention to hydration should be given to women in prolonged labour.

Induction of labour

Most women will discontinue their LMWH on the day of admission unless written instructions by a consultant state otherwise. All women who had antenatal LMWH should have thromboembolic stockings applied, and be advised on the importance of hydration and mobilisation. If the VTE score is 4 or more, then an individual plan should be made after the initial assessment of cervical favourability, to determine if further doses of LMWH should be administered during the induction of labour process. This should balance the risk of needing regional anaesthesia against the risk of VTE.

Epidural/Spinal See Table 1 below for recommendation

Table 1 Recommended time intervals before & after neuroaxial block and catheter removal

Enoxaparin	**Acceptable time before** **Puncture/ catheter placement**	**Acceptable time for next dose after** **Puncture/catheter removal**
Prophylactic dose	12 hours	4 hours
Therapeutic dose	24 hours	4 hours Delay 24 hours after traumatic placement

Postnatal

All women should have a further assessment following delivery on a fresh form (see appendix 1). It is recommended that women be re-weighed after delivery and if the weight has increased more than 12 kg, this should be taken to calculate dose of LMWH and not the booking weight. Risk assessment after delivery should be done prior to transfer to the ward by the midwife or doctor who performed the delivery, preferably within 4 hours of delivery. All births taking place in the birth centre and home births need to be risk assessed.

Special care should be taken in advising LMWH to vulnerable women especially women with a psychiatric illness who may default self-administration.

Special issues of affecting thromboprophylaxis

1. Accurate dosage:

Dose of prophylactic LMWH is dependent on maternal weight: if there has been an increase of more than 12 kg weight in pregnancy the dose may need to be increased e.g. if at booking a woman has a weight of 82 kg. the correct dose prescribed is Enoxaparin 40 mg per day - however if her weight at 36 weeks is 101 kg. the dose increases to 60 mg per day. Treatment dose of LMWH is calculated according to current maternal weight. See back of Appendix 1 for dosage according to weight. The LMWH used in CTMUHB is enoxaparin . Discuss patients with LMWH allergy with consultant haematologist with expertise in haemostasis and pregnancy.

1. Responsibilities of staff :

After any procedure in theatre, it is the responsibility of the team (Anaesthetist/Obstetrician /Midwife) to discuss need for thrombo-prophylaxis, prescribe the appropriate dose and duration, document the time of first dose to be given on the drug chart before the woman leaves the theatre. The first prophylactic dose of LMWH should be given within 4 hours of delivery provided there are no obstetric concerns regarding postpartum haemorrhage and regional analgesia has not been used. If regional analgesia or anaesthesia has been used, then it is the responsibility of the anaesthetist to document time of first dose of LMWH – it is recommended the first dose should be administered 4 hours after removing the epidural catheter or spinal needle. The hospital pharmacist ensures the correct weight, appropriate dose and duration is dispensed.

Acute Venous Thrombotic Event

Most pregnant women with a VTE will have clinical symptoms. These include unilateral leg pain, redness and swelling (DVT) lower abdominal pain (pelvic vessel thrombus), groin pain, dyspnoea, chest pain, haemoptysis, and collapse (PE). Signs include tachypnoea, tachycardia, low grade pyrexia, and a discrepancy in the diameter of the lower limbs by 3 cm. or more. DVT is more likely to be on the left side than the right due to compression from the uterus on the iliac vessels. Women are reviewed promptly by the medical team in A&E or AMU. However, if these areas are busy and obstetric patients can be reviewed promptly in obstetric areas, clinical judgement of experienced obstetricians may be more expeditious to initiate relevant investigations and treatment.

Investigation and Management:

In any woman suspected of having a VTE, treatment dose of LMWH should be given until the diagnosis has been excluded. This can be with enoxaparin 1mg/kg bd or tinzaparin 175units/kg daily (based on booking weight unless an increase of more than 12kg has occurred).

All women should have a full blood count (FBC), coagulation screen, urea and electrolytes (U&Es) and liver function tests (LFTs) taken. D-dimers are not useful in pregnant women as pregnancy elevates the results. Likewise, the WELLS score has not been validated as a screening tool for pregnant women, and its use is therefore not advised. Pregnancy-adapted YEARS algorithm has been found in one study to safely rule out PE and avoid CTPA but has not been validated for use universally9.

For suspicion of DVT, a compression Doppler ultrasound of the affected leg should be undertaken. If this is negative for a DVT and the clinical suspicion of DVT is low, then LMWH can then be stopped. However, if clinical suspicion is high then treatment should be continued, and further imaging should be discussed with the radiologists. This may include a repeat Doppler scan after 3 and 7 days, contrast venography or MRI venography. Women with groin pain should have full leg and pelvis scanned to exclude ilio-femoral thrombus.

For suspicion of PE in a clinically stable patient, a chest X-ray, 12 lead ECG and arterial blood gas should also be undertaken. ECG abnormalities suggestive of a PE include T wave inversion, S1Q3T3 pattern, and right bundle branch block. CXR may show other pathologies such as pneumonia, which may affect the suitability of further imaging. If there are signs or symptoms of DVT then initial investigation is a Doppler lower limb, and if positive then treat as a PE. If there is no clinical indication of a DVT, then the definitive investigation is either a Computerised Tomography Pulmonary Angiogram (CTPA) or Ventilation Perfusion (VQ) scan. Women need to be informed that with both imaging techniques the radiation exposure will slightly increase (1 in 170,000) the risk of childhood cancers in the infant (more so with VQ than CTPA) and breast cancer in the mother (more so with CTPA than VQ). A consent form needs to be signed by the patient before sending for imaging (Appendix 4 can be downloaded from the intranet).

For suspicion of PE, in a clinically unstable patient, care must be undertaken by a multidisciplinary team including consultant obstetrician, consultant anaesthetist, physicians and radiologists, in an appropriate area such as labour ward or HDU, and follow the principles of ABC resuscitation. Investigations ideally should be as for clinically stable patients but with a portable echo (which may show right ventricular dysfunction) or CTPA.

The obstetric team should see pregnant women with chest pain in conjunction with the medical team. In the last confidential enquiries, some women were referred for assessment to the medical team who were unaware of or underestimated the risk of embolism in pregnancy2.

Pregnant and postpartum women presenting to the Emergency Department with medical problems should be discussed with a member of the maternity medical team. This should ensure appropriate investigation and treatment of pulmonary embolism is not withheld and prophylaxis is prescribed where appropriate1.

Treatment of DVT and stable PE

LMWH can be given once daily or divided doses with dosage titrated against the woman's booking or recent weight. See Table 2 below for recommended dosages. Women will usually be seen in A&E and/or in ambulatory care and treatment regime prescribed by the medical team with follow-up in obstetric and medical team, as appropriate.

Table 2 Initial dose of therapeutic enoxaparin is determined as follows:

Booking / early pregnancy weight	Initial enoxaparin dose (subcutaneous)
< 50 kg	40 mg twice daily or 60 mg once daily
50–69 kg	60 mg twice daily or 90 mg once daily
70–89 kg	80 mg twice daily or 120 mg once daily
90–109 kg	100 mg twice daily or 150 mg once daily
110–125 kg	120 mg twice daily or 180 mg once daily
> 125 kg	Discuss with haematologist

Treatment of Unstable PE

Treatment with IV unfractionated heparin is preferable to LMWH for its quicker response. One regime is to give a loading dose of 80 units/kg followed by an infusion of 18 units/kg/hour. Monitoring of the APTT will be required where IV heparin is administered. If there is haemodynamic compromise, then thrombolytic therapy may be given followed by IV heparin infusion (omitting the loading dose). The health board IV heparin prescription chart should be used link: http://ctuhb-intranet/dir/MM/AntiCoag/Procedures%20Policies%20and%20Charts/Heparin%20infusion%20chart.pdf

In cases of life threatening PE, a team of experienced clinicians, including the on-call consultant obstetrician, should decide on an individual basis whether the woman receives intravenous unfractionated heparin, thrombolytic therapy or thoracotomy and surgical embolectomy. The on-call medical team should be contacted immediately. An urgent portable echocardiogram or CTPA within one hour of presentation should be arranged. Management should involve a multidisciplinary resuscitation team including senior physicians, obstetricians, haematologist, vascular surgeon, anaesthetist and radiologist. Neither pregnancy, caesarean section delivery

or the immediate postpartum state are absolute contraindications to thrombolysis.

Following acute-phase management with LMWH, some form of thrombo-prophylaxis must be continued for the rest of the pregnancy and the puerperium. Advice from the haematologist and physician should be taken. Arrangements should be made with the haematology department for outpatient follow-up and advice with assessment of blood platelets and peak anti-Xa levels, if appropriate. The aim is to achieve a peak anti-Xa 3 hours post-injection of 0.5 – 1.2 units/ml. A plan on management of anticoagulation for these women during induction of labour, spontaneous labour, or elective surgery, should be made in conjunction with haematology.

Post-partum therapeutic dose is continued for 6 weeks but occasionally for 3 months in total, and can be switched to Warfarin after the fifth postnatal day. Both LMWH and warfarin are safe in breast-feeding. Liaison with the VTE service is advised for women wishing to start oral therapy. Women should ensure they have effective contraception if commencing warfarin due to its teratogenic effects.

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