University Hospitals of Morecambe Bay NHS Foundation Trust

Venous Thromboembolism (VTE) prevention, diagnosis and management – maternity guideline

Version	5.0
Approved Date	25.01.2013
Date Ratified	25.01.2013
Ratified by	WACS Governance Group
Review Date	25.01.2016
Author	Dr Shantha Narasimhan

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

CONTENTS

See intranet for valid version

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

1 Introduction

Pulmonary embolism (PE) is the leading cause of direct maternal death and it is estimated that two thirds of these could be prevented with identification of risk factors and appropriate thromboprophylaxis. The relative risk of PE is increased 4 – 6 fold in pregnancy and still further in the puerperium, with this representing the highest risk period. A significant proportion of VTE occur in the first trimester, thromboprophylaxis should therefore commence as soon as possible in those at risk. If possible, those known to be at risk should have pre-pregnancy counselling and a prospective plan of care.

2 Purpose

This guideline describes the recommended management for care of women with VTE and of the risk assessment process for pregnancy and the puerperium.

Implementation of the policy will lead to :

- Evidence based consistent practice

3 Duties

3.1 Maternity staff

Duties of staff within maternity services are to follow this guideline.

No guideline will apply in every situation; however, it will apply the majority of the time and staff should have an evidence based justification for deviation from the guideline.

The guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient.

4 Policy

4.1 Risk assessment / management plan

All women should undergo a documented assessment of risk factors for VTE in early pregnancy, or before pregnancy, using the *VTE RISK ASSESSMENT TOOL,* which should be repeated if the woman develops other inter-current problems or is admitted to hospital for any reason during pregnancy.

For any woman assessed as at risk of VTE, a management plan should be documented in the maternal records, ideally in the management plan section of the hand held pregnancy notes; she should deliver in the consultant unit.

A risk assessment, using the *VTE RISK ASSESSMENT TOOL* should be performed following delivery, ideally prior to woman leaving the delivery room (or midwife leaving the home in case of home birth)

Any woman in the midwife-led unit, or at home, assessed as at sufficient risk of VTE to require LMWH, should be transferred to the consultant unit, in accordance with the *TRANSFER* guideline. Women needing postnatal thromboprophylaxis may deliver at midwife led unit in Kendal if agreed with consultant in the antenatal period

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

and with a documented management plan.

Following assessment as at risk of VTE, a management plan should be documented in the maternal records- ideally on page 5 of the postnatal notes for mother.

4.2 Antenatal and postnatal low molecular weight heparin (LMWH)

Enoxaparin (Clexane) ***Unlicensed indication during pregnancy*** - see British National Formulary

Prophylactic dose	
Maternal weight (kg)	**Dose**
≤50	20mg daily
>50 and ≤90	40mg daily
>90 and ≤170	40mg 12 hourly
>170	0.6mg / kg / day

Therapeutic dose Antenatal period	
Maternal weight (kg)	**Dose**
≤50	40 mg 12 hourly
>50 and ≤70	60 mg 12hourly
>70 and ≤90	80 mg 12 hourly
>90	100mg 12 hourly

Therapeutic dose Postnatal period
1.5mg/Kg/day, in two divided doses

The Bleeding Risk must be assessed prior to starting LMWH (see below for risk factors)

Contraindications:

- Active bleeding
- Increased risk of bleeding e.g. placenta praevia
- Bleeding diasthesis e.g. von Willebrands
- Thrombocytopaenia (Platelet count <75)
- Severe liver or renal disease
- Acute stroke
- Uncontrolled hypertension (>200/120mmHg)

4.3 Women on low molecular weight heparin (LMWH)

- A management plan for the intrapartum and postnatal periods should be documented in the maternity records, ideally in both the hand held pregnancy notes and hospital antenatal summary sheet.
- LMWH is the agent of choice for antenatal thromboprophylaxis. They are at least as effective as, and safer than, unfractionated heparin.
- If the woman has previously been treated with unfractionated heparin, check

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

platelet count after 7 days if treatment is planned for longer than this period. If platelet count <150 X 10^9/L or there is a fall of 50% from baseline, discuss with haematologist **before** further administration. The risk of heparin-induced thrombocytopaenia is low with LMWH. Current guidelines advise that platelet count monitoring is not required in patients who have not been exposed to unfractionated heparin.

- The risk of osteoporotic fractures is very low (0.04%)

- Bleeding risk is less than 2% with prophylactic doses

- Anti-Xa level monitoring is not required in women with normal renal function as they provide little evidence on the efficacy of prophylaxis; the exception is women with anti-thrombin deficiency.

- Women should be advised not to take their LMWH dose and attend delivery suite if they have -
  - Vaginal bleeding
  - Spontaneous rupture of membranes
  - Suspected labour

- No spinal or epidural for 12 hours following last PROPHYLACTIC dose of LMWH.

- Epidural catheter should not be removed within 12 hours of the most recent injection of LMWH.

- LMWH should be given no sooner than four hours after spinal or removal of epidural catheter.

- For elective caesarean section, the last PROPHYLACTIC dose of LMWH should be no later than 6pm on the day prior to surgery and first postnatal dose no sooner than four hours after the procedure. There is an increased risk of wound haematoma with women on Clexane (2%)

4.4 Therapeutic / high (twice daily) prophylactic doses

• Women receiving therapeutic/ high prophylactic doses of LMWH may require induction of labour so that dosages may be planned.

• Women using therapeutic/high prophylactic dosages should have their dose reduced to a daily prophylactic dose, if appropriate, the day prior to induction / caesarean section and, if appropriate continued at this dose during labour. This should be discussed with the haematologist.

• Where a woman presents on a therapeutic/high prophylactic regime of LMWH, regional anaesthetic techniques should not be employed for at least 24 hours following the last dose of LMWH. Alternative analgesia such as opiate-based,

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

intravenous, patient-controlled analgesia should be offered, after discussion with the anaesthetist.

4.5 **Breast Feeding**

Warfarin, unfractionated heparin and LMWH are all safe for breastfeeding women.

4.6 **Suspected VTE - management**

Prompt and appropriate clinical evaluation of the patient is paramount in the decision-making process.
A management plan should be documented in the health records.

History

- Symptoms of DVT (typically sudden onset unilateral leg pain or swelling, hard and tender muscle on examination, +/- superficial dilated veins, low grade pyrexia) or PE (pleuritic pain, breathlessness, +/- haemoptysis or collapse)
- Previous/family history of thromboembolism
- Risk factors, as detailed in *VTE RISK ASSESSMENT TOOL.*

Examination

- Signs of DVT/PE
- Pleural rub or effusion
- Tachycardia
- Tachypnoea
- Oliguria
- Signs of right heart strain
- Cyanosis
- Systemic hypotension
- Shock

Follow up

Any woman diagnosed with VTE during pregnancy or in the postnatal period should be offered a follow up postnatal appointment with an obstetrician. On-going haematology appointments should be arranged with haematology services.

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

Management of suspected VTE

Suspected DVT and no clinical suspicion of PE

⇩

Doppler ultrasound of leg veins (not emergency request)
Baseline Activated Partial Thromboplastin Time (APTT), Prothrombin Time (PT), Fibrinogen, FBC
Exclude history of heparin sensitivity / heparin induced thrombocytopenia

⇩

Significant suspicion of DVT or proven DVT

⇩

Give therapeutic dose LMWH daily until Doppler result obtained. Discuss with haematologist.

⇩

Doppler negative

⇩

Consider alternative diagnoses.
If alternative diagnosis is unlikely – discuss with on call physician / haematologist; may need to continue treatment and repeat Doppler in 3-5 days on advice of physician / haematology.

⇩

Doppler positive

⇩

Discuss with haematologist and plan follow-up in antenatal clinic.
Will require anaesthetic referral.

Suspected non-massive PE

⇩

Full Blood count, APPT, PT, Fibrinogen, Arterial blood gases, ECG
Chest X-ray to exclude alternative chest pathology
If no alternative chest pathology discuss with radiology re perfusion scan with appropriate shielding or CTPA
Give therapeutic LMWH and await scan result

⇩

Perfusion scan low probability

⇩

Consider alternative diagnoses.

Stop LMWH.
Discuss with on call physician / haematologist if suspicion remains high.

⇩

Perfusion scan indeterminate

⇩

Discuss with on call physician / haematologist and radiologist.
Continue LMWH until final diagnosis is reached.

⇩

Perfusion scan high probability / confirmed PE on CTPA

⇩

Continue LMWH.
Discuss with haematologist.

See in joint haematology clinic for follow up + anaesthetic referral required

Suspected massive PE

⇩

(Signs of right heart strain, profound hypoxia, systemic hypotension)
Medical emergency - 2222.
See *MATERNAL COLLAPSE* guideline

⇩

Give high flow (15L/min) continuous oxygen, inform consultant obstetrician and anaesthetist.
Consider CTPA when patient stable.
Exclude other causes of shock.
Give therapeutic LMWH.
Consider surgical embolectomy.

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

Name DOB Hospital number						
Pre-existing risk factors	Score	Booking Score	P/N Score	In patient Score	In patient Score	In patient Score
≥1 VTE + Thrombophillia	3	Discuss with haematology Antenatal prophylaxis with LMWH and at least 6 weeks post-natally				
≥ 1VTE + family history of VTE or thrombophillia	3					
≥1 VTE unprovoked or oestrogen related	3					
Thrombophilia no previous VTE (may be lower risk – haematology review)	3					
≥2 VTE	3					
VTE – provoked (no family history of VTE)- **score 3 post natally**	2 / 3					
Surgical procedure (eg appendicectomy) in pregnancy or <6 weeks postpartum	2					
Maternal medical problems • Sickle cell • IV drug usage • Heart or lung disease • Cancer • Inflammatory conditions • SLE	2					
Obesity BMI > 40 at booking	2					
Caesarean Section in labour	2					
Obesity BMI > 30 or > 9Okg at booking	1					
Age > 35 years	1					
Family history of VTE or thrombophilia	1					
Parity ≥ 3	1					
Smoker	1					
Gross varicose veins	1					
Paraplegia	1					
Sickle Cell Disease	1					
Dehydration/hyperemesis/OHSS**	1					
Multiple Pregnancy / ART	1					
Pre-eclampsia (this pregnancy)	1					
Delivery factors						
Prolonged Labour > 24 hours	1					
Mid-cavity rotational delivery	1					
Elective caesarean section	1					
APH /PPH 1,000mls or Transfusion	1					
Transient Risk Factors						
Long Haul Travel (within last 4/52)	1					
Current systemic infection	1					
Immobility AN or PN >24 hrs	1					
Antenatal Thromboprphylaxis	3		6/52 post natal prophylaxis LMWH			
TOTAL SCORE						
DATE						
Signature						

* ART = Assisted Conception ** OHSS = Ovarian Hyperstimulation Syndrome

Clinicians MUST assess the bleeding risk prior to starting LMWH

High risks	Antenatal prophylaxis with LMWH and at least 6 weeks post-natally
Intermediate risks	**CONSIDER** antenatal prophylaxis with LMWH if applicable and at least 7 days post natal LMWH (longer if persistent risk factors)
Antenatal cumulative risk score 3 OR 2 if admitted	**CONSIDER** Antenatal prophylaxis with LMWH if applicable
Antenatal cumulative risk score ≤2	Mobilisation and hydration
Post natal cumulative score ≥3	7 days post natal LMWH (longer if persistent risk factors) + compression stockings
Post natal cumulative score ≥2	7 days post natal LMWH (longer if persistent risk factors)
Post natal score ≤1	Mobilisation and hydration

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

5.0 Dissemination and Implementation

5.1 Dissemination

The policy will be distributed and communicated as outlined in the distribution plan. A copy of the policy will be available to all staff on the Intranet through the Library Service.

5.2 Implementation

It is expected that any policy will be fully operational by the training and implementation dates identified.

6.0 Document Control

6.1 Library of Procedural Documents

All current approved documents are kept on the Library System which is available through the Trust Intranet.

6.2 Archiving

An electronic archive of strategies, policies, protocols, SOPs and guidelines is maintained by the Library Service.

6.3 Process for retrieving archived documents

Requests for access to archived documents should be made to the Head of Library & Knowledge Service.

7.0 Monitoring Compliance

Adherence to this policy will be reported as detailed below.

Requirement	Method	Frequency	Lead	Monitoring Group	Action plan lead	Committee/ group overseeing Action Plan
Adherence to guideline	Audit	Minimum triennial	Audit lead	Maternity audit group	Chair of the Guideline Group	Guideline development group

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

7.1 **Standards/ KPIs**

	Yes	No	Not applicable
Have risk assessments been completed as per guideline (booking / post natal / admission)			
Has the guideline been followed in women presenting with signs and symptoms and a management plan documented			
Have the risk assessments been actioned and a management plan documented			
Has thromboprophylaxis been prescribed according to the guideline			
Is the management of women on thromboprophylaxis according to this guideline for induction / labour			
Has post natal thromboprophylaxis been appropriately prescribed			
Has the guideline been followed in women with massive pulmonary embolism			
Has a post natal appointment been made with appropriate clinician			
Notes fully compliant			

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

CHANGE CONTROL SHEET

This is a Controlled Document. The definitive version is on the intranet. Printed versions should be verified as valid with the intranet version.

DEVELOPMENT TEAM

Name	Job Title
Dr Shantha Narasimhan	Consultant O&G
Dr Tina Kozlowski	Consultant Haematologist
Dr Andrew Sambrook	Consultant Radiologist

Consultant Obstetricians & Gynaecologists UHMBFT (circulation for comments)
Band 7 and above midwifery staff UHMBFT (circulation for comments)
Non-consultant obstetricians / gynaecology medical staff ST3 and above UHMBFT (circulation for comments)

AMENDMENT HISTORY

Revision No.	Date of Issue	Page/Section Changed	Description of Change	Review Date
5.0			Complete revision	

See intranet for valid version

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

DISTRIBUTION PLAN

Dissemination lead:	Chair guideline development group
Is a previous document already being used?	Yes
If yes, in what format and where?	Available on the Intranet
Action to retrieve out-of-date copies of the document:	• Replace document on the Trust Intranet – via Heritage • Matrons to Remove old paper copies from guideline folders
Actions to communicate the document contents to staff:	The policy will be distributed and communicated via: • E mail communication to staff • Paper copy added to guideline folders on each site. • Highlighting at handover of new guideline publication Upload to Heritage library system for intranet

To be disseminated to:	
Library Service	For Policy Library and Archive
Chairperson of approving committee	For information
Maternity staff: midwives & medical	For implementation

TRAINING IMPLICATIONS

Is training required to be given due to the introduction of this policy?	No

Action by	Action required	Implementation Date

IMPLEMENTATION ACTIONS REQUIRED

Action by	Action required	Implementation Date
Chair guideline development group	Dissemination	1 month from ratification date

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

EQUALITY & DIVERSITY IMPACT ASSESSMENT TOOL

		Yes/No	Comments
1.	**Does the policy/guidance affect one group less or more favourably than another on the basis of:**		
	• Race	No	
	• Ethnic origins (including gypsies and travellers)	No	
	• Nationality	No	
	• Gender	No	
	• Culture	No	
	• Religion or belief	No	
	• Sexual orientation including lesbian, gay and bisexual people	No	
	• Age	No	
	• Disability - learning disabilities, physical disability, sensory impairment and mental health problems	No	
2.	**Is there any evidence that some groups are affected differently?**	No	
3.	**If you have identified potential discrimination are there any exceptions - valid, legal and/or justifiable?**	No	
4.	**Is the impact of the policy/guidance likely to be negative?**	No	
4.a	**If so can the impact be avoided?**	N/A	
4.b	**What alternative are there to achieving the policy/guidance without the impact?**	N/A	
4.c	**Can we reduce the impact by taking different action?**	N/A	

If you have identified a potential discriminatory impact of this procedural document, please refer it to the HR Equity & Diversity Specialist, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact the HR Equity & Diversity Specialist, Extension 6242.

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

REFERENCES (Include references to all relevant Trust Policies and Guidelines)

Number	References
1	RCOG (2009) Reducing the risk of thrombosis in pregnancy and the puerperium. Green Top guideline No. 37.
2	RCOG (2007)The Acute Management of Thrombosis and Embolism During Pregnancy and the Puerperium (Green-top 37b)
3	

GLOSSARY and DEFINITIONS

Abbreviation or Term	Definition
PE	Pulmonary embolism
VTE	Venous thromboembolism
LMWH	Low molecular weight heparin
CTPA	CT pulmonary angiogram

SUPPORTING EVIDENCE

Number	Evidence
1	Enter results of the literature search
2	

ASSOCIATED DOCUMENTS

Number	Document
1	Procedural Documents Policy – Maternity and Gynaecology
2	

See intranet for valid version

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

Appendix 1 - Checklist for the Review and Approval of Procedural Documents

	Title of document being reviewed:	Yes/No/ Unsure	Comments
1.	**Title**		
	Is the title clear and unambiguous?	Yes	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Yes	
2.	**Rationale**		
	Are reasons for development of the document stated?	Yes	
3.	**Development Process**		
	Is the method described in brief?	no	Procedural documents guideline
	Are individuals involved in the development identified?	yes	
	Do you feel a reasonable attempt has been made to ensure relevant expertise has been used?	Yes	
	Is there evidence of consultation with stakeholders and users?	Yes	
4.	**Content**		
	Is the objective of the document clear?	Yes	
	Is the target population clear and unambiguous?	Yes	
	Are the intended outcomes described?	Yes	
	Are the statements clear and unambiguous?	Yes	
5.	**Evidence Base**		
	Is the type of evidence to support the document identified explicitly?	Yes	
	Are key references cited?	Yes	
	Are the references cited in full?	Yes	
	Are local/organisational supporting documents referenced?	Yes	
6.	**Approval**		
	Does the document identify which committee/group will approve it?	Yes	
	If appropriate, have the joint Human Resources/staff side committee (or	n/a	

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

	Title of document being reviewed:	Yes/No/ Unsure	Comments
	equivalent) approved the document?		
7.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	Yes	
	Does the plan include the necessary training/support to ensure compliance?	Yes	
8.	**Document Control**		
	Does the document identify where it will be held?	Yes	
	Have archiving arrangements for superseded documents been addressed?	Yes	
9.	**Process for Monitoring Compliance**		
	Are there measurable standards or KPIs to support monitoring compliance of the document?	Yes	
	Is there a plan to review or audit compliance with the document?	Yes	
10.	**Review Date**		
	Is the review date identified?	Yes	
	Is the frequency of review identified? If so, is it acceptable?	Yes	
11.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation?	Yes	

Approval - If the Author and Development Group are happy to approve this document, please sign and date it and forward to the chair of the committee/group where it will receive final ratification.			
Name	*(Author)*	Date	
Signature	Paper copy kept by guideline group		
Committee Approval			
Ratification - If the committee is happy to ratify this document, please sign and date it and forward copies to the Author.			
Name		Date	
	Paper copy kept by guideline group		

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust

Copyright © 2012 University Hospitals of Morecambe Bay NHS Foundation Trust