Blackpool Teaching Hospitals NHS
NHS Foundation Trust

Document Type: **GUIDELINE**		**Unique Identifier:** OBS/GYNAE/GUID/102
Title: **Venous Thromboembolism – Treatment/Management In Pregnancy, Labour And The Puerperium**		**Version Number:** 3
		Status: Ratified
Scope: All staff caring for pregnant and postnatal women		**Classification:** Departmental
Author/Originator and title: Miss E Haslett, Consultant Obstetrician Mr S J Duthie, Consultant Obstetrician Dr Macheta, Consultant Haematologist Mr A Duncan, Cardiothoracic Surgeon Janet Danson-Smith, Midwifery Matron		**Responsibility:** Obstetrics and Gynaecology Directorate
Replaces: Version 2 Venous Thromboembolism – Treatment/Management in Pregnancy, Labour and the Puerperium Obs/Gynae/Guid/102	**Description of amendments:** Change use of Tinzaparin to Dalteparin	
Name Of: Divisional/Directorate/Working Group: Obstetrics and Gynaecology Policy Group	**Date of Meeting:** 22/05/2012	**Risk Assessment:** Not Applicable **Financial Implications** Not Applicable
Validated by: Obstetrics and Gynaecology Directorate Meeting	**Validation Date:** 18/06/2012	**Which Principles of the NHS Constitution Apply?** Principle 1-4
Ratified by: Clinical Improvement Committee	**Ratified Date:** 07/08/2012	**Issue Date:** 07/08/2012
Review dates may alter if any significant changes are made		**Review Date:** 01/05/2015
Does this document meet the requirements of the Equality Act 2010 in relation to Race, Religion or Belief, Age, Disability, Gender, Sexual Orientation, Gender Identity, Pregnancy & Maternity, Marriage and Civil Partnership, Carers, Human Rights and Social Economic Deprivation discrimination? Initial Assessment		

1. PURPOSE

To provide staff with guidance regarding the immediate investigation and management of women in whom venous thromboembolism (VTE) is suspected during pregnancy or the puerperium.

2. SCOPE

This guideline applies to all clinical staff caring for pregnant and postnatal women.

3. PROCEDURE

3.1 The Significance of Signs and Symptoms in the Light of Known Risk Factors

A woman with unilateral limb swelling must be considered as having a deep vein thrombosis until proven otherwise. In addition, if any woman presents with any of the following symptoms, it may indicate the presence of a VTE:

- Oedema of the limbs
- Pain in the calves
- Thrombophlebitis
- Low abdominal pain
- Low grade pyrexia
- Breathlessness
- Chest pain
- Haemoptysis
- Collapse

However, if risk factors for VTE have been identified (see appendix 2 and 3) and the woman presents with any of the above signs and symptoms, the nurse/midwife must refer to the medical staff/obstetrician (excluding FY1) for assessment and treatment. All actions taken must be documented in the health record.

Please note: The symptoms of pulmonary embolism can be non-specific and the diagnosis should be considered in any pregnant or postnatal women who is unwell.

3.2 The Requirement to Document an Individual Management Plan in the Health Records of Women who require Treatment for a Diagnosis of VTE

An individual management plan must be documented in the health record by the medical staff and/or obstetrician and must include the plan for sections 3.3.2, up to and including 3.3.5, and 3.4 and 3.4.1 as applicable.

3.3 Deep Vein Thrombosis (DVT)

3.3.1 Acute management

Any woman suspected of having a DVT, must be admitted to delivery suite for emergency management as follows:
The admitting doctor must ensure that the following are carried out:

- Full clinical assessment including the Maternity Obstetric Early Warning Score/Early Warning Score

- Full blood count

- Biochemistry profile
- Clotting screen

The nurse/midwife will:
- Measure the legs and apply appropriately sized anti-embolic stockings to both legs in order to reduce leg oedema
- Elevate the leg
- Document all actions taken in the health record

The midwife/obstetrician must ensure that:
- Fetal monitoring is performed if appropriate

3.3.2 Anticoagulation

The doctor will prescribe anticoagulants on the drug chart and document same in the Health record.

Please note: Anticoagulation treatment with Low Molecular Weight Heparin must not be discontinued until the diagnosis has been excluded by radiological imaging

Dalteparin dosage is based on the woman's booking weight and calculated as follows:

Body weight ('Booking' weight)	**Dose**
Under 50kg	5000 units S/C twice daily
50 – 69 kg	6000 units S/C twice daily (10000 unit/ml Graduated syringe to be used. Discard 0.4mls prior to administration)
70 – 89 kg	8000 units S/C twice daily (10000 unit/ml Graduated syringe to be used. Discard 0.2mls prior to administration)
90kg and over	10000 units S/C twice daily

3.3.3 Diagnosis

- Radiological imaging – usually Compression Duplex Ultrasound.
- If Iliac Vein thrombosis is suspected (backache and swelling of the entire limb), Magnetic Resonance Venography or Conventional Contract Venography may be considered. Please discuss with the Radiologist on call

3.3.4 Management of the woman once a positive diagnosis has been made

3.3.4.1 Monitoring

- The doctor will review the woman daily and record in the health record
- All actions taken must be recorded in the woman's health record
- The doctor responsible for care will ensure that the platelet level is checked after 6 days of therapeutic treatment. Routine platelet count monitoring is not recommended.
- Women with body weight <50 kg and $\geq$ 90 kg or with other complicating factors e.g. renal impairment, recurrent VTE or Antithrombin deficiency, discuss the measurement of peak Anti-Xa activity with the Consultant Haematologist on call.

3.3.4.2 Maintenance treatment

Treatment with therapeutic doses of Dalteparin should be continued for the remainder of the pregnancy and for at least 6 weeks postnatally and until at least 3 months of treatment has been given. If oral anticoagulants are preferred, the doctor must document an

individual management plan. Regular review in antenatal clinic is required. Post natal review – refer to section 3.6

3.3.5 Self Administration of subcutaneous Dalteparin:

The nurse/midwife will teach the woman the following:

- How to self administer the drug at the correct dose.
- That excessive bruising at the injection site must be reported immediately to the midwife or telephone the delivery suite.
- Safe disposal of the syringe and needle
- Document actions taken in the health record

3.4 Management of Non-Massive Pulmonary Embolism (PE)

- Refer to section 3.3.1 and 3.3.2

In addition, the following may be considered by the doctor;

- ECG
- Arterial blood gases

3.4.1 Diagnosis of a PE

- Chest xray – to exclude other pathology e.g. Haemothorax

If the chest xray is normal perform:

- Compression Duplex Doppler of both legs – if this shows evidence of thrombus, manage as above – see section 3.3

If both the chest xray and Compression Duplex Doppler are negative, discuss with the Consultant Radiologist on call re appropriate pulmonary imaging as below:

- Ventilation-perfusion (V/Q) lung scan
- Computed Tomography Pulmonary Angiogram (CTPA)

3.4.2 Monitoring and Maintenance Treatment

Refer to sections 3.4

3.5 Therapeutic Anticoagulation during Labour and Delivery

- The Consultant Obstetrician acting in conjunction with the Physician, Haematologist, and Anaesthetist must enter a detailed plan of management for delivery in the health record
- The woman should be advised that once she is in labour or thinks she is in labour, she should not inject any further Dalteparin. She should come to hospital where she will be admitted. The medical staff will review and prescribe appropriate doses of Dalteparin.
- For Induction of labour, therapeutic Dalteparin should be stopped 24 hours before artificial rupture of membranes.
- Ensure that the woman is fitted with appropriately fitting anti-embolic stockings

3.6 The Process for Offering a Postnatal Appointment with an Appropriate Clinician to all Women who have been diagnosed with VTE during Pregnancy or Postnatal Period

- The Consultant Obstetrician will ensure that the woman is referred to the Anticoagulant Clinic using the referral form located on the Intranet (search for Anticoagulation to locate the referral form)
- The Consultant Obstetrician must also ensure that the woman is given an

appointment to attend the Medical Obstetric Clinic (Tuesday afternoon) for review of treatment and thrombophilia screen (appendix 1) if necessary.

- Actions taken must be documented in the health record

3.7 Management of Massive Life Threatening Pulmonary Thromboembolism in Pregnancy

Collapsed, shocked women will need to be assessed by a team of experienced clinicians including the on call Consultant Obstetrician and Consultant Anaesthetist. The following emergency measures must be taken:

1. Emergency resuscitation:

- Instigate the 2222 antenatal, postnatal obstetric emergency procedure or Antenatal and Postnatal Cardiac Arrest procedure
- Inform the Consultant Obstetrician on call and the Consultant Anaesthetist on call immediately.
- Cardiothoracic Anaesthetist on call re performing a Trans-oesophageal Echocardiogram to confirm the diagnosis of pulmonary embolism. If they are not available contact the Cardiology Registrar on call.
- Follow basic life support procedure until the Advanced Life Support provider is present if appropriate.
- Resuscitation of the mother is the priority. If undelivered, consider immediate delivery

2. The following treatment options are available:

- Intravenous unfractionated heparin
- Thrombolytic therapy
- Thoracotomy/Surgical Embolectomy – discuss with Consultant Cardio-thoracic surgeon on call.

3. Care would need to continue on Intensive Care Unit and this would need to be discussed with the Consultant Intensivist on call.

3.8 Additional Therapies

The medial team may need to consider the use of a temporary inferior vena cava filter in the perinatal period for women with Iliac vein VTE to reduce the risk of pulmonary thromboembolism or in women with proven VTE and who have continuing pulmonary thromboembolism despite adequate anticoagulation

3.9 Organisation's Expectations in Relation to Staff Training

Staff training is undertaken as outlined in the Mandatory Risk Management Training Policy (CORP/POL/354)

3.10 Process for Monitoring Compliance

The process for monitoring compliance is identified in Appendix 4 and 5

4. ATTACHMENTS	
Appendix Number	**Title**
1	Thrombopyilia screen
2	Antenatal VTE Risk Assessment
3	Postnatal VTE Risk Assessment
4	Process for monitoring compliance – CNST
5	Process for monitoring compliance – NHSLA

6	Equality Impact Assessment Tool

5. ELECTRONIC AND MANUAL RECORDING OF INFORMATION
Electronic Database for Procedural Documents
Held by Policy Co-ordinators/Archive Office

6. LOCATIONS THIS DOCUMENT ISSUED TO		
Copy No	**Location**	**Date Issued**
1	Intranet	07/08/2012
2	Wards and Departments	07/08/2012

7. OTHER RELEVANT/ASSOCIATED DOCUMENTS	
Unique Identifier	**Title and web links from the document library**
Obs/Gynae/Proc/005	Maternal Antenatal and Postnatal Cardiac Arrest Calls (2222) http://fcsharepoint/trustdocuments/Documents/OBS-GYNAE-PROC-005.doc
Corp/Proc/083	Cardiopulmonary resuscitation http://fcsharepoint/trustdocuments/Documents/CORP-PROC-003.docx
CORP/GUID/076	Prevention of Venous Thromboembolism in medical and surgical patients http://fcsharepoint/trustdocuments/Documents/CORP-GUID-076.doc
CORP/POL/354	Mandatory Risk Management Training Policy http://fcsharepoint/trustdocuments/Documents/CORP-POL-354.docx

8. SUPPORTING REFERENCES/EVIDENCE BASED DOCUMENTS
References In Full
RCOG (2009) Reducing the Risk of Thrombosis and embolism during pregnancy and the puerperium http://www.rcog.org.uk/womens-health/clinical-guidance/reducing-risk-of-thrombosis-greentop37

9. CONSULTATION WITH STAFF AND PATIENTS	
Name	**Designation**

10. DEFINITIONS/GLOSSARY OF TERMS	

11. AUTHOR/DIVISIONAL/DIRECTORATE MANAGER APPROVAL			
Issued By	Miss E Haslett	**Checked By**	Miss E J Davies
Job Title	Consultant Obstetrician	**Job Title**	Clinical Director
Date	August 2012	**Date**	August 2012

Appendix 1 - Tests required as part of a thrombophillia screen.

a) PCR for Factor V Leiden (EDTA sample to haematology).

b) PCR for prothrombin gene variant (EDTA sample to haematology).

c) Assay for antithrombin 111 activity (coagulated sample), except if the patient is on heparin or warfarin.

d) Assay for Protein C and Protein S activity (coagulated sample), except if the patient is on warfarin or heparin.

e) Lupus anticoagulant screen (coagulated sample) – only do if off Warfarin or Heparin

f) Anticardiolipin antibodies (serum to immunology).

Please note: Samples for Protein C, Protein S and Antithrombin 3 should only be taken when the patient has been off Warfarin for more than a month.

Appendix 2 – Antenatal VTE Risk Assessment

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Antenatal VTE Risk Assessment and Management

Abbreviations used in this document to be listed here with the full description:
VTE - Venous thromboembolism
SPD - Symphysis Pubis Dysfunction
PPH - Postpartum Haemorrhage
BMI - Body Mass Index
LMWH - Low Molecular Weight Heparin

Write patient details or affix Identification label
Hospital Number:
Name:
Address:

Date of Birth:
NHS Number:

If women must be assessed at Booking and on admission to hospital

- Previous single VTE +
  - Thrombophilia or family history
  - Unprovoked/oestrogen related
- Previous recurrent VTE

→ **HIGH RISK**
- **Requires antenatal prophylaxis with Dalteparin**
- **Anti-embolic stockings**
- **Refer to Consultant**

- Single previous VTE with either no family history or no thrombophilia
- Thrombophilia and no VTE
- Cardiac/pulmonary disease (some types)
- Systemic Lupus Erythematosis
- Malignancy
- Inflammatory conditions
- Nephrotic syndrome
- Sickle cell disease
- Intravenous drug user
- Surgical procedures
- BMI >40

→ **INTERMEDIATE RISK**
- **Consider antenatal prophylaxis with Dalteparin and anti-embolic stockings**
- **Refer to Consultant**

- Age >35 years
- BMI >30
- Para ≥3
- Family history of VTE
- Smoker
- Gross varicose veins
- Severe sepsis
- Immobility (≥3 days) eg. Paraplegia, SPD, Long distance travel (>4 hours)
- Pre-eclampsia
- Hyperemesis Gravidarum/Dehydration
- Ovarian hyperstimulation syndrome
- Multiple pregnancy or ART

→ 3 or more risk factors
2 or more if admitted

→ <3 risk factors

→ **LOWER RISK**
Mobilisation and avoidance of dehydration

All High Risk women will require anti-embolic stockings and Dalteparin according to body weight, for the duration of the pregnancy.
Those at Intermediate Risk, and those with 3 or more Lower Risk factors, (2 or more if admitted), to be considered for anti-embolic stockings and Dalteparin.

Dosage of Dalteparin according to body weight at booking:
Body weight <50kg - 2500 units daily
Body weight 50 – 90kg - 5000 units daily
Body weight 91 - 130kg - 7500 units daily
Body weight 131 – 170kg – 10,000 units daily
Body weight >170 kg – 75 units per kilo per day

Please CIRCLE level of Risk following assessment: HIGH INTERMEDIATE LOW

Signed: **Print name:** **Designation:** **Date:**

Appendix 3 Postnatal VTE Risk Assessment

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Postnatal VTE Risk Assessment and Management at Delivery

Abbreviations used in this document to be listed here with the full description:
VTE - Venous thromboembolism
SPD - Symphysis Pubis Dysfunction
PPH - Postpartum Haemorrhage
BMI - Body Mass Index
LMWH - Low Molecular Weight Heparin

Write patient details or affix Identification label
Hospital Number:
Name:
Address:

Date of Birth:
NHS Number:

All women MUST be assessed following delivery

- Any previous VTE
- Anyone requiring LMWH antenatally

→ **HIGH RISK**
Requires at least 6 weeks postnatal prophylaxis with Dalteparin + anti embolic stockings till mobile

- Asymptomatic thrombophilia, inherited or acquired
- Prolonged hospital admission
- Cardiac/pulmonary disease (some types)
- Systemic Lupus Erythematosis
- Malignancy
- Inflammatory conditions
- Nephrotic syndrome
- Sickle cell disease
- Intravenous drug user
- Any surgical procedures in the puerperium
- BMI >40
- Caesarean section

→ **INTERMEDIATE RISK**
Requires at least 7 days postnatal prophylaxis with Dalteparin + anti embolic stockings till mobile

Please note: If persisting or >3 risk factors, consider extending prophylaxis with Dalteparin to 6 weeks

- Age >35 years
- BMI >30
- Para ≥3
- Smoker
- Gross varicose veins
- Severe sepsis
- Immobility (≥3 days) eg. Paraplegia, SPD, Long distance travel (>4 hours)
- Pre-eclampsia
- Mid cavity or rotational operative delivery
- Prolonged labour >24 hours
- PPH >1 litre or blood transfusion

→ 2 or more risk factors

→ <2 risk factors

→ **LOWER RISK**
Mobilisation and avoidance of dehydration

Dosage of Dalteparin according to body weight at booking:
Body weight <50kg - 2500 units daily
Body weight 50 – 90kg - 5000 units daily
Body weight 91 - 130kg - 7500 units daily
Body weight 131 – 170kg – 10,000 units daily
Body weight >170 kg – 75 units per kilo per day

Please note:
- **If the woman has had an epidural, the first dose of Dalteparin must not be given until 4 hours after removal of the epidural catheter**
- **If postpartum haemorrhage, give the first dose by 4 hours after delivery**

Please CIRCLE level of Risk following assessment: HIGH INTERMEDIATE LOW

Signed: **Print name:**

Designation: **Date:**

Appendix 4 – CNST Process for monitoring compliance

Minimum requirement to be monitored		Process for monitoring e.g. audit	Responsible individual/ group/ committee	Frequency of monitoring	Responsible individual/ group/ committee for review of results	Responsible individual/ group/ committee for development of action plan	Responsible individual/ group/ committee for monitoring of action plan and Implementation
b)	The significance of signs and symptoms in the light of known risk factors	1% of all health records of women who have delivered following thromboprohylaxis during the antenatal and/or postnatal period	Labour Ward Lead Consultant Obstetrician	Annual	Women and Children's Governance Group	Women and Children's Governance Group	Women and Children's Governance Group
d)	The requirement to document an individual management plan in the health records of women who require thromboprophylaxis or treatment for a diagnosis of VTE	1% of all health records of women who have delivered following thromboprohylaxis during the antenatal and/or postnatal period	Labour Ward Lead Consultant Obstetrician	Annual	Women and Children's Governance Group	Women and Children's Governance Group	Women and Children's Governance Group
h)	The management of massive life threatening pulmonary embolism in pregnancy	1% of all health records of women who have delivered following thromboprohylaxis during the antenatal and/or postnatal period	Labour Ward Lead Consultant Obstetrician	Annual	Women and Children's Governance Group	Women and Children's Governance Group	Women and Children's Governance Group
i)	The process for offering a postnatal appointment with an appropriate clinician to all women who have been diagnosed with VTE during pregnancy or the postnatal period	1% of all health records of women who have delivered following thromboprohylaxis during the antenatal and/or postnatal period	Labour Ward Lead Consultant Obstetrician	Annual	Women and Children's Governance Group	Women and Children's Governance Group	Women and Children's Governance Group

Appendix 5 – NHSLA Process for monitoring compliance -

Minimum requirement to be monitored		Process for monitoring e.g. audit	Responsible individual/ group/ committee	Frequency of monitoring	Responsible individual/ group/ committee for review of results	Responsible individual/ group/ committee for development of action plan	Responsible individual/ group/ committee for monitoring of action plan and Implementation
a)	Process/risk assessment for identifying women at risk of venous thromboembolism	Audit	Labour Ward Lead Consultant Obstetrician	Annual	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee
b)	Prophylactic treatment regime for high risk women	Audit	Labour Ward Lead Consultant Obstetrician	Annual	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee
c)	Procedure to be followed if venous thromboembolism is suspected	Audit	Labour Ward Lead Consultant Obstetrician	Annual	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee
d)	Management of the woman once a positive diagnosis has been made	Audit	Labour Ward Lead Consultant Obstetrician	Annual	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee
e)	Organisations expectations in relation to staff training as identified in the Training Needs Analysis	Audit	Labour Ward Lead Consultant Obstetrician	Annual	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee	Labour Ward Lead Consultant Obstetrician Clinical Governance Committee

Appendix 6: Equality Impact Assessment Tool

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To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval.

Would the relevant Equality groups be affected by the document? (If Yes please explain why you believe this to be discriminatory in Comment box)
Venous Thromboembolism – Treatment/Management in Pregnancy Labour and the Puerperium Obs/Gynae/Guid/102

	Questionnaire	Yes/No Double click and select answer	Comments
1	Grounds of race, ethnicity, colour, nationality or national origins e.g. people of different ethnic backgrounds including minorities: gypsy travellers and refugees / asylum seekers.	No	
2	Grounds of Gender including Transsexual, Transgender people	No	
3	Grounds of Religion or belief e.g. religious /faith or other groups with recognised belief systems	No	
4	Grounds of Sexual orientation including lesbian, gay and bisexual people	No	
5	Grounds of Age older people, children and young people	No	
6	Grounds of Disability: Disabled people, groups of physical or sensory impairment or mental disability	No	
7	Is there any evidence that some groups are affected differently?	No	
8	If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?	No	
9	Is the impact of the document/guidance likely to be having an adverse/negative affect on the person (s)?	No	
10	If so can the negative impact be avoided?	N/A	

11	What alternatives are there to avoid the adverse/negative impact?	**Please Comment**	
12	Can we reduce the adverse/negative impact by taking different action?	N/A	**Please Identify How**

13 Q1 (a) **Is the document directly discriminatory?** No (under any discrimination legislation) • Racial Discrimination • Age Discrimination • Disability Discrimination • Gender Equality • Sexual Discrimination	**Q2 (b) (i)** Is the document indirectly discriminatory? No **b (ii)** If you said yes , is this justifiable in meeting a legitimate aim N/A	**Q3 (c)** Is the document intended to increase equality of opportunity by positive action or action to redress disadvantage N/A Please give details To safeguard vulnerable adults

14 If you have answered **no** to all the above questions **1-13** and the document does not discriminate any Equality Groups please go to **section 15**

If you answered **yes** to Q1 (a) and **no** to Q3 (b) this is unlawful discrimination.

If you answered **yes** to Q2 (b) (i) **no** to Q2 (b) (ii) and **no** to Q3 (c), this is unlawful discrimination

If the content of the document is not directly or indirectly discriminatory, does it still have an adverse impact?

No

Please give details

If the content document is unlawfully discriminatory, you must decide how to ensure the organisation acts lawfully and amend the document accordingly to avoid or reduce this impact

15 Name of the Author completing the Equality Impact Assessment Tool.

Name Janet Danson-Smith

Signature

Designation Midwifery Matron

Date May 2012