Wirral University Teaching Hospital NHS
NHS Foundation Trust

ANTENATAL
INTRAPARTUM
POSTNATAL CARE **WIRRAL WOMEN & CHILDREN'S HOSPITAL**

Guideline No: 33 Venous Thromboembolism Prophylaxis and Treatment

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Document Review History

Version	Review Date	Reviewed By	Approved By
1	Nov 06	P Green, Consultant, O&G C Friaz-Jimenez, Consultant, Anaesthetist	MAC 2006
2	Aug 09	P Green, Consultant, O&G M Ellard, Consultant, O&G	DCGSG Aug 2009
3	July 10	Mrs S Mwenechanya, Consultant, O&G	DCGSG Jul 2010
4	Oct 10	Mrs S Mwenechanya, Consultant, O&G	DCGSG Oct 2010
5	July 2012	D Lloyd-Jones, Q&S Specialist	DCGSG

MONITORING COMPLIANCE WITH THE GUIDELINE	
Minimum requirement to be monitored	Auditable Standards – See below
Process for monitoring	Audit of Guideline
Responsible individual/group/committee	Risk Management Department
Frequency of monitoring	3 Yearly
Responsible individual/group/committee for review of results	Obstetric & Gynaecology Audit Meeting
Responsible individual/group/committee for development of action plan	Audit Lead
Responsible individual/group/committee for monitoring of action plan	Divisional Clinical Governance Steering Group

COMPLIANT WITH:	
1.	NHSLA Standard 3.8
2.	CEMACH 2007
3.	NICE. (2007) Intrapartum care

AUDITABLE STANDARDS	
1.	**All women receive risk assessments at booking, on admission, weekly for hospital inpatients, following delivery, following development of inter-current illness, onset of complications in the pueperium**
2.	**All women with significant risk of VTE (antenatal, intrapartum & postnatal) receive prophylactic measures**
3.	Women diagnosed with VTE should have an individual management plan which states dose and duration of thromboprophylaxis treatment
4.	Where risk factors have been identified, there is documented evidence of an individualised management plan with type and duration of prophylaxis treatment in all cases
5.	All women receiving LMW heparins (Antenatal & Postnatal) receive the correct dose and for the appropriate length of time
6.	All patients who have had a VTE episode should receive an obstetric follow up appointment at a minimum of 6 weeks postnatal follow up where appropriate

CONTENTS

1.0 INTRODUCTION

Venous Thromboembolism (VTE) remains the leading cause of maternal death. Where substandard care was identified the main reasons were inadequate risk assessment in early pregnancy, compounded by a failure to recognise or act on identified risk factors. In addition, substandard care was identified as a failure to appreciate the significance of signs and symptoms in the light of known risk factors and initiate treatment promptly or administer adequate dosages. This guideline discusses: -

- How to risk assess a patient for VTE
- When to risk assess
- How to manage those identified as high risk

2.0 GUIDELINE REGIME

2.1 Appropriate and timely risk assessments

All women should undergo an assessment by a midwife or obstetrician using the risk factor assessment tool (Appendix A) for VTE at:

Episode of Care	Risk Assessor
Booking	Obstetrician/Midwife
Following development of inter-current problems i.e. pre-eclampsia etc	Obstetrician
On admission to hospital	Midwife
Weekly for hospital inpatients	Obstetrician
Following delivery	Obstetrician/Midwife
Following onset of complications in the puerperium	Obstetrician

NB: All Risk Assessments and a plan of care must be documented within the Hand Held notes – see Appendix A

Thromboprophylaxis should be prescribed according to Appendix A

Thromboprophylaxis measures include:

- Thromboembolic Deterrent stockings (TED's)
- Flowtron Boots
- Low molecular weight heparin

Discuss risk factors with client and document outcome of discussion in Hand Held notes.

2.2 The significance of signs and symptoms in the light of known risk factors

Clinicians must remain vigilant, as there is a poor correlation between clinical signs and diagnosis of VTE.

Symptoms and signs of DVT and PE are shown below

DVT	PE
Leg Pain	Dyspnoea
Swelling	Tachypnoea
Tenderness	Tachycardia
Pyrexia	Pyrexia
Oedema	Collapse
Low Abdominal Pain with raised WCC	Chest Pain
L>R (9:1)	Cough +/- Haemoptysis
Iliofemoral >popliteo-femoral	Faintness
	Raised JVP (Jugular Venous Pressure)
	Focal chest signs (pleural rub)

If there is a high index of suspicion for DVT or PE, treatment must commence even if diagnostic tests are awaited.

The following investigations are appropriate:

- All patients – Coagulation screen, full blood count. D-Dimers have a low predictive value but if negative are reassuring.

- DVT – Ultrasound duplex scanning. If negative and low suspicion discontinue treatment. If negative but high suspicion continue treatment until venogram performed. If this is positive continue treatment.

- PE - ECG (tachycardia, RBBB, peaked p waves lead II) – SI, QIII, TIII not reliable in pregnancy. CXR (atelectasis, wedge shaped infarct, pleural effusion), CTPA, pulmonary angiography or MRI may be required. V/Q scans thought not to be useful.

NB Small PE's may not be seen on radiological investigation and if suspicion persists despite negative radiological test results continue treatment.

2.2.1 Actions to be taken once risk of VTE identified

Individualised management plan to be made and documented in health care records as to when, what type and how long thromboprophylaxis to be given as per Appendix A.

2.2.2 Women Who Require Thromboprophylaxis or Treatment for a Diagnosis of VTE

These women should have an individualised management plan documented in the healthcare records as to what dose, and how long thromboprophylaxis or treatment should be given.

2.3 Thromboprophylaxis during pregnancy

Tinzaparin is the low molecular weight heparin (LMWH) of choice in the maternity service at Wirral University Teaching Hospital (WUTH). The following women should receive prophylaxis:

- Any woman with significant risk as per risk assessment
- Day before a planned elective caesarean section for high risk patients only
- Tinzaparin dosage is dependant on the most recent recorded weight

Weight	Tinzaparin Dose
<50 kg	3500 units tinzaparin daily
50-90 kg	4500 units tinzaparin daily
91-130 kg	7000 units tinzaparin daily
131-170 kg	9000 units tinzaparin daily
>171 kg	75 units/kg/day tinzaparin

2.4 The care during labour and delivery of women on LMWH thromboprophylaxis

No further LMWH should be administered once labour commences.

During labour if a woman has a significant VTE risk other thromboprophylaxis measures are undertaken (maintain hydration, TED's) so that regional anaesthesia remains an option in labour. Guidance on administration of a regional anaesthetic is given below:

- Prophylactic LMWH – 12 hours must elapse before it is safe to administer regional block / anaesthesia
- Therapeutic LMWH – 24 hours must elapse before it is safe to administer regional block / anaesthesia
- Post delivery further LMWH must not be given until at least 4 hours post removal of an epidural catheter or insertion of a spinal block.
- In the unlikely event that LMWH is administered after insertion of an epidural the catheter must not be removed until at least 12 hours post prophylactic dose or 24 hours post therapeutic dose.

There is no contraindication to individual modes of delivery if a woman has had LMWH thromboprophylaxis. Normal obstetric / midwifery labour management should continue.

2.5 Thromboprophylaxis during the postnatal period

See regional anaesthesia guidance above for when it is safe to administer LMWH.

TED stockings are used in all cases that have had a surgical procedure performed in theatre (Caesarean section, Instrumental delivery, MROP, repair of 3/4th degree tear) if not on LMWH thromboprophylaxis.

All women with a BMI >50 should be fitted with Flowtron boots intra-operatively. Flowtron boots should be used for the first 6 hours post procedure and women should be advised to continue to wear TED stockings until 6 weeks post partum.

All women with a BMI >40 should be offered postnatal LMWH thromboprophylaxis regardless of the mode of delivery.

For all women following risk assessment if tinzaparin is also required it should be used for a minimum of 7 doses postnatally. In some individual cases extended thromboprophylaxis for up to 6 weeks should be considered – this will be at the discretion of the consultant.

All elective caesarean sections receive a minimum of 7 doses

- If high risk first dose given antenatally and the remaining 6 doses postnatally
- If low risk first dose given 4 hours following caesarean section and then daily until all 6 doses have been administered

All emergency caesarean sections receive a minimum of 7 doses postnatally.

Discuss risk factors with client and document outcome of discussion in Hand Held notes.

2.6 The management of massive life threatening pulmonary thromboembolism in pregnancy

Massive PE presents with maternal collapse. Immediate resuscitation measures should be instigated as soon as possible (CPR, call cardiac arrest 2222). If the woman is antenatal early recourse to caesarean section within 5 minutes of the collapse may be necessary as a life saving procedure to assist with the ongoing resuscitation of the mother**.**

2.7 Therapeutic management of VTE

Tinzaparin is the LWMH used for treatment of VTE at WUTH. Treatment dose is dependant on weight and is calculated at 175iu/Kg daily by subcutaneous injection usually at 6pm.

A guide to the doses required is shown below:

Weight Kg	Dose iu	Volume of 20,000iu injection	Weight Kg	Dose iu	Volume of 20,000iu injection
50	9,000	0.45ml	100	18,000	0.90
55	10,000	0.50	105	18,000	0.90
60	11,000	0.55	110	19,000	0.95
65	11,000	0.55	115	20,000	1.00
70	12,000	0.60	120	21,000	1.05
75	13,000	0.65	125	22,000	1.10
80	14,000	0.70	130	23,000	1.15
85	15,000	0.75	135	24,000	1.20
90	16,000	0.80	140	25,000	1.25
95	17,000	0.85	>140	Discuss with haematologist	

If treatment is for distal DVT (below the knee) it should continue for 12 weeks. For proximal DVT (above the knee) and PE treatment should continue for 6 months. In both situations if the period of treatment is confined to the antenatal period only, continue prophylaxis up to and following delivery for at least 6 weeks postnatal. If the period of VTE treatment exceeds the remainder of the antenatal period (i.e. DVT at 35 weeks gestation) the treatment dose should be decreased to the appropriate prophylactic dose during induction and labour.

2.8 Postnatal follow-up of patients diagnosed with VTE during pregnancy or the postnatal period

All women who have been diagnosed with VTE have ongoing anticoagulation management co-ordinated through the haematology service. A postnatal appointment should also be arranged with the obstetric consultant to discuss thrombophilia testing and implications for a further pregnancy. This should occur a minimum of six weeks post delivery. This discussion will include the requirement for thromboprophylaxis, when thromboprophylaxis should be commenced and the specific measures to be taken in the future at the time of delivery. Record discussion in the health record.

3.0 REFERENCES

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Confidential Enquiry into Maternity and Child Health. (2004). *Why Mothers Die 2000-2002.*

Confidential Enquiry into Maternity and Child Health. (2007). *Saving Mothers' Lives: Reviewing maternal deaths to make motherhood safer - 2003-2005.*

National Institute for Health and Clinical Excellence. (2004). *Caesarean Section*.

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Royal College of Obstetricians and Gynaecologists, Royal College of Anaesthetists, Royal College of Midwives, Royal College of Paediatrics and Child Health. (2008). *Standards for Maternity Care: Report of a Working Party.*

Royal College of Obstetricians and Gynaecologists. (2007). *Thromboembolic disease in pregnancy and the puerperium: Acute management*.

Royal College of Obstetricians and Gynaecologists. (2004).

Thromboprophylaxis during pregnancy, labour and after vaginal delivery.

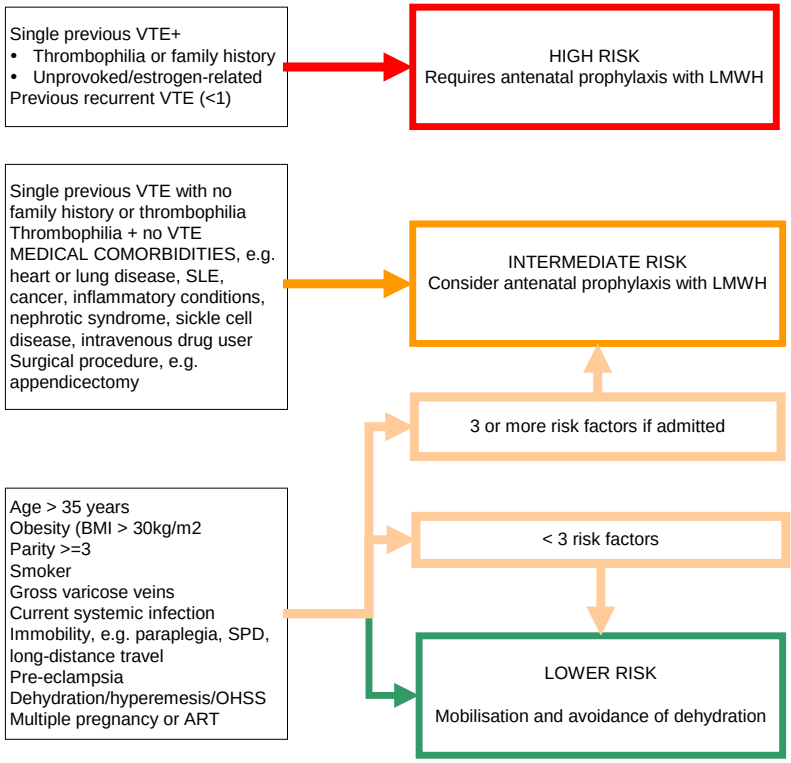
4.0 RELATED DOCUMENTS

Appendix A DVT Risk Assessment Scale

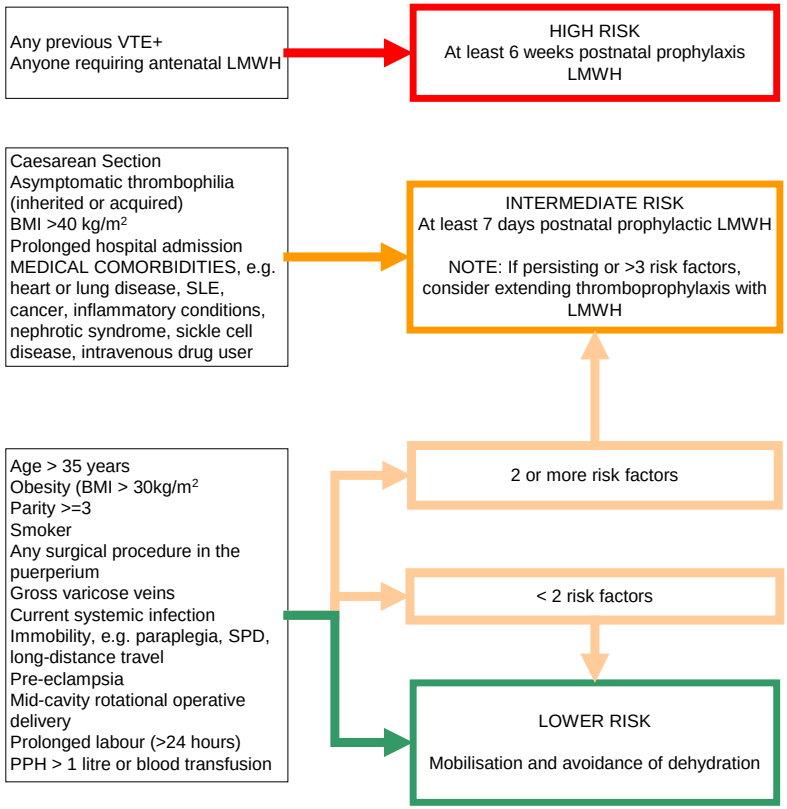
Appendix A

Obstetric Thromboprophylaxis Risk Assessment and Management

Antenatal Assessment & Management
(To be assessed at booking and repeated if admitted)



Postnatal Assessment & Management
(To be assessed on Delivery Suite)



Antenatal and Postnatal Prophylactic Dose of LMWH

Weight <50 kg = 3500 units tinzaparin daily
Weight 50-90 kg = 4500 units tinzaparin daily
Weight 91-130 kg = 7000 units tinzaparin daily
Weight 131-170 kg = 9000 units tinzaparin daily
Weight >170 kg = 75 units/kg/day tinzaparin

KEY
ART = assisted reproductive therapy, BMI = bodymass index (based on booking weight), gross varicose veins = symptomatic, above the knee or associated with phlebitis/skin changes, immobility = >= 3 days, LMWH = low molecular weight hepain, OHSS = ovarian hyperstimulation syndrome, PPH = postpartum haemorrhage, SLE = systemic lupus erythematosus, SPD = symphisis pubis dysfunction with reduced mobility, thrombophilia = inherited or acquired, long-distance travel = >4 hours, VTE = venous thromboembolism