Blackpool Teaching Hospitals
NHS Foundation Trust

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Title: **Venous Thromboembolism – Treatment / Management in Pregnancy, Labour and the Puerperium**	**Version Number:** 5 **Status:** Ratified
Target Audience: All staff caring for pregnant and postnatal women	**Divisional and Department:** Obstetrics and Gynaecology Directorate
Author / Originator and Job Title: Dr E Haslett, Consultant Obstetrician Janet Danson-Smith, Patient Experience Coordinator Mr Eric Mutema, Head of Department Dr M Grey, Consultant Haematologist	**Risk Assessment:** Not Applicable

Replaces: Version 4 Venous Thromboembolism – Treatment/Management in Pregnancy, Labour and the Puerperium OBS/GYNAE/GUID/102	**Description of amendments:** Investigations of Pulmonary Embolism	
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Blackpool Teaching Hospitals NHS Foundation Trust aims to design and implement services, policies and measures that meet the diverse needs of our service, population and workforce, ensuring that they are not placed at a disadvantage over others. The Equality Impact Assessment Tool is designed to help you consider the needs and assess the impact of your policy in the final Appendix.

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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 TARGET AUDIENCE

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 OBS/GYNAE/GUID/103) and the woman presents with any of the above signs and symptoms, the nurse / midwife must refer to the medical staff / obstetrician (excluding Foundation Year (FY) 1) 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 Maternity Day Unit (MDU) or 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	5,000 units S/C twice daily
50 – 64 kg	7,500 units S/C am and 5,000 units S/C pm
65 – 79 kg	7,500 units S/C twice daily

Body weight ('Booking' weight)	Dose
80kg – 94 kg	10,000 units S/C am and 7,500 units S/C pm
95-109kg	10,000 units S/C twice daily
110 - 124kg	12,500 units S/C am and 10,000 units S/C pm
>125kg	Discuss with haematologist

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.
- Women with body weight <50 kg and > 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. Postnatal 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;

- Electrocardiography (ECG).
- Arterial blood gases.
- Chest X-Ray

3.4.1 Diagnosis of a PE

- **In women with suspected PE without symptoms and signs of DVT**, a ventilation / perfusion (V/Q) lung scan or a computerised tomography pulmonary angiogram (CTPA) should be performed.
- **In women with suspected PE who also have symptoms and signs of DVT**, compression duplex ultrasound should be performed. If this shows evidence of thrombus, manage as above – see section 3.3
- **If compression ultrasonography confirms the presence of DVT**, no further investigation is necessary and treatment for VTE should continue.
- When the chest X-ray is abnormal and there is a clinical suspicion of PE, CTPA should be performed in preference to a V/Q scan.
- **Alternative or repeat testing should be carried out** where V/Q scan or CTPA is normal but the clinical suspicion of PE remains. Anticoagulant treatment should be continued until PE is definitively excluded.
- **Women with suspected PE should be advised that**, compared with CTPA, V/Q scanning may carry a slightly increased risk of childhood cancer but is associated with a lower risk of maternal breast cancer; in both situations, the absolute risk is very small.

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 must 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:

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 to facilitate maternal resuscitation (within 4 minutes of arrest).

The following treatment options are available:

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

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 2 and 3.

4 ATTACHMENTS	
Appendix Number	**Title**
1	Thrombophilia screen
2	Process for monitoring compliance
3	Process for monitoring compliance
4	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 IS ISSUED TO		
Copy No	**Location**	**Date Issued**
1	Intranet	21/02/2019
2	Wards and Departments	21/02/2019

7 OTHER RELEVANT / ASSOCIATED DOCUMNETS	
Unique Identifier	**Title and web links from the document library**
CORP/GUID/076	Prevention of Venous Thromboembolism in medical and surgical patients http://fcsp.xfyldecoast.nhs.uk/trustdocuments/Documents/CORP-GUID-076.docx
CORP/POL/354	Mandatory Risk Management Training Policy http://fcsp.xfyldecoast.nhs.uk/trustdocuments/Documents/CORP-POL-354.docx
CORP/PROC/083	Cardiopulmonary resuscitation http://fcsp.xfyldecoast.nhs.uk/trustdocuments/Documents/CORP-PROC-083.docx

7 OTHER RELEVANT / ASSOCIATED DOCUMNETS	
Unique Identifier	**Title and web links from the document library**
OBS/GYNAE/GUID/103	Venous Thromboembolism - Antenatal, Intrapartum and Postnatal Risk Assessments and Prophylaxis http://fcsp.xfyldecoast.nhs.uk/trustdocuments/Documents/OBS-GYNAE-GUID-103.docx

8 SUPPORTING REFERENCE / EVIDENCE BASED DOCUMENTS
References In Full
Royal College of Obstetricians and Gynaecologists (RCOG). (April 2015). Thrombosis and Embolism during Pregnancy and the Puerperium, Reducing the Risk (Green-top Guideline No. 37a). Available: https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg37a/ . Last accessed 27/02/2018.
Royal College of Obstetricians and Gynaecologists (RCOG). (April 2015). Thrombosis and Embolism during Pregnancy and the Puerperium, the Acute Management of (Green-top Guideline No. 37b). Available: https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg37b/ . Last accessed 27/02/2018.
National Institute for Health and Care Excellence. (NICE guideline [NG89] Published date: March 2018). Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism. Available: https://www.nice.org.uk/guidance/ng89

9 CONSULATION WITH STAFF AND PATIENTS	
Name	**Designation**
Anthony Freestone	Radiology
Jennifer Walters	Lead Pharmacist – Surgery

10 DEFINITIONS / GLOSSARY OF TERMS	
CTPA	Computed Tomography Pulmonary Angiogram
DVT	Deep Vein Thrombosis
ECG	Electrocardiography
FY	Foundation Year
MDU	Midwifery Development Unit
PCR	Polymerase Chain Reaction
PE	Pulmonary Embolism
V/Q	Ventilation-perfusion
VTE	venous thromboembolism

11 AUTHOR / DIVISIONAL / DIRECTORATE MANAGER APPROVAL			
Issued By	Dr E Haslett	**Checked By**	Mr Mutema
Job Title	Consultant Obstetrician	**Job Title**	Head of Department
Date	January 2018	**Date**	January 2018

APPENDIX 1: TESTS REQUIRED AS PART OF A THROMBOPHILLIA SCREEN

a) Polymerase Chain Reaction (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 – 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	Divisional Risk Governance Group	Annual	Divisional Risk Governance Group	Divisional Risk Governance Group	Divisional Risk 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	Divisional Risk Governance Group	Annual	Divisional Risk Governance Group	Divisional Risk Governance Group	Divisional Risk 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	Divisional Risk Governance Group	Annual	Divisional Risk Governance Group	Divisional Risk Governance Group	Divisional Risk 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	Divisional Risk Governance Group	Annual	Divisional Risk Governance Group	Divisional Risk Governance Group	Divisional Risk Governance Group

APPENDIX 3 – 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	Divisional Risk Governance Group	Annual	Divisional Risk Governance Group	Divisional Risk Governance Group	Divisional Risk Governance Group
b)	Prophylactic treatment regime for high risk women	Audit	Divisional Risk Governance Group	Annual	Divisional Risk Governance Group	Divisional Risk Governance Group	Divisional Risk Governance Group
c)	Procedure to be followed if venous thromboembolism is suspected	Audit	Divisional Risk Governance Group	Annual	Divisional Risk Governance Group	Divisional Risk Governance Group	Divisional Risk Governance Group
d)	Management of the woman once a positive diagnosis has been made	Audit	Divisional Risk Governance Group	Annual	Divisional Risk Governance Group	Divisional Risk Governance Group	Divisional Risk Governance Group
e)	Organisations expectations in relation to staff training as identified in the Training Needs Analysis	Audit	Divisional Risk Governance Group	Annual	Divisional Risk Governance Group	Divisional Risk Governance Group	Divisional Risk Governance Group

APPENDIX 4: EQUALITY IMPACT ASSESSMENT FORM

Department	Departmental Wide	**Service or Policy**	Guideline	**Date Completed:**	March 2015

GROUPS TO BE CONSIDERED

Deprived communities, homeless, substance misusers, people who have a disability, learning disability, older people, children and families, young people, Lesbian Gay Bi-sexual or Transgender, minority ethnic communities, Gypsy/Roma/Travellers, women/men, parents, carers, staff, wider community, offenders.

EQUALITY PROTECTED CHARACTERISTICS TO BE CONSIDERED

Age, gender, disability, race, sexual orientation, gender identity (or reassignment), religion and belief, carers, Human Rights and socio economic/deprivation.

QUESTION	**RESPONSE**			**IMPACT**
	Issue	Action	Positive	Negative
What is the service, leaflet or policy development? What are its aims, who are the target audience?	The Procedural Document is to ensure that all members of staff have clear guidance on processes to be followed. The target audience is all staff across the Organisation who undertakes this process.	Raise awareness of the Organisations format and processes involved in relation to the procedural document.	Yes – Clear processes identified	
Does the service, leaflet or policy/ development impact on community safety • Crime • Community cohesion	Not applicable to community safety or crime	N/A	N/A	
Is there any evidence that groups who should benefit do not? i.e. equal opportunity monitoring of service users and/or staff. If none/insufficient local or national data available consider what information you need.	No	N/A	N/A	
Does the service, leaflet or development/ policy have a negative impact on any geographical or sub group of the population?	No	N/A	N/A	
How does the service, leaflet or policy/ development promote equality and diversity?	Ensures a cohesive approach across the Organisation in relation to the procedural document.	All policies and procedural documents include an EA to identify any positive or negative impacts.		
Does the service, leaflet or policy/ development explicitly include a commitment to equality and diversity and meeting needs? How does it demonstrate its impact?	The Procedure includes a completed EA which provides the opportunity to highlight any potential for a negative / adverse impact.			
Does the Organisation or service workforce reflect the local population? Do we employ people from disadvantaged groups	Our workforce is reflective of the local population.			
Will the service, leaflet or policy/ development i. Improve economic social conditions in deprived areas ii. Use brown field sites iii. Improve public spaces including creation of green spaces?	N/A			
Does the service, leaflet or policy/ development promote equity of lifelong learning?	N/A			
Does the service, leaflet or policy/ development encourage healthy lifestyles and reduce risks to health?	N/A			
Does the service, leaflet or policy/ development impact on transport? What are the implications of this?	N/A			
Does the service, leaflet or policy/development impact on housing, housing needs, homelessness, or a person's ability to remain at home?	N/A			
Are there any groups for whom this policy/ service/leaflet would have an impact? Is it an adverse/negative impact? Does it or could it (or is the perception that it could exclude disadvantaged or marginalised groups?	None identified			

ACTION:

Please identify if you are now required to carry out a Full Equality Analysis	**No**	**(Please delete as appropriate)**

APPENDIX 4: EQUALITY IMPACT ASSESSMENT FORM		
Name of Author: **Signature of Author:**	Dr Haslett	**Date Signed:** **January 2018**
Name of Lead Person: **Signature of Lead Person:**		**Date Signed:**
Name of Manager: **Signature of Manager**	Mr Mutema	**Date Signed:** **January 2018**