Gloucestershire Hospitals
NHS Foundation Trust

TRUST CLINICAL POLICY

VENOUS THROMBOEMBOLIC DISORDERS - DIAGNOSIS AND TREATMENT THROMBOPROPHYLAXIS DURING PREGNANCY, LABOUR AND AFTER DELIVERY

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FAST FIND:

DOCUMENT OVERVIEW:

This policy aims to provide information regarding the prevention of venous thromboembolism (VTE) and the management and treatment of thromboembolic disease in the pregnant woman (and in the puerperium).

VENOUS THROMBOEMBOLIC DISORDERS - DIAGNOSIS AND TREATMENT THROMBOPROPHYLAXIS DURING PREGNANCY, LABOUR AND AFTER DELIVERY

1. INTRODUCTION

1.1 Pulmonary embolism (PE) has been the main cause of direct maternal death in the UK (CEMACH, 2004). Reports have highlighted failures of diagnosis and treatment.

1.2 All women should undergo an assessment for risk factors for VTE in early pregnancy CEMACH, 2004). Women with high risk factors are especially susceptible to VTE (see **Appendix 1**).

2. DEFINITIONS

2.1 Venous thrombosis (VT): A condition in which a blood clot forms in a vein

2.2 Deep-vein thrombosis (DVT): Venous thrombosis that occurs in 'deep veins' in the legs, thighs or pelvis

2.3 Pulmonary embolism (PE): A blood clot that breaks off from the deep veins and blocks the pulmonary arteries

2.4 Venous thromboembolism (VTE): The blocking of a blood vessel by a blood clot dislodged from its site of origin. It includes both DVT and PE

2.5 Thrombophilia: The genetic or acquired prothombotic states that increase the tendency to VTE

2.6: Thromboprophylaxis: A measure taken to reduce the risk of thrombosis

3. PURPOSE

3.1 This policy aims to provide information regarding the prevention of venous thromboembolism (VTE) and the management and treatment of thromboembolic disease in the pregnant woman (and in the puerperium).

4. ROLES AND RESPONSIBILITIES

Post/Group	Details	Resources	Review/ Monitoring	Implementation	Records	Reporting
Midwives	• following this and associated policies/procedures • utilise the information within this guideline to provide the best evidence and practice • communicate effectively during the management of VTE			X	X	
Obstetricians	• following this and associated policies/procedures • utilise the information within this guideline to provide the best evidence and practice • communicate effectively during the management of VTE • produce management plans for the treatment of VTE and for the use of appropriate thromboprophylaxis		X	X	X	
Labour Ward Forum, Antenatal Group	• Monitoring effectiveness of policy		X			X

5. RISK ASSESSMENT

5.1 Pregnancy is a risk factor for VTE with a ten-fold increase compared with the risk for non-pregnant women. All women should undergo an assessment for risk factors for VTE in early pregnancy (see sample **Antenatal VTE Risk Assessment for Maternity**) (CEMACH, 2004).

5.1.1 Women with additional risk factors are especially susceptible to VTE and should be assessed by an obstetrician (see **Appendix 1**).

5.1.2 This risk assessment should be repeated if the woman is admitted to hospital for any reason, if she develops other intercurrent problems and when she has delivered (see sample **Post Delivery VTE Risk Assessment for Maternity**).

5.2 Women at high risk of VTE should ideally be offered pre-pregnancy counselling with a prospective management plan as the thrombotic risk exists from the first trimester (RCOG, 2009).

5.3 Women with a previous confirmed VTE (can be assumed if prolonged anticoagulation) should be screened for inherited and acquired thrombophilia before pregnancy (RCOG, 2009).

5.4 Women with a previous non-oestrogen-related VTE provoked by a minor risk factor should undergo testing for thrombophilia in early pregnancy (unless already tested) as this will influence management and decisions regarding thromboprophylaxis antenatally. Women with a prior unprovoked or oestrogen-provoked VTE should be considered for thromboprophylaxis and hence testing for heritable thrombophilia is not required

5.5 Ongoing risk assessment throughout the pregnancy and puerperium should be continued and immobilisation and dehydration avoided (RCOG, 2009).

6. THROMBOPROPHYLAXIS IN PREGNANCY AND PUERPERIUM: Clinical Groups

6.1 Seek advice of haematologist or consider joint obstetric/medical/haematology clinic if any doubt about need for thromboprophylaxis. An individual management plan should be documented in the health records for women who require thromboprophylaxis or treatment for diagnosis of VTE.

6.2 **Women with previous VTE, no thrombophilia** (RCOG, 2009).

6.2.1 Women with a previous single provoked (excluding oestrogen-related) VTE and no other risk factors require close surveillance; antenatal LMWH is not routinely recommended

6.2.2 Women with previous VTE that was unprovoked or oestrogen related (pregnancy or combined oral contraceptive pill [COCP]) or who have additional risk factors should be considered for antenatal (A/N) thromboprophylaxis with LWMH.

6.2.3 Women with previous recurrent VTE or previous VTE and a family history (FH) of VTE in a first-degree relative or a VTE in an unusual site (e.g. axillary vein) should be offered A/N thromboprophylaxis with LMWH.

6.2.4 ALL women with a previous VTE should be offered postnatal (P/N) thromboprophylaxis with low molecular weight heparin (LMWH) for 6 weeks.

6.3 **Women with previous VTE and inherited thrombophilia (**RCOG, 2009**)**

6.3.1 Women with previous VTE and thrombophilia should be offered A/N thromboprophylaxis with LMWH and for at least six weeks P/N.

6.3.2 Obtain expert haematological advice for women with symptomatic thrombophilia, as specific thrombophilias, particularly antithrombin deficiency, merit higher doses of LMWH for thromboprophylaxis (see doses below and table 1).

6.4 **Women with inherited thrombophilia without previous VTE (**Nelson-Piercy, 2002**)**
The risk varies considerably and each woman should be individually assessed.

6.4.1 A/N and P/N (6 weeks) thromboprophylaxis with LMWH should be offered in:

- Women with antithrombin deficiency
- Women with combined deficiencies (e.g Factor V Leiden and prothrombin gene mutation)
- Women homozygous for defects (Factor V Leiden, Protein C, Protein S)
- Women with thrombophilia and additional risk factors

6.4.2 Close antenatal surveillance and P/N thromboprophylaxis for 6 weeks with LMWH should be offered in:

- Women with other inherited thrombophilias (e.g heterozygous Factor V Leiden, Protein C and S)

- Women with acquired thrombophilias (see below) and additional risk factors

6.5 **Women with acquired thrombophilia (antiphospholipid syndrome)**

6.5.1 Antiphospholipid syndrome (APS) is defined as the presence of lupus anticoagulant or anticardiolipin antibodies of medium–high titre on two occasions eight weeks apart, found in association with a history of:

a/ Thrombosis (arterial or venous)

b/ Or adverse pregnancy outcome (3 or more unexplained miscarriages <10/40, a fetal death >10/40 or a premature [< 35 weeks] birth due to severe pre-eclampsia or intrauterine growth restriction).

6.5.2 The risk of recurrent thromboses in women with APS is up to 70%. Therefore, pregnant women with APS and previous thromboses should receive A/N and P/N thromboprophylaxis with LMWH.

6.5.3 The management of women with obstetric manifestations of APS is more controversial. Low-dose aspirin (75mg) has been shown to improve pregnancy outcome in APS and is recommended for all women with APS. However, the presence of antiphospholipid antibodies with no previous 'APS classifiable' pregnancy loss or thrombosis does not equate to APS and such women do not require LMWH (or low-dose aspirin).

6.5.4 Women with antiphospholipid syndrome identified because of recurrent miscarriage may not require LMWH for six weeks postpartum but should receive LMWH for at least three to five days, especially if they have other risk factors (RCOG, 2004).

6.6 **Women without previous VTE or thrombophilia (**RCOG, 2009**)**

6.6.1 These women should have ongoing assessment of additional risk factors for VTE as follows:

a/ Women with ≥ 3 persisting risk factors should be considered for thromboprophylaxis with LMWH antenatally and for up to 7 days P/N. These women should also be given graduated compression stockings (TEDS) post-delivery. Continuing assessment in the A/N period may allow thromboprophylaxis to be discontinued if the risk disappears

b/ Women with a Body Mass Index (BMI) > 40 should be considered for thromboprophylaxis with LMWH for up to 7 days after delivery and be given graduated compression stockings

c/ Consider LMWH if two persisting risk factors for up to 7 days after delivery

d/ All women who have had a Caesarean section should receive thromboprophylaxis whilst in hospital. They should be given graduated compression stockings which should be worn for 7 days, longer if continued immobility

7. THROMBOPROPHYLAXIS – SUGGESTED REGIME (See Table 1)

7.1 A/N thromboprophylaxis with Dalteparin (Fragmin®) should be started as early in pregnancy as practical. Once started, it should be continued until delivery unless a specific risk factor is removed or disappears.

7.2 Women receiving antenatal LMWH should be advised that if they have any vaginal bleeding they should not inject further LMWH. Once in labour (or suspected labour) advise woman not to inject any further LMWH. Reassess after admission and further doses to be prescribed by medical staff.

7.3 Use of regional analgesia and anaesthesia in women on LMWH should be carefully considered:

- Discuss epidural with a senior anaesthetist
- Do not use a regional technique (epidural, spinal) within 12 hours of last prophylactic dose of LMWH

7.4 Omit morning dose LMWH prior to elective Caesarean section

7.5 P/N thromboprophylaxis with Dalteparin (Fragmin®) should be started as soon as possible after delivery. Encourage mobilisation and avoid dehydration

- Wait 4 hours after removal of an epidural catheter
- Give graduated compression stockings
- Continue for up to 7 days for moderate risk women (table 1)
- Continue for 6 weeks for moderate risk - 1 (AN) or high risk women (table 1)
- If additional risk factors P/N persist beyond 7 days, extend thromboprophylaxis for up to 6 weeks or until additional risk factors no longer present
- Do not prescribe combined oral contraceptive pill (COCP) during first 3 months P/N for moderate/high VTE risk women

7.6 LMWH are the agents of choice for thromboprophylaxis. These are at least as effective as and safer than unfractionated heparin. Dalteparin (Fragmin®) is the agent used in GHNHSFT

- Monitoring of anti-Xa levels not required, providing the woman has normal renal function. Lower doses of Dalteparin should be used if the creatinine clearance is < 20 ml/minute
- Routine platelet count monitoring is not required, unless unfractionated heparin has been used
- Warfarin should be avoided in pregnancy. It is safe after delivery and whilst breastfeeding. May be started on 2nd or 3rd P/N day. Continue LMWH until the international normalised ratio (INR) is > 2

7.7 Tested thromboprophylaxis doses of Dalteparin (Fragmin®)

7.7.1	Body weight	< 50kg	2500 units daily
7.7.2	Body weight	50 – 90kg	5000 units daily
7.7.3	Body weight	91- 130kg (BMI > 30)	7500 units daily (can give in 2 doses)
7.7.4	Body weight	131-170kg	5000 units bd
7.7.5	Body weight	> 170kg	75 units/kg/day (give in 2, bd doses)
7.7.6	Therapeutic dose		100 units/kg bd

Table 1 Summary of guidelines for thromboprophylaxis

Degree of Risk	Clinical scenarios	Recommended thromboprophylaxis
Very High risk VHR	Previous recurrent VTE (±thrombophilia) on long term warfarin	A/N high prophylactic or treatment dose Fragmin and P/N warfarin. Specialist involvement
High risk HR	Personal history of unprovoked or oestrogen-related VTE / family history VTE / Thrombophilia	Plan made by senior obstetrician **At least** Fragmin 5,000 U daily P/N to 6/52
Moderate risk-1 (A/N) MR	Previous provoked VTE (transient risk factor) no additional risk factors	Plan made by senior obstetrician – close A/N surveillance. Fragmin 5,000 U daily P/N for 6 weeks.
Moderate risk-2 (A/N) MR	3 or more persisting additional risk factors (appendix 1)	Consider A/N thromboprophylaxis. Fragmin 5,000 U daily P/N for up to 7 days or until mobile. Give TEDS
Moderate risk	2 additional risk factors (appendix 1)	Fragmin 5,000 U daily for up to 7 days or until

(P/N) MR	or **Any** woman delivered by LSCS	fully mobile. Give TEDS
Low risk LR	0 – 1 additional risk factors	Early mobilisation, hydration, reassessment

8. DIAGNOSIS OF VTE

8.1 All women with a suspected VTE event should be objectively tested (RCOG, 2007). Treatment with LMWH should be started until the diagnosis is excluded by objective testing, unless treatment is strongly contraindicated.

8.2 The clinical assessment of DVT and PE is unreliable and less than half of women will have the diagnosis confirmed on objective testing. VTE should be considered at any stage of pregnancy, with the puerperium being the time of greatest risk.

8.3 Signs and symptoms VTE:

- DVT: leg pain or discomfort (Left leg more commonly affected than right), swelling, tenderness, increased temperature and oedema, lower abdominal pain and increased White Blood Cells (WBC)

- PE:shortness of breath, collapse, chest pain, haemoptysis, faintness, raised jugular venous pressure (JVP), focal signs in chest, DVT symptoms and signs

8.4 Some of the above are found in normal pregnancy and a definitive diagnosis is essential. Treatment does reduce morbidity and mortality. The diagnosis has implications for the current and future pregnancies and it influences contraceptive and Hormone Replacement Therapy (HRT) decisions.

9. DEEP VEIN THROMBOSIS (DVT)

9.1 Pregnant women with a suspected DVT should be seen for assessment:

- If < 20 weeks refer to medical admissions team / ambulatory day unit (GRH extension 6641); inform obstetrician
- If ≥ 20 weeks admit to antenatal ward

9.2 A compression duplex ultrasound scan (USS) of the leg should be arranged – see action card **AC1**

- If the diagnosis is confirmed continue anticoagulation
- If USS negative and low level of clinical suspicion, discontinue anticoagulation
- If USS negative and high level of clinical suspicion, continue anticoagulation and repeat USS in a week or consider Venogram (discuss with radiologist)

10. PULMONARY EMBOLISM (see action card **AC2**)

10.1 Pregnant women with a suspected PE should be admitted:

- If < 20 weeks refer to medical admissions team; inform obstetrician
- If ≥ 20 weeks admit to antenatal ward; consider involvement of medical team

10.2 A full assessment should be made including the following investigations;

- Pulse oximetry
- Arterial blood gases if O_2 < 92%
- Electrocardiogram (ECG)
- CXR – chest X-ray is NOT contraindicated in pregnancy (CEMD, 2001)

10.3 If CXR is negative and there are any symptoms or signs in the legs suggestive of DVT perform compression duplex USS of the leg(s).

10.4 If both CXR and leg USS (if applicable) are negative with persistent clinical suspicion of PE a perfusion (Q) scan or computed tomography pulmonary angiogram (CTPA) should be performed.

10.4.1 Women should be informed that Q scanning carries a slightly higher risk of childhood cancer compared with CTPA (1/280,000 versus less than 1/1,000,000) but carries a lower risk of maternal breast cancer. The isotopes used in these scans have very short half-lives and the radiation to the fetus is minimal (< 400 µGy). There is minimal excretion of isotope or iodinated contrast (for CTPA) into breast milk. Breast milk should be expressed and discarded for 12 hours following a Q scan (Administration of Radioactive substances Advisory Committee, 2006) and for 12 – 24 hours following CTPA (as per individual contrast manufacturers' recommendations.

10.4.2 Where feasible, women should be involved in the decision to undergo Q or CTPA scanning. Ideally informed consent should be obtained before these tests are undertaken

10.4.3 If there is a high clinical suspicion and investigations are negative discuss with medical team and radiologists. Continue anticoagulation treatment until VTE is excluded.

10.4.4 D-dimer estimation should not be performed to diagnose acute VTE in pregnancy.

10.5 Before anticoagulation therapy is commenced blood should be taken for a full blood count, coagulation screen, urea and electrolytes and liver function tests.

10.6 Do not routinely perform a thrombophilia screen prior to therapy. When undertaken, thrombophilia screens should be interpreted by a haematologist.

11. INITIAL TREATMENT OF VTE

11.1 In suspected VTE, low molecular weight heparin (LMWH) should be given until the diagnosis is excluded by objective testing, unless treatment is strongly contraindicated.

11.2 LMWHs are unlicensed for use in pregnancy but there is growing evidence of their safety and efficacy. LMWHs do not cross the placenta. Dalteparin (Fragmin®) is the preferred LMWH at a dose of 100units/kg twice daily, based on early pregnancy weight, as detailed below:

Table 2

Early pregnancy weight (kg)	Fragmin® Rx dose (approx 100units/kg BD)	**Licensed Fragmin® dose (approx 200units/kg OD)**
< 46	5000u am + 2500u pm	**7500 units OD**
46-56	5000u BD	**10000 units OD**
57-68	7500u am + 5000u pm	**12500 units OD**
69-82	7500u BD	**15000 units OD**
≥ 83	10000u am + 7500u pm	**18000 units OD**

11.3 Monitoring of dose: - routine measurement of peak anti-Xa activity for patients on LMWH for treatment of acute VTE in pregnancy or postpartum is not recommended except in women at extremes of body weight (<50kg and >90kg) or with other complicating factors e.g. renal impairment or recurrent VTE)

11.4 Routine platelet count monitoring should not be carried out (unless unfractionated heparin has been given)

12. MAINTENANCE TREATMENT OF VTE

12.1 Oral anticoagulants are avoided for maintenance therapy in pregnancy because of their adverse effects on the fetus, although may be considered in the puerperium (RCOG, 2007).

12.2 The suggested anticoagulation for the remainder of the pregnancy is subcutaneous LMWH, with Fragmin® the preferred treatment at the dosages in Table 2.

12.3 Women receiving therapeutic doses of unfractionated heparin should have their platelet count monitored at least every other day until day 14 or until the unfractionated heparin is stopped.

12.4 Long term use of LMWH is associated with a lower risk of osteoporosis and bone fractures than unfractionated heparin.

12.5 Arrangements should be made for safe disposal of needles and syringes.

13. DURATION OF THERAPY

13.1 In the non-pregnant situation, the duration of anticoagulant treatment is usually six months and this is recommended in the pregnant situation. If the VTE occurs early in the pregnancy and provided there are no additional risk factors, the dose of LMWH could be reduced to prophylactic levels (Dalteparin [Fragmin®] 5000units daily) after six months of therapy. Following delivery, treatment or prophylaxis should continue (see below).

14. DELIVERY PLAN FOR WOMEN TREATED FOR VTE OR RECEIVING THROMBOPROPHYLAXIS

14.1 A delivery plan should be made for each patient, involving the obstetrician, anaesthetist and haematologist as necessary.

14.2 Advise the woman that once she thinks she is in labour, she should **not** inject any further low molecular weight heparin. Further doses are to be prescribed by medical staff.

14.3 If induction of labour is planned for a woman on treatment LWMH, the woman should reduce the LMWH to the prophylactic dose on the day before induction (Dalteparin 5000units daily). The treatment dose (BD dose) should be started following delivery.

14.4 Epidural or spinal anaesthesia may be considered after discussion with a senior anaesthetist.

14.5 Regional techniques should not be used until at least 12 hours after the previous prophylactic dose of LMWH and for at least 24 hours after the last treatment dose of LMWH. LMWH should not be given for at least 4 hour after the epidural catheter has been removed and the catheter should not be removed within 12 hours of the most recent injection (RCOG, 2001).

14.6 Elective LSCS – give prophylactic dose of Dalteparin (Fragmin® 5000units) on the day before delivery and omit the morning dose of LMWH; perform the operation in the morning. Give the prophylactic dose 4 hours post operatively and restart the treatment dose that evening.

14.7 The following should be considered:

14.7.1 FBC, Group and Save (G&S), clotting screen

14.7.2 Inform anaesthetist on admission

14.7.3 Active management of third stage after vaginal delivery:

- IM Syntometrine (500mcg Ergometrine + 5 units oxytocin) if platelets >80
- IV syntocinon (10 units oxytocin) if platelets <80
- IV syntocinon infusion (40units in 500mls over 4hours)

14.7.4 Early suturing of perineal tears or episiotomy

14.7.5 In women receiving therapeutic levels of LMWH, wound drains should be considered at Caesarean section and the skin incision should be closed with staples or interrupted sutures to allow drainage of any haematoma

14.8 **Women on anticoagulant therapy are at high risk of haemorrhage**

14.8.1 If high risk of haemorrhage is thought likely (major APH, coagulopathy, progressive wound haematoma, suspected intrabdominal bleeding, post partum haemorrhage and heparin treatment is considered essential, consider using unfractionated heparin which has a shorter half-life and is more easily reversed by protamine sulphate. Seek advice of haematologist.

15. BLEEDING WHILST ANTICOAGULATED

15.1 LMWH: if bleeding is severe refer to haematologist. Reverse with IV protamine as follows:

- 0–3 hours post LMWH - For each 100 units LMWH 1mg protamine to a maximum of 50mg
- > 3hours post LMWH - For each 100 units LMWH 0.5mg protamine – refer to haematologist
  NB: use of protamine sulphate
- Administer slowly, 5mg/min IV injection. Maximum single dose 50mg
- Further dose may be required as it has a short half-life and LMWH will continue to be absorbed
- Repeat injection may be given at 60 minutes
- Protamine will only partly (65-80%) neutralise Anti-Xa activity of LMWH
- Increased risk of allergy if previously given or has allergy to fish

16. MASSIVE PULMONARY EMBOLISM

16.1 If a massive pulmonary embolism occurs, patients have acute severe dyspnoea often with severe chest pain. Massive pulmonary embolism consists of cyanosis, shock syncope, and/or circulatory collapse with hypotension (defined as a systolic blood pressure < 90mmHg or a pressure drop of 40 mmHg or more with no evident cause).

16.2 Urgent expert advice should be sought from the on-call medical team, critical care services, cardiothoracic surgeons and interventional radiologists as appropriate. An urgent portable echocardiogram or CTPA within 1 hour of presentation should be arranged. Patients in shock should be managed on intensive care. Thrombolytic therapy (Streptokinase, Urokinase and Recombinant tissue plasminogen activator) may be used in the emergency management of massive pulmonary embolism. Their use is associated with miscarriage or fetal death and maternal bleeding and their use should be restricted to women in extremis. Unfractionated heparin anticoagulation and emergency pulmonary embolectomy may be considered.

17. POSTNATAL ANTICOAGULATION

17.1 Women who have had a VTE in pregnancy need at least a 6 month course of full anticoagulation. Women who have already completed a 6 month course prior to delivery only need a further 6 weeks of prophylactic anticoagulation. This can be with either LMWH or warfarin. Breastfeeding is safe with either LMWH or Warfarin.

17.2 Warfarin post delivery - Warfarin can be started on the 3rd postnatal day (later if increased risk of postpartum haemorrhage). See **action card AC3.** The international normalised ratio (INR) should be checked on day 2 of treatment and subsequent doses titrated to maintain an INR between 2.0 – 3.0. LMWH should be continued until the INR has been in the therapeutic range (>2) for 48 hours. Warfarin is teratogenic and contraceptive advice must be given if this is used.

18. FOLLOW-UP PLAN

18.1 A follow-up appointment should be arranged to review management and discuss plans for the future (pregnancies and future contraception). Screening tests for thrombophilia should be performed once anticoagulation has been discontinued. Referral to the haematologist should be made for ongoing monitoring of Warfarin therapy if this is being used. A physician and or haematologist may be involved in continuing care if indicated.

18.2 Consider graduated elastic compression stockings on the leg affected by DVT for two years as this has been shown to reduce the risk of post-thrombotic syndrome (RCOG, 2007).

19. TRAINING

*Level of training required	Staff Group / s	Division / Department	Frequency of training / update	Method of training delivery	Lead and department responsible for provision of training
A	Midwives Obstetricians	Women and Children's	Once	Cascade via newsletter/	PDM

				Meetings	
B	Community Midwives	Women and children's	Annually	Training session	ANS Coordinators
A	Community Midwives	Women and Children's	Opportunity to attend every 6-8 weeks	Drop in session	ANS Coordinators

***Levels of Training**

A = Awareness (Micro-teach, drop in session, e-learning)	**B= ½ day (2.5 – 3 hours)** (workshop, training event, e-learning)	**C = Full day (5-6 hours)** (workshop, training event)	**D= Course** (more than one day training)

20. MONITORING OF COMPLIANCE

20.1 This list is not exhaustive and additional criteria may be included at the Trust discretion

20.2 The audit will include the current CNST level 3 Maternity standards and sample size if related

20.3 Sample sizes selected will be dependent on the cohort size. The data collection period will be identified by the Maternity CNST Lead

20.4 Action plans will be developed and reviewed as required by the instigating body

20.5 The audit will be carried out using the standardised audit tool and methodology as agreed by the maternity audit team and in line with the audit process.

20.6 The audit results will be presented to the multidisciplinary Obstetrics and Gynaecology Audit presentation meeting.

20.7 Where deficiencies are identified, an action plan will be developed by the author, following the Multidisciplinary Obstetrics and Gynaecology Audit presentation meeting. These action plans are implemented and monitored by the Associated Forum.

20.8 Audits are undertaken as routine triennially, however if deficiencies are identified or changes implemented, audit will be undertaken sooner.

		Monitoring of Compliance				
Source		**Criteria (Objective to be measured)**	**Monitoring Methodology**	**Lead Responsible**	**Time scales**	**Reporting arrangements**
CNST level 3	i	**Appropriate and timely risk assessments to identify those at risk of VTE** - At booking - At 36/40 - Any admission - Postnatal Prescription sheet assessment completed	case-note audit against criteria in policy document	Antenatal Forum	Annually	Antenatal Forum
CNST	ii	Significance of signs and symptoms in light of known risk factors	case-note audit against criteria in policy document	Antenatal Forum	Triennially	Antenatal Forum
CNST level 3	iii	**Appropriate actions taken in response to the risk assessments once the risk of VTE has been identified.**	case-note audit against criteria in policy document	Antenatal Forum	Annually	Antenatal Forum
CNST level 3	iv	**Documented individual management plan in the health records of women who require thrombophylaxis or treatment for a diagnosis of VTE**	case-note audit against criteria in policy document	Antenatal Forum	Annually	Antenatal Forum
CNST	v	Correct thromboprophlaxis during pregnancy	case-note audit against criteria in policy document	Antenatal Forum	Triennially	Antenatal Forum
CNST	vi	Correct care during labour and delivery of women on thromboprophylaxis	case-note audit against criteria in policy document	Antenatal Forum	Triennially	Antenatal Forum
CNST	vii	Correct thromboprophylaxis during	case-note audit	Antenatal Forum	Triennially	Antenatal Forum

		postnatal period	against criteria in policy document			
CNST	viii	Correct management of life threatening pulmonary thromboembolism in pregnancy	case-note audit against criteria in policy document	Antenatal Forum	Triennially	Antenatal Forum
CNST	ix	Postnatal appointment with appropriate clinician to all women who have been diagnosed with VTE during pregnancy or the postnatal period				
Incident reports	x	Women with Pulmonary Embolus notified via ACI reporting	Incident form completed	Risk Management Forum	If identified	Maternity Clinical Governance
CQUIN targets	xi	To comply with GHNHSFT Objectives in relation to VTE	Monthly VTE audit PAS screen at discharge Monthly safety thermometer	Lead for Quality	Monthly	Quality Committee Reprot

21. REFERENCES

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1. RISK FACTORS ASSOCIATED WITH ANY PREGNANCY

1.1 Hypercoagulability

1.1.1 Increased clotting factors: II, V, VII, VIII, X, XII and fibrinogen
1.1.2 Increased platelet aggregation
1.1.3 Decreased protein S, plasminogen activator, factors XI, XIII
1.1.4 Increased resistance to activated protein C

1.2 Stasis

1.2.1 Increased venous distensibility, decreased venous tone
1.2.2 50% decrease in venous flow in lower extremities by 3rd trimester
1.2.3 Uterus is mechanical impairment to venous return

1.3 Endothelial

1.4 Vascular damage at delivery (Caesarean section or assisted vaginal)

2. ADDITIONAL RISK FACTORS FOR VENOUS THROMBOEMBOLISM IN PREGNANCY AND THE PUERPERIUM

2.1 Pre-existing

Previous VTE
Thrombophilia:
Congenital
Antithrombin deficiency
Protein C or S deficiency
Factor V Leiden
Prothrombin gene variant
Acquired
Lupus anticoagulant
Anticardiolipin antibodies

Age over 35 years
Obesity (BMI >35)
Parity >4
Gross varicose veins
Paraplegia
Sickle cell disease
Inflammatory disorders (e.g. inflammatory bowel disease)
Some medical disorders (e.g. nephritic syndrome, certain cardiac diseases)
Myeloproliferative disorders (e.g. essential thrombocythaemia, polycythaemia)

2.2 New onset or transient*

Surgical procedure including LSCS
Hyperemesis
Dehydration
Severe infection (e.g. pyelonephritis)
Immobility (> 4 days bed rest)
Pre-eclampsia
Excessive blood loss
Long-haul travel
Prolonged labour
Midcavity instrumental delivery
Immobility after delivery

2.3 *These risk factors are potentially reversible and may develop at later stages in gestation than the initial risk assessment or may resolve; an ongoing individual risk assessment is important.

VENOUS THROMBOEMBOLIC DISORDERS - DIAGNOSIS AND TREATMENT THROMBOPROPHYLAXIS DURING PREGNANCY, LABOUR AND AFTER DELIVERY – DOCUMENT PROFILE

DOCUMENT PROFILE	
REFERENCE NUMBER	A2014
CATEGORY	Clinical
VERSION	5
SPONSOR	Dhushyanthan Mahendran
AUTHOR	Anne McCrum
ISSUE DATE	August 2011
REVIEW DETAILS	August 2014 (GOGG)
ASSURING GROUP	Labour Ward Forum and Antenatal Working Group
APPROVING GROUP	Gloucestershire Obstetric Guideline Group (GOGG)
APPROVAL DETAILS	12/08/2008 item 3 – GOGG 19/08/2008 – Clinical Policy Group 12/09/2008 – Clinical Policy Group 27/10/2009 item 3.3 – GOGG 10/11/2009 item 27 – Clinical Policy Group 10/12/2009 item 165/09.30 – Senior Nurse Committee 03/09/2010 item 4.3 - GOGG 05/04/2011 item 4.6 – GOGG 02/08/2011 - GOGG
DISSEMINATION DETAILS	Upload to Policy Site; cascaded via Women and Children's Division
EQUALITY IMPACT ASSESSMENT	Added to policy 25/07/2011
KEYWORDS	VTE, PE
RELATED TRUST DOCUMENTS	Antenatal VTE Risk Assessment for Maternity Post Delivery VTE Risk Assessment for Maternity
OTHER RELEVANT DOCUMENTS	Action Card AC1 Investigation of suspected DVT in Pregnancy / Puerperium Action Card AC2 Investigation of suspected PE in Pregnancy/Puerperium Action Card AC3 Warfarin Loading Guidelines

Authors	Version	Reason for review	Ratified
Anne McCrum Consultant Obstetrician	Version 1 August 2008	New guideline	Gloucestershire Obstetric Guideline Group (GOGG)
Anne McCrum Consultant Obstetrician	Version 2 Review October 2009	Addition of VTE proforma	Gloucestershire Obstetric Guideline Group (GOGG)
Anne McCrum Consultant Obstetrician	Version 3 Review September 2010	VTE proforma split to antenatal and postnatal	Gloucestershire Obstetric Guideline Group (GOGG)
Anne McCrum Consultant Obstetrician	Version 4 Review April 2011	Review for CNST standards	Gloucestershire Obstetric Guideline Group (GOGG)
Anne McCrum Consultant Obstetrician	Version 5 Review August 2011	Review following audit	Gloucestershire Obstetric Guideline Group (GOGG)

Gloucestershire Hospitals NHS
NHS Foundation Trust

EQUALITY IMPACT ASSESSMENT

INITIAL SCREENING

1. Lead Name : Kirsty Davis
Job Title : PDM

2. Is this a new or existing policy, service strategy, procedure or function?

New | Existing ✓

3. Who is the policy/service strategy, procedure or function aimed at?

Patients | Carers | Staff ✓ | Visitors

Any other | Please specify:

4. Are any of the following groups adversely affected by this policy:

If yes is this high, medium or low impact (see attached notes):

Disabled people:	No	✓	Yes	
Race, ethnicity & nationality:	No	✓	Yes	
Male/Female/transgender:	No	✓	Yes	
Age, young or older people:	No	✓	Yes	
Sexual orientation:	No	✓	Yes	
Religion, belief & faith:	No	✓	Yes	

If the answer is yes to any of these proceed to full assessment.

If the answer is no to all categories, the assessment is now complete.

Date of assessment: 25/07/2011 | Completed by: K.Davis

Signature: | Job title: PDM

Director: | Signature:

This EIA will be published on the Trust website. A completed EIA must accompany a new policy or a reviewed policy when it is confirmed by the relevant Trust Committee, Divisional Board, Trust Director or Trust Board. Executive Directors are responsible for ensuring that EIA's are completed in accordance with this procedure.