FOI REF: 19/029

22 January 2019

FREEDOM OF INFORMATION ACT

I am responding to your request for information under the Freedom of Information Act. The answers to your specific questions are as follows:

We request copies of your VTE assessments protocols and policies that were in place in February 2017.

Please see the attached documents for East Sussex Healthcare NHS Trust’s VTE Diagnosis, Treatment and Prevention Policy and Procedure and the Clinical Guideline for Thromboprophylaxis and Treatment of VTE in Maternity that were in place in February 2017.

If I can be of any further assistance, please do not hesitate to contact me.

Should you be dissatisfied with the Trust's response to your request, please write to Lynette Wells, Director of Corporate Affairs, East Sussex Healthcare NHS Trust (lynette.wells2@nhs.net) quoting the above reference.

Yours sincerely

Linda Thornhill (Mrs)
Corporate Governance Manager
est-tr.foi@nhs.net
## Venous Thromboembolism Diagnosis, Treatment and Prevention Policy and Procedure

<table>
<thead>
<tr>
<th>Version:</th>
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<td>Patient Documentation and Policy Ratification Group</td>
</tr>
<tr>
<td>Date ratified:</td>
<td>May 2015</td>
</tr>
<tr>
<td>Name of author and title:</td>
<td>Emma Jones-Davies, Medicines Management Nurse &amp; VTE</td>
</tr>
<tr>
<td>Date Written:</td>
<td>27th June 2012</td>
</tr>
<tr>
<td>Name of responsible committee/individual:</td>
<td>Ian Bourns, Director of Medicines Management &amp; Pharmacy</td>
</tr>
<tr>
<td>Date issued:</td>
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<tr>
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<td>All staff</td>
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<td>Associated Documents:</td>
<td>Anticoagulant Guidance Thromboprophylaxis and Treatment of Venous Thromboembolism in Maternity</td>
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<th>Author</th>
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<td>V1.0 2012166</td>
<td>12th April 2012</td>
<td>Emma Jones-Davies</td>
<td>Update</td>
<td>Additional processes outlined, Community included, NHSLA criterion included Mechanical Thromboprophylaxis and treatment and diagnosis included</td>
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<td>November 2012</td>
<td>Emma Jones-Davies</td>
<td>Update</td>
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<td>V1.2 2013087</td>
<td>February 2013</td>
<td>Emma Jones-Davies</td>
<td>Update</td>
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<td>May 2015</td>
<td>Emma Jones-Davies</td>
<td>Update</td>
<td>Additional processes outlined, new VTE Pathways included, Dose Banding Guidance, discharge procedure and VTE Cohort information included</td>
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## Consultation Table

This document has been developed in consultation with the groups and/or individuals in this table:

<table>
<thead>
<tr>
<th>Name of Individual or group</th>
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<td>VTE Expert Group</td>
<td>ADNs</td>
<td>January 15</td>
</tr>
<tr>
<td>Ed Pineles</td>
<td>Medical Consultant</td>
<td>January 15</td>
</tr>
<tr>
<td>Richard Grace</td>
<td>Consultant Haematologist</td>
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</tr>
<tr>
<td>Andrew Leonard</td>
<td>Medical Consultant</td>
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<tr>
<td>James Wilkinson</td>
<td>Clinical Lead Medicine</td>
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<tr>
<td>Jonathon Palmer</td>
<td>Clinical Pharmacy Manager</td>
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</tr>
<tr>
<td>Rachael Stephens</td>
<td>TVN</td>
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<tr>
<td>Louise Wilson</td>
<td>Vascular Specialist Nurse</td>
<td>January 15</td>
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<tr>
<td>Document Steering Group</td>
<td>Ward Matrons</td>
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This information may be made available in alternative languages and formats, such as large print, upon request. Please contact the document author to discuss.
# Table of Contents

1. Introduction.......................................................................................................................... 5
2. Purpose.................................................................................................................................. 5
   2.1. Rationale .......................................................................................................................... 5
2.2. Principles ............................................................................................................................ 5
   2.3. Scope ............................................................................................................................... 5
3. Definitions ............................................................................................................................. 6
4. Accountabilities and Responsibilities ...................................................................................... 7
   4.1. Clinical Unit (CU) Responsibilities ................................................................................. 7
   4.2. Consultants ..................................................................................................................... 7
   4.3. Doctors ........................................................................................................................... 7
   4.4. Ward Matrons and Heads of Nursing ............................................................................ 8
   4.5. Registered Nurses, Operating Department Practitioners and Registered Midwives ....... 8
   4.6. Medicines Management/VTE Nurse ............................................................................. 8
   4.7. Pharmacists .................................................................................................................... 8
   4.8. Ward Clerks ................................................................................................................... 9
   4.9. All Staff .......................................................................................................................... 9
   4.10. Medical Staff working in Community and Rehabilitation Settings............................ 9
5. Procedures and Actions to Follow .......................................................................................... 9
   5.1. VTE Prevention ............................................................................................................. 9
      5.1.1. Risk Assessment ........................................................................................................ 9
      5.1.2. Cohort Groups .......................................................................................................... 10
      5.1.3. Risk Assessment for VTE and recommended interventions summary .................. 10
      5.1.4. Chemical Thromboprophylaxis Guidance .............................................................. 11
      5.1.5. Contraindications and Cautions to Heparins .......................................................... 12
      5.1.6. Epidural Timings and Administration of Anticoagulants ....................................... 12
   5.2. VTE Prevention Patient Information .............................................................................. 12
   5.3. Extended (Post Discharge) Thromboprophylaxis Process (Chemical and Mechanical) .................................................................................................................. 13
   5.4. Post Discharge use of Mechanical Thromboprophylaxis .............................................. 14
   5.5. Clinical Guidelines for the use of Mechanical Thromboprophylaxis ............................ 14
      5.5.1. Introduction ............................................................................................................. 14
      5.5.2. Procedures /Course of Action required .................................................................... 14
      5.5.3. Risk Assessment for VTE and recommended interventions summary .................. 15
      5.5.4. Contra-indications ................................................................................................. 16
      5.5.5. Process for the application of knee length AES ...................................................... 17
      5.5.6. Process for the application of thigh length AES ...................................................... 18
      5.5.7. Intermittent Pneumatic Compression Devices (IPCD) use .................................... 19
   5.6. Diagnosis and Management of VTE .............................................................................. 20
5. Equality and Human Rights Statement ............................................................................... 23
6. Training ........................................................................................................................................... 23
7. Monitoring Compliance with the Document ..................................................................................... 24
8.1. Process for Monitoring Compliance ............................................................................................ 24
8.2. Monitoring this Policy: Standards/Key Performance Indicators .................................................. 24
9. References ......................................................................................................................................... 27
Appendix A – VTE Risk Assessment Tools (Adults on Admission) ......................................................... 28
Appendix B – Obstetrics Risk Assessment Tool Risk Assessment Profile for Thromboprophylaxis during Pregnancy, Labour and Post-partum ......................................................... 29
Appendix C - Preoperative Assessment Nurse Led Risk Assessment Tool ............................................ 32
Appendix D – Risk Assessment for Venous Thromboembolism (VTE) in Patients with Below-Knee Plaster .................................................................................................................. 34
Appendix E - PE Diagnosis and Treatment Pathway ............................................................................ 35
Appendix F – Haemodynamically Stable PE Referral Pathway – Ambulatory Care ......................... 36
Appendix G – PE Investigation Proforma ............................................................................................. 37
Appendix H – DVT Pathway .................................................................................................................. 38
Appendix I – DVT Investigation Proforma ........................................................................................... 39
Appendix J – Patient Information Leaflet – Preventing Hospital-acquired Bloodclots .......................... 40
Appendix K – Patient Information Leaflet - Deep Vein Thrombosis and Legs in Plaster Casts .......... 44
Appendix L- Enoxaparin Dose Banding Tool ....................................................................................... 47
Appendix M – Current List of Agreed Cohort Groups who do not require full VTE Risk Assessment – Guidance for Clinical Staff and Ward Co-ordinators .............................................. 48
1. Introduction

The Department of Health (DH) has stated that Venous Thromboembolism (VTE) is responsible for approximately 25,000 preventable deaths per year. Patients who are admitted with a VTE and who have had a previous admission to hospital within a ninety day period are classified as having a Hospital Acquired Thrombosis (HAT). The Trust aims to implement a robust VTE prevention strategy to reduce the incidence of HAT and improve patient safety.

This document describes the Trust wide multi-disciplinary processes relating to VTE prevention and risk management for all adult patient admissions in accordance with Department of Health (DH) and National Acute Standard Contract (Schedule 20).

Current DH requirements focus on acute care areas though the Trust is committed to VTE prevention across the organisation and this document should be referenced across all in patient areas, where VTE prevention strategies are being implemented.

This document also describes the diagnostic and management pathways in place for patients presenting with suspected or confirmed VTE.

2. Purpose

2.1. Rationale

This document outlines the roles, responsibilities and actions required to drive and implement effective VTE prevention across the organisation. The document also incorporates the diagnosis and treatment pathways in use in the Medical Assessment Units and Emergency Departments on the acute care sites (See Appendices E and F for Pulmonary Embolism (PE) Pathways and H for Deep Vein Thrombosis Pathway).

2.2. Principles

All acute care providers are required to demonstrate compliance with the NICE recommendations for Venous Thromboembolism (VTE) prevention (2010).

The Trust is committed to the implementation of effective VTE prevention, diagnosis and treatment processes in order to reduce the incidence, mortality and subsequent co-morbidities relating to VTE. Current recommendations to manage the risk of VTE are described in NICE Clinical Guidance 92 (CG92, 2010). Evidence based recommendations for the diagnosis and treatment of VTE are described in American College of Chest Physicians (ACCP) Antithrombotic Therapy and Prevention of Thrombosis Evidence Based Clinical Practice Guidelines (2012).

2.3. Scope

All adult in patients will be risk assessed on admission, re-assessed within 24 hours and ‘as the clinical situation changes’ in line with DH requirements.

Patients assessed to be at risk of VTE will be offered appropriate thromboprophylaxis in accordance with NICE recommendations.

This document also outlines the diagnosis and treatment pathways for VTE together with guidance in the use of mechanical thromboprophylaxis. For detailed clinical direction in relation to the management of VTE and the use of anti-coagulants, refer to Anti-coagulant Guidance available via the Extranet.
3. Definitions

Anti-embolic Stockings (AES)
Anti-embolic Stockings (AES) are compression stockings used to aid in the prevention of VTE.

CTPA
CTPA stands for Computed Tomographic Pulmonary Angiogram and is used in the diagnosis of Pulmonary Embolism.

Duplex Doppler Ultra sound scan
Duplex Doppler Ultra sound scan is used in the diagnosis of Deep Vein Thrombosis.

D Dimer
D Dimer is a blood test used to aid in the diagnosis of VTE.

Graduated Compression Stockings (GCS)
Graduated Compression Stockings (GCS) are stockings used in the prevention and management of Post Thrombotic Syndrome, they differ from AES as they have a higher compression profile.

Hospital Associated Thrombosis (HAT)
Hospital Associated Thrombosis (HAT) is used to describe VTE which has arisen following a previous hospital admission (within a preceding ninety day period of diagnosis with VTE) or during the patient’s in patient episode.

Intermittent Pneumatic Compression Devices (IPCD)
Intermittent Pneumatic Compression Devices (IPCD) aim to reduce venous stasis and enhance fibrinolytic activity to reduce the risk of early clot formation.

Thromboprophylaxis (TP)
Thromboprophylaxis (TP) is the term used to describe various measures to prevent VTE and are often described as chemical (pharmacological) and mechanical (the use of Anti-embolic Stockings and Intermittent Pneumatic Compression Devices / Foot Impulse Devices).

Venous Thromboembolism (VTE)
Venous Thromboembolism (VTE) is the term used to describe blood clots which form in the veins and which can lead to chronic co-morbidities and death. These blood clots are usually described as Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE). A PE is a blood clot which has travelled to the lungs and can be fatal.
Vitamin K Antagonist (VKA)

Vitamin K Antagonist (VKA) is used to describe certain anti-coagulants used to treat VTE, for example, Warfarin.

4. Accountabilities and Responsibilities

4.1. Clinical Unit (CU) Responsibilities

Clinical Unit Leads, General Managers, Service Managers and Heads of Nursing are responsible for the implementation of this policy and for driving the national VTE prevention programme within their Clinical Units.

Clinical Unit Leads, General Managers, Service Managers and Heads of Nursing are responsible for ensuring that clinical practice for VTE prevention is compliant with NICE CG92 within their specialties and CUs.

Clinical Unit Leads, General Managers, Service Managers and Heads of Nursing are responsible for ensuring compliance with the VTE Root Cause Analysis process in line with national requirements (Schedule 20, NHS Acute Standard Contract). They are also responsible for the dissemination of learning from RCAs within their Clinical Units and for reporting incidents on DATIX including Serious Incidents when fatal preventable Hospital Associated Thrombosis cases are identified.

The Clinical Unit Management Teams are responsible for the implementation of regular audit within their Clinical Unit specialties to comply with the NHS Standard Contract for Acute Services, with oversight and monitoring by the CU leads and support from the Medicines Management / VTE Nurse.

4.2. Consultants

The consultant in charge of the patient is responsible for ensuring that VTE Risk Assessment is undertaken. They are also responsible for compliance with the Hospital Associated Thrombosis (HAT) Root Cause Analysis process and any Duty of Candour issues arising as a result of the reporting of HAT Serious Incidents. Support will be provided by the Medicines Management / VTE Nurse.

4.3. Doctors

Doctors are responsible for carrying out VTE risk assessments as part of the clerking/admission process. They are also responsible for re-assessment within 24 hours and ‘as the clinical situation changes’ in line with NICE CG92. Risk Assessment should be recorded using the VitalPAC VTE module in all areas using VitalPAC unless there is a VitalPAC system failure, when paper based recording should be reverted to.

Doctors are responsible for prescribing both chemical and mechanical thromboprophylaxis on the patient’s prescription chart and TTA letter / Electronic Discharge Summary if required post discharge. They are also responsible for specifying the duration of use.

Doctors are also responsible for discussing VTE risk and bleeding risk with patients and appropriate thromboprophylaxis measures.
4.4. Ward Matrons and Heads of Nursing

Ward Matrons and Heads of Nursing are responsible and accountable for ensuring compliance with the national and trust VTE requirements including Risk Assessment in their clinical areas.

Ward Matrons and Heads of Nursing are responsible and accountable for ensuring that all nursing and Health Care Assistant staff in their clinical areas adhere to this policy and have attended relevant training. They are also responsible for providing and storing evidence of attendance and training records to comply with external monitoring bodies (CQC).

4.5. Registered Nurses, Operating Department Practitioners and Registered Midwives

Registered Nurses are responsible for confirming the patient’s thromboprophylaxis (‘treatment’) plan using the VitalPAC VTE module.

Registered Nurses are responsible for prompting VTE and bleeding risk assessment and reassessment of patients as the clinical situation changes.

RNAs are also responsible for ensuring that VTE patient information is provided to patients and recorded in line with the NICE Quality 3 Standard for VTE Prevention. Registered Nurses, Operating Department Practitioners and Registered Midwives are accountable for the safe use of mechanical thromboprophylaxis. Health Care Assistants, Student Nurses and Allied Health Professionals may use these devices under the supervision and accountability of the Registered Practitioners above.

RNAs/ RMAs/ODPS are responsible for recording all mechanical thromboprophylaxis interventions and for fitting and monitoring the safe use of this equipment in their care areas. RNAs are also responsible for ensuring that patients are assessed as competent to self-administer Low Molecular Weight Heparin post discharge where necessary and for ensuring that written and verbal patient information and sharps boxes are provided prior to discharge. Refer to Extended Thromboprophylaxis process (Section 5.3) on page 13.

4.6. Medicines Management/VTE Nurse

The Medicines Management / VTE Nurse is responsible for supporting clinical practice in VTE prevention and for collecting and reporting both VTE and HAT incidence data. The Medicines Management / VTE Nurse is responsible for supporting managers and clinical staff in implementation of the VTE prevention programme Trust wide and reporting on VTE related issues across the organisation.

The DH require all acute providers to perform individual Root Cause Analysis where patients have developed a VTE in pregnancy, following a previous hospital admission (within a 90 day period) or where patients have developed a VTE whilst in hospital for another reason. Root Cause Analysis processes will be supported by the VTE Group and Medicines Management / VTE Nurse who will report to the Patient Safety and Clinical Improvement Group and commissioners in line with locally agreed reporting arrangements.

4.7. Pharmacists

Pharmacists are responsible for supporting and advising staff in appropriate prescribing and administration of VTE prophylaxis and VTE treatment regimens as required. They
will also contribute to the on-going monitoring and evaluation of thromboprophylaxis practices Trust wide including prescribing, clinical effectiveness, procurement and regular audit.

4.8. Ward Clerks

Ward Clerks and Administration staff are responsible for inputting VTE Risk Assessment data onto OASIS / PAS once the patient has been admitted. This data should be entered on to the system as early in the patient’s care episode as feasible. Ward Matrons should ensure this process is followed in their clinical areas.

4.9. All Staff

All staff (including non-accountable staff) required to measure and fit AES and Intermittent Pneumatic Compression Devices are responsible for ensuring that they have attended training and are competent to use these medical devices. Training is facilitated via the Medical Devices Educators.

4.10. Medical Staff working in Community and Rehabilitation Settings

Patients admitted to Community and Rehabilitation settings direct from Primary Care do not currently require a VTE and bleeding risk assessment on admission, however, it is recommended that the GP / Trust doctor should carry out a VTE Risk Re-assessment on transfer to in patient community areas or where there are concerns about the individual patient’s condition. The GP should ensure that appropriate risk management interventions are instigated and communicated to the nursing team. East Sussex Healthcare Trust staff working in all care settings may raise any VTE risk concerns with the Medicines Management Nurse.

5. Procedures and Actions to Follow

5.1. VTE Prevention

5.1.1. Risk Assessment

To comply with DH requirements, all adult patients (over 18 years of age) will, on admission to acute care areas, receive an assessment of their individual VTE and bleeding risk using the clinical assessment criteria described in the national tool. VitalPAC VTE Electronic Risk Assessment is the first line tool for assessment Trust wide. The standard Adult VTE Risk Assessment tool will remain in the Integrated Patient Documentation until VitalPAC VTE is embedded in all relevant clinical areas. The tools currently approved for use at ESHT are included in Appendices A, B, C and D.

Doctors are responsible for carrying out VTE risk assessments as part of the clerking / admission process, however it is recognised that due to operational pressures responsibility for VTE risk assessment cannot rest solely with the gateway (assessment) areas. Therefore a proportion of assessments will be carried out on transfer from the assessment areas.

Doctors are also responsible for re-assessment of VTE and bleeding risk within 24 hours and ‘as the clinical situation changes’, this should be recorded using the VitalPAC Risk Assessment module in line with DH requirements or recorded clearly in the patient’s notes / on the paper risk assessment tool.
Planned admission patients admitted for day case procedures that require an overnight stay will be re-assessed for VTE and bleeding risk on transfer to the inpatient area, this should be recorded using VitalPAC where possible.

Patients who are transferred from Critical Care to ward areas will be re-assessed by the doctor responsible for taking over the individual patient’s on-going management at the point of transfer.

In certain areas including Pre-operative Assessment Clinics, Radiology and Day Surgery, Registered Nurses undertake VTE and bleeding risk assessments. Nurse led assessments should be checked with the patient on the day of admission for any changes. VTE risk assessment concerns should be recorded and raised with the relevant doctor on admission. Appropriate thromboprophylaxis interventions should be implemented and recorded in the patient documentation or using VitalPAC. See Appendix C for Nurse Led Assessment Tool.

Patients transferred to in-patient Rehabilitation and Community care settings within the Trust, will have been risk assessed as part of their acute care admission. Where patients are prescribed post discharge thromboprophylaxis, the receiving unit / facility will continue with the VTE risk management interventions as prescribed. Where advice is required, all East Sussex Healthcare settings will be supported by the Medicines Management / VTE Nurse.

5.1.2. Cohort Groups

Co-horting has been agreed for certain patient groups deemed as presenting a similar risk profile. These arrangements were agreed by the Director of Medicines Management, Strategic Health Authority and Trust’s Clinical Director. Cohort groups should be entered on to OASIS / PAS as ‘cohorted’ for monitoring purposes. Refer to Appendix M for agreed cohort groups information.

Where patients are risk assessed, the identification of one or more thrombosis risk factor in the relevant section indicates that the patient is at risk of VTE and thromboprophylaxis should be considered. Where patients are identified as at risk of VTE and at risk of bleeding, mechanical thromboprophylaxis may be indicated. If the patient’s bleeding risk outweighs the risk of VTE, chemical thromboprophylaxis will be contra-indicated.

5.1.3. Risk Assessment for VTE and recommended interventions summary

(From Kings Thrombosis Centre)

<table>
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<tr>
<th>VTE Risk</th>
<th>SURGICAL PATIENTS* - Recommended T/P</th>
<th>MEDICAL PATIENTS* - Recommended T/P</th>
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<tr>
<td>HIGH with low risk of bleeding</td>
<td>LMWH * + AES +/- IPCD + Encourage early mobilisation and hydration</td>
<td>LMWH * + Encourage early mobilisation and hydration</td>
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<td>HIGH with significant risk of bleeding</td>
<td>AES +/- IPCD + Encourage early mobilisation and hydration</td>
<td>AES +/- IPCD + Encourage early mobilisation and hydration</td>
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<tr>
<td>LOW</td>
<td>Encourage early mobilisation and hydration</td>
<td>Encourage early mobilisation and hydration</td>
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Refer to specific pathways for Orthopaedic patients, Obstetric patients and CVA patients. * Dosages will vary depending on patient’s condition.

5.1.4. Chemical Thromboprophylaxis Guidance

All prescribers should adhere to the Summary of Product Characteristics (SPC) for each drug and consult advice from the British National Formulary (BNF) or Medicines Information where appropriate.

Doctors are responsible for ensuring that patients are offered appropriate thromboprophylaxis including post discharge thromboprophylaxis where indicated in line with NICE CG92 (2010). All prophylaxis interventions (mechanical and chemical) should be prescribed on the patient’s prescription chart and Discharge Summary (where appropriate) with a specified duration of therapy.

At ESHT, where chemical thromboprophylaxis is indicated, the standard regime is Enoxaparin (Clexane), to be administered once daily (OD) via subcutaneous injection.

The standard adult dose recommended for prevention of VTE is 40mg OD. Seek advice where weight based dosing may be indicated, see Dose Banding tool – Appendix L.

For patients with impaired renal function (eGFR <30ml/min/1.73m²) a reduced dose may be indicated (20mg) and in severe renal failure (eGFR<15ml/min/1.73m²) Enoxaparin is contraindicated and Unfractionated Heparin (UFH) may be considered senior medical advice should be sought.

For patients who object to porcine products, Fondaparinux may be considered providing the patient’s renal function is normal.

All patients receiving chemical thromboprophylaxis should have baseline platelet, renal and liver function tests to ensure appropriate therapy.

For Medical patients assessed as requiring thromboprophylaxis NICE recommend that Enoxaparin (LMWH) should be administered till the patient's risk is reduced and mobility increases, usually for a period of 5-7 days.

For Surgical patients assessed as requiring thromboprophylaxis, NICE recommend that mechanical TP is used till mobility increases and chemical TP should continue till the patient’s risk is reduced.

For patients with active cancer undergoing major bowel / pelvic surgery, extended thromboprophylaxis for 28 days is recommended (CG92).

Orthopaedic patients undergoing Total Hip Replacement, and Total Knee Replacement will be offered the Direct Thrombin Inhibitor oral anticoagulant Dabigatan as extended thromboprophylaxis (post discharge) in line with NICE recommendations-please refer to Specialty specific guidelines.

Patients admitted with hip fracture will also require extended thromboprophylaxis (LMWH) for 28 days in line with NICE CG92.

Patients receiving chemical thromboprophylaxis with UFH will be monitored for Heparin Induced Thrombocytopenia (HIT) in line with Anticoagulant Guidance. For
patients receiving LMWH, a baseline Full Blood Count -Platelet count, must be performed and unless there are clinical concerns, no further monitoring is routinely required. HIT incidence is generally thought to be low (<0.1%) particularly with LMWH. Where HIT is suspected, advice should be sought from the senior clinician or consultant haematologist in line with Anticoagulation Guidance.

5.1.5. Contraindications and Cautions to Heparins

Doctors and Registered Nurses should be aware of the contraindications to chemical thromboprophylaxis including bleeding risks which should be clearly documented on the risk Assessment tool.

Cautions include use in the elderly, hypersensitivity to heparins, hepatic and renal impairment.

**Contraindications include (refer to SPC)**

- Active bleeding
- Platelet count <75x109/l
- Untreated inherited bleeding disorder
- Previous HIT or allergy to Enoxaparin
- Recent cerebral haemorrhage
- On therapeutic anticoagulation
- Acquired bleeding disorder
- Severe uncontrolled hypertension
- Recent neurosurgery or eye surgery
- Peptic ulcers
- Severe liver disease
- Oesophageal varices
- Acute bacterial endocarditis
- Patient objection to porcine products

For detailed clinical guidance related to the use thromboprophylaxis /anti-coagulants including managing adverse events, refer to Anticoagulant Guidance.

5.1.6. Epidural Timings and Administration of Anticoagulants

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<tr>
<th>Epidural timings</th>
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<td>avoid</td>
<td>12 hours</td>
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<tr>
<td>Hours post dose before catheter REMOVAL</td>
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<td>12 hours</td>
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<tr>
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<td>12 hours</td>
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<td>2 hours</td>
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5.2. VTE Prevention Patient Information

Patients and carers will be offered both verbal and written VTE prevention information as part of the admission and discharge processes. The current ratified Patient Information Leaflets are included in Appendices J and K. Planned surgical admission patients will be offered information at Pre-Operative Assessment Clinics as appropriate. Emergency
admission patients will be offered information during the inpatient episode. Patients being discharged with extended thromboprophylaxis will be offered Anti-embolic Stockings information where indicated and medicines (including self-injection and sharps management guidance) information. Nurses should record information provision in the patient’s notes.

5.3. Extended (Post Discharge) Thromboprophylaxis Process (Chemical and Mechanical)

Where indicated, in line with NICE CG92, patients will be offered extended thromboprophylaxis. If there are concerns regarding post discharge patient compliance and anti-embolic stockings (AES) use, this will be recorded in the notes by the RN and AES will not be supplied.

Prior to discharge the patient (or carer) should have their medicine checked and correlated with the Prescription Chart and Discharge Summary and explained to them (as per NMC Standards for Medicines Management and Trust policy) including duration of treatment, possible side effects (bleeding risks), signs and symptoms of VTE, where appropriate. Verbal consent to administer should be obtained from the patient or carer. Where patients are being discharged with extended chemical thromboprophylaxis, the discharging nurse will ensure that the patient is provided with the appropriate ‘Clexane at Home’ Patient Information Leaflet, together with the Trust’s ratified ‘Preventing blood clots’ Patient Information Leaflet prior to discharge.

Where patients are being discharged with Low Molecular Weight Heparin, the RN will ensure that the patient or carer consents to self administer and is assessed as competent in self-injection technique.

Where patients require additional support for post discharge administration of chemical thromboprophylaxis, a community nurse referral may be indicated.

The RN should also ensure that the patient / carer is provided with the appropriate Patient Information Leaflet and sharps box and is made aware of the sharps collection arrangements for their locality.

A Waste Transfer / Duty of Care Form for the relevant local council (depending on which area the patient is being discharged to) should be completed and signed by the Discharging Nurse / Health Care Professional, then faxed or scanned (with the HCP signature), emailed or issued to the patient to post (this last method is the least preferable as many patients being discharged are cancer patients and our aim is to avoid additional pressures on these patients). There are separate Waste Transfer Forms for each local council; these are available by contacting the Medicines Management /VTE Nurse.

The patient should be provided with the appropriate local council's telephone number and advised to contact the council to arrange sharps collection when the course of treatment has been completed.

All extended thromboprophylaxis interventions should be recorded in the patient’s notes prior to discharge.
5.4. Post Discharge use of Mechanical Thromboprophylaxis

The NICE Quality Standard for VTE prevention includes the prescribing of extended thromboprophylaxis where indicated. Very occasionally immobile patients may be discharged whilst continuing to use AES as part of their continuing VTE prevention plan.

Checks should be made to ensure suitability and patient compliance post discharge. If patients are unable to apply, remove or wash AES in line with the manufacturer’s instructions and do not have adequate support to do this, they should not be supplied. Where AES are indicated but not supplied, the rationale should be documented. Where patients are identified as at high risk of VTE, a District Nurse referral may be indicated in order to support the patient’s use of AES at home.

Where patients are discharged with AES and are expected to wear them for longer than 72 hours post discharge, the GP should be informed via the Discharge Summary and responsibility for post discharge monitoring should be transferred to the patient’s GP. If patients are discharged with AES and are expected to wear them for more than 72 hours, two pairs should be provided to facilitate washing-patients may purchase additional pairs from the League of Friends shops at Eastbourne and Conquest.

Patients discharged with AES must be provided with verbal and written instructions related to their safe use and prescribed duration of wear and this should be documented in the patient’s notes and GP correspondence.

There are currently no processes in place to facilitate post discharge continuation of IPCD therapy. For patients transferred to community and rehabilitation settings, the Equipment Library should be contacted where IPCD use is indicated.

5.5. Clinical Guidelines for the use of Mechanical Thromboprophylaxis

5.5.1. Introduction

Mechanical Thromboprophylaxis incorporating the safe use of Anti-embolic Stockings (AES) and Intermittent Pneumatic Compression Devices (IPCD) are important tools in the prevention of Venous Thromboembolism. The main advantages of mechanical thromboprophylaxis measures are that they do not carry any risk of bleeding and are non-invasive.

This section of the document aims to support Registered Nurses (RNs), Midwives (RMs) and Operating Department Practitioners (ODPs) who are responsible for the safe use of these devices.

Health Care Assistants and other Allied Health Professionals may use these devices under the accountability of the Registered Nurse / Midwife / ODP.

5.5.2. Procedures / Course of Action required

Patients provided with Anti-embolic Stockings (AES) and Intermittent Pneumatic Compression Devices (IPCD) will be measured, fitted and monitored appropriately in line with the NICE Quality Standard for VTE Prevention. Registered Nurses (RNs and RMs) and Midwives will carry out twice daily skin checks in line with Mechanical Thromboprophylaxis Guidelines.

All VTE risk management interventions should be based on individual risk assessment in accordance with DH requirements. Changes in thromboprophylaxis intervention should be based on individual re-assessment of risk and documented
clearly in the patient’s notes and in the Thromboprophylaxis section of the Medicines Order and Administration Chart (‘Prescription chart’).

For guidance in the use of compression devices to manage other conditions including Post Thrombotic Syndrome, please consult the Vascular Nurse Specialist. The Trust has standardised on knee length AES for VTE prevention. Thigh length AES are available from the Equipment Libraries on both acute sites for use where patients are undergoing vascular procedures such as Varicose Veins surgery. Where the patient is deemed to be at risk of VTE, appropriate thromboprophylaxis (T/P) should be administered in line with NICE CG92. Mechanical T/P may be used where there is a risk of VTE together with an identified risk of bleeding. It may be used in combination with chemical T/P, other mechanical T/P or alone.

5.5.3. Risk Assessment for VTE and recommended interventions summary

<table>
<thead>
<tr>
<th>VTE Risk</th>
<th>SURGICAL PATIENTS* - Recommended T/P</th>
<th>MEDICAL PATIENTS* - Recommended T/P</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH with low risk of bleeding</td>
<td>LMWH * + AES +/- IPCD + Encourage early mobilisation and hydration</td>
<td>LMWH * + Encourage early mobilisation and hydration</td>
</tr>
<tr>
<td>HIGH with significant risk of bleeding</td>
<td>AES + / - IPCD + Encourage early mobilisation and hydration</td>
<td>AES +/- IPCD + Encourage early mobilisation and hydration</td>
</tr>
<tr>
<td>LOW</td>
<td>Encourage early mobilisation and hydration</td>
<td>Encourage early mobilisation and hydration</td>
</tr>
</tbody>
</table>

Refer to specific pathways for Orthopaedic patients, Obstetric patients and CVA patients. * Dosages will vary depending on patient’s condition.

Where indicated, Mechanical Thromboprophylaxis should be used till the patients mobility is restored relative to the patients ‘normal’ state.

NICE (2010) define reduced mobility as ‘Bed bound, unable to walk unaided or likely to spend a proportion of the day in bed or chair’ (NICE 2010 Venous Thromboembolism: reducing the risk of venous thromboembolism (deep vein thrombosis and pulmonary embolism) in patients admitted to hospital Clinical Guideline 92).

Mechanical Thromboprophylaxis modalities in use at East Sussex Healthcare Trust include Saphena Anti-embolic Stockings (AES) and Huntleigh Flowtron Universal Intermittent Pneumatic Compression devices (IPCDs). This policy applies specifically to these makes and models of equipment.

The first part of this guideline will describe the correct use of Anti-Embolism Stockings (AES). AES aid in the prevention of VTE in the immobile patient by reducing venous stasis (pooling) and passive venous distension, both of which can trigger the formation of blood clots.
Saphena AES comply with the Sigel profile to exert approximately 18mmHg compression at the ankle, 14mmHg at the mid-calf point and 8mmHg at the upper thigh in accordance with NICE recommendations.

Correct measuring, application and monitoring of the use of AES in accordance with NICE is essential and is the responsibility of RNs, RMs, ODPs across the Trust. Health Care Assistants and Students may undertake application of AES and IPCD under supervision by a registered practitioner. Incorrect application can result in tissue damage, heel ulceration and permanent circulatory impairment.

Daily monitoring including correct fitting and twice daily skin checks should be carried out to ensure patient safety in line with the NICE Quality Standard for VTE and recorded in the patient’s notes.
Where AES are prescribed, they should be used until the patient’s mobility has returned to their ‘normal’ level. Patients should be re-measured every 72 hours whilst they are in hospital to monitor for changes in their size requirements.

AES are single patient use items and can be washed up to sixteen times. They should be changed every 72 hours (or sooner if soiled) both in hospital and at home. They can be washed by hand or machine at a maximum of 75 degrees. They must not be bleached or tumble dried and patients should be issued with washing instructions where appropriate.
AES should be worn for 23.5 hours per day and removed for up to 30 minutes to check skin integrity and facilitate personal hygiene.

Oily substances may damage the material and should be avoided, aqueous solutions should be used to moisturise the patient’s legs.

5.5.4. Contra-indications

AES and IPCDs are contra-indicated in the following conditions:

- Known or suspected acute DVT / PE*
- Suspected or confirmed Peripheral Arterial Disease-intermittent claudication, rest pain, aneurysmal disease
- Peripheral neuropathy
- Cellulitis
- Previous skin grafts, gangrene, dermatitis, gout, skin lesions
- Absent foot pulses / Doppler Pressure Index <0.8
- Femoral popliteal bypass grafts and lower limb arterial bypass
- Extensive or pitting oedema
- Pulmonary oedema
- Acute Stroke (AES ONLY-use IPCD)
- Allergies to fabric components (NB Saphena AES are Latex Free)
- Where compliance problems are identified

Mechanical Thromboprophylaxis should be used with caution in the following conditions, consult medical, TVN or Vascular Nurse advice as appropriate:

- Diabetes
- Extreme leg deformity
- Confirmed or suspected Ischaemic Heart Disease
- Current or previous history of leg, foot and heel ulceration
- Fragile skin and trophic skin changes (cold, pale, shiny, hairless limb)
- Congestive Cardiac Failure (do not use IPCDs)
Patients on Noradrenaline

Staff should ensure that the arterial status of the patient is sufficient to allow safe compression. In certain circumstances a Doppler ultra-sound will be indicated to confirm the Ankle Brachial Pressure Index (ABPI) where there are doubts about arterial status. In these circumstances, the relevant medical team should be contacted for further assessment. The Vascular Nurse Specialist may also be contacted for advice before applying AES. All VTE prevention interventions should be recorded in the patient’s notes. When providing AES to patients, the Saphena AES packaging which contains comprehensive user instructions should be issued to the patient / carer and recorded as above.

5.5.5. Process for the application of knee length AES

<table>
<thead>
<tr>
<th>Action</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss the procedure with the patient ascertaining if there are contra-indications, explaining the rationale for use and gain consent where possible.</td>
<td>To assess the patient for suitability, involve the patient in decisions around care and ensure compliance.</td>
</tr>
<tr>
<td>Locate the measuring point two fingers above the ankle bone</td>
<td>To ensure that the stockings fit correctly.</td>
</tr>
<tr>
<td>Measure both ankles in Centre Metres (CM) using the colour zoned measure tape supplied</td>
<td>The measure tape colour zone indicates the size required.</td>
</tr>
<tr>
<td>Note the size (s) indicated and ankle circumference. Observe the shape and size of both legs for any difference or abnormality.</td>
<td>Occasionally patients may require two different sized garments where there is a difference in limb proportion.</td>
</tr>
<tr>
<td>Select the correct colour coded size(s) for the patient.</td>
<td>Measurement tape and packs of stockings are colour coded to aid in correct measuring and fitting.</td>
</tr>
<tr>
<td>Ensure the garment is not inside out and insert your hand in as far as the heel pocket.</td>
<td>To fit the stocking correctly in accordance with the manufacturers instructions.</td>
</tr>
<tr>
<td>Grasp the centre of the heel pocket and keeping hold of it, turn the stocking inside out. Turn back to the heel area only.</td>
<td>As above.</td>
</tr>
<tr>
<td>Ease the stocking over the foot ensuring the heel patch is aligned under the heel.</td>
<td>To ensure correct fitting.</td>
</tr>
<tr>
<td>Gently ease the stocking over the ankle and up the leg ensuring that the fabric is not dragged against the skin.</td>
<td>To avoid tissue damage.</td>
</tr>
<tr>
<td>Smooth out any creases on the foot ensuring that the top of the toes are covered and the open section is located under the toes area. Do not push the toes through the open section.</td>
<td>To avoid tissue damage.</td>
</tr>
<tr>
<td>Stretch the stocking over the calf, up to two fingers below the back of the knee joint, smoothing out any wrinkles. Ensure that the band at the top is flat against the skin and not rolled over.</td>
<td>To prevent tourniquet effect and ensure blood flow is not compromised</td>
</tr>
<tr>
<td>Check the patient 30 minutes after initial application to ensure that there are no</td>
<td>Monitoring to ensure patient safety.</td>
</tr>
<tr>
<td>adverse effects.</td>
<td>To comply with NICE Quality Standard and to ensure that all team members are aware of the date to change and date to discontinue use.</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Document the size, date issued, date due to be changed, and recommended duration of wear.</td>
<td></td>
</tr>
<tr>
<td>Ensure the patient is comfortable. Explain the need to report any changes of sensation, swelling or discoloration in the toes and feet to a member of the care team.</td>
<td>Compliance may be affected if the patient is uncomfortable. In some patients it may be necessary to try a smaller or larger size. Changes in sensation etc. could indicate circulatory impairment and AES should be removed without delay.</td>
</tr>
<tr>
<td>Monitor use and document daily. Remove the stockings for up to 30 minutes each day to check the patient’s skin condition and clean and dry the patient’s legs and feet.</td>
<td>AES should be worn for 23.5 hours per day for maximum effectiveness. Personal hygiene and skin checks are essential to basic care. Documentation provides evidence of care.</td>
</tr>
<tr>
<td>To remove, grasp the top of the stocking and pull down gently over the calf, heel and foot, taking care not to damage the skin.</td>
<td>Care in removing stockings is essential in preventing damage to the patient’s skin.</td>
</tr>
<tr>
<td>Observe for any damage to the skin and remove the stockings as necessary. Contact the Tissue Viability Nurse as soon as possible and document.</td>
<td>To prevent further complications and to gain advice as to future management.</td>
</tr>
<tr>
<td>Where tissue damage has been identified, alert the relevant medical team so that the patient’s VTE prevention plan may be re-evaluated.</td>
<td>To ensure that the individual patients VTE risk is managed using appropriate interventions.</td>
</tr>
<tr>
<td>-Measure the patient’s legs and document every 72 hours and as the clinical situation changes</td>
<td>Re-measuring is an essential part of monitoring use to ensure that stockings fit properly as the patient may lose or gain weight whilst in hospital. Swelling and oedema may also alter leg dimensions.</td>
</tr>
<tr>
<td>Ensure that stockings are changed every three days whilst the patient is in hospital. AES are single patient use-do not dispose if patient is to be discharged with AES as these can be laundered by the patient/carer on discharge.</td>
<td>In line with the manufacturers instructions and to ensure effective management of resources.</td>
</tr>
<tr>
<td>Document that you have issued the patient with the AES packaging which contains user instructions and care advice where appropriate.</td>
<td>To comply with the NICE Quality Standard for VTE and trust policy.</td>
</tr>
<tr>
<td>Avoid using oil based creams and emollients where possible, use aqueous solutions.</td>
<td>These substances can damage the fabric of the stockings.</td>
</tr>
</tbody>
</table>

Thigh length AES are available from the Medical Equipment Libraries for patients assessed as requiring them e.g. Varicose Vein Surgery patients. Guidance in applying thigh length stockings are below.

5.5.6. Process for the application of thigh length AES

<table>
<thead>
<tr>
<th>Action</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refer to section 4.9. Measure the ankle as</td>
<td>To aid in correct fitting- refer to the</td>
</tr>
</tbody>
</table>
for knee length stockings, then measure the widest part of the thigh and ensure that it does not exceed the maximum thigh measurements set out by the manufacturer.

packaging which contains the maximum thigh measurement range. If in doubt advise the Equipment Library of the patient’s thigh measurements in CM so the correct size can be provided.

Follow the procedure as above pulling the stocking up over the knee ensuring that the darker colour section ends below the knee. Ease the top band up the thigh to rest below the buttocks.

The darker zone exerts a different (higher) level of compression in order to be effective.

If the patient’s thigh is long, stretch the upper part of the stocking till it is at the desired length, smoothing out any wrinkles and ensuring the top does not roll over.

The stockings are designed to stretch to the required length. The band should lie flat against the patient’s skin to avoid tourniquet effect.

Ensure the patient is comfortable. Explain the need to report any changes of sensation, swelling or discoloration in the toes and feet to a member of the care team.

Compliance may be affected if the patient is uncomfortable. In some patients it may be necessary to try a smaller or larger size. Changes in sensation etc. could indicate circulatory impairment and AES should be removed without delay.

For removal, refer to below knee stockings guidance as above.

If the patient has a large ankle compared to calf, or small calf, the next smaller size stocking may be indicated.

If the patient has a large calf compared to ankle or smaller ankles, or long large feet, the next larger size may be indicated.

Patients who are undergoing decolonisation for MRSA should have their AES changed every day to ensure effective decolonisation.

5.5.7. Intermittent Pneumatic Compression Devices (IPCD) use

IPC devices work by augmenting venous blood flow velocity, thus reducing venous stasis and by enhancing early fibrinolytic activity to reduce the risk of clot formation. Contra-indications and cautions reflect those relating to AES use and are listed on page 16 (Section 5.5.4)

IPC devices are useful in VTE prevention for both medical and surgical patients where there is an identified risk of VTE together with a risk of bleeding.

Patients should be consulted and consent obtained prior to use wherever possible. This should be documented including the date on which therapy started.

IPC devices are used widely within the Operating Theatre setting where patients are immobilised. For intra and immediate post-operative guidance refer to Local Protocol for the Use of Compression Devices to Prevent Deep Vein Thrombosis in the Operating Department.

IPCD should be applied on admission or prior to induction of anaesthesia where possible and continued in the recovery phase until anaesthetic effects have worn off. Ideally therapy will continue with minimal interruption (garments only should be
removed to perform skin checks and hygiene) till the patient's mobility level has increased and they are no longer confined to bed or chair.

The manufacturer recommends that the device is used for a minimum period of 72 hours or until the patient's mobility has increased. IPCD can be applied to one limb if necessary intra-operatively, however both limbs should be connected to the device as soon as practicable. IPCD garments are deemed as Single Patient Use, however the Trust has accepted re-use in certain controlled situations, please refer to the Local Protocol for the Use of Compression Devices to Prevent Deep Vein Thrombosis in the Operating Department.

IPCD should be used to manage the risks of VTE in Stroke patients deemed at high risk with reduced mobility provided there are no contraindications.

Where IPCD is indicated in general care areas, garments and devices are accessible from the Equipment Libraries. The garments should be labelled with the patient's name to avoid multiple use and minimalise the risk of cross infection.

AES should not be used purely as a skin barrier in conjunction with IPCD. Stockinettes should be made available where a non-sterile skin barrier is required though neither AES nor stockinettes offer any protection against infection risk.

IPCD can be used in certain cases where AES are not suitable for example where the patient objects to AES or is allergic to the AES fabric. They should not be used for patients who are mobile as their use necessitates movement restriction.

As a minimum, twice daily safety checks should be made to monitor and prevent any damage to the patient's skin, all checks should be recorded in accordance with NICE Quality Standard.

IPCD use should be discontinued immediately if the patient reports tingling, numbness or discomfort associated with the device. Discontinuation and the rationale should be recorded in the patient's documentation.

Any damage to the patient's skin should be incident reported and the TVN or Vascular Nurse should be contacted as soon as possible for advice.

IPCD devices should not be used in known or suspected acute Deep Vein Thrombosis (DVT), phlebitis, severe Congestive Cardiac Failure or acute Pulmonary Embolism.

5.6. Diagnosis and Management of VTE

Where patients present with suspected VTE, they will be referred via the GP or A&E to the Medical Assessment Units. Patients will be investigated and managed following the VTE pathways. Please refer to Appendices E, F, G, H and I.

GP's may also opt to manage their own patients presenting with suspected VTE. GP's will carry out investigations including D dimer and Pre-test Probability assessment to aid diagnosis in line with the joint Clinical Commissioning Groups DVT Assessment and Treatment Scheme. GP's may access the Trust's Ultrasound service. Where possible a same or next day appointment will be arranged. Where indicated, treatment with LMWH should be commenced. A written USS request should accompany the patient. Ultrasound results will be verbally reported to the practice on the day of the examination.
or the following morning. A written report will follow. GPs will be responsible and accountable for initial and longer term monitoring of anti-coagulation.

Where DVT or PE is suspected the clerking doctor should undertake a Pre Test Probability assessment, using the Two Level Wells Score or equivalent in line with NICE CG144 Venous thromboembolic diseases: the management of venous thromboembolic diseases and the role of thrombophilia testing. If PTP is positive, a D-Dimer test, Full Blood Count (FBC) and Urea and Electrolytes (U&E) should be initiated. If the D-Dimer is positive an ultrasound Doppler scan or CTPA for suspected PE should be arranged. If unavailable on the same day, treatment with Low Molecular Weight Heparin (Enoxaparin 1.5mg/kg/day) should commence, with initiation of Vitamin K Antagonist (VKA) or other oral anticoagulant as soon as possible, where appropriate, in line with ACCP / NICE guidelines.

Doctors may also consider the use of NICE approved Direct /Novel Oral Anticoagulants where deemed clinically appropriate, in line with the trust’s VTE Pathways or CCG DVT Assessment and Treatment Scheme.

If the Doppler Ultrasound confirms the presence of DVT, a senior medical review is required and a follow up appointment should be arranged with GP. If the scan is inconclusive, the senior doctor / GP may arrange a repeat scan and may initiate treatment with anti-coagulation using their clinical judgement.

All patients under investigation for acute VTE (PE and DVT) should be screened for possible manifestation of occult cancer. Consultation should aim to uncover any symptoms of common solid tumours (abdomen, chest, back pain, cough, weight loss etc.). A rectal examination should also be performed on all patients with a breast examination recommended for females.

A chest X-ray is indicated for all patients and blood tests including Full Blood Count (FBC), Liver Function Tests (LFTs). A PSA test should also be performed for male patients. Any abnormal finding should prompt a senior medical review.

Patients diagnosed with Proximal Deep Vein Thrombosis or haemodynamically stable Pulmonary Embolism with no apparent underlying cancer will be offered Low Molecular Weight Heparin (LMWH) – Enoxaparin 1.5mg/kg/day (unless contraindicated) for at least five days until the patient’s INR adjusted by a Vitamin K Antagonist (VKA), is 2 or above for a minimum of 24 hours (Target INR 2.5).

Where Rivaroxaban has been agreed for treatment in line with the VTE Pathway, a dose of 15mg twice daily will be prescribed for 21 days. From day 22 the patient will be switched to 20mg once daily for the duration of their therapy, this will be managed by the patient’s GP along with follow up arrangements.

Patients started on Rivaroxaban will be provided with an alert card and relevant patient information including information on side effects.

Patients with renal impairment or established renal failure (eGFR <30ml/min/1.73m²) should be treated with either LMWH (1mg/kg/day) with dose adjustments in accordance with Anti-Xa assay monitoring or Unfractionated Heparin (UFH) titrated according to activated partial thromboplastin time (APTT). Refer to Anticoagulant Guidance.
Unfractionated Heparin should also be considered for patients with an increased risk of bleeding and patients with PE and haemodynamic instability—see Anticoagulant Guidance.

Patients with active cancer should be managed with LMWH-Enoxaparin 1.5mg / kg / day for six months unless contraindicated.

Fondaparinux may be considered for patients who object to porcine products, providing renal function is normal.

Vitamin K Antagonists (VKA) should be instigated within 24 hours of diagnosis to patients with a confirmed proximal DVT or PE with no underlying cancer. Regular INR monitoring arrangements should be made via the patient’s GP. Treatment with VKA should be reviewed at three months by the GP. The duration of treatment with VKA may be extended beyond three months for patients with an unprovoked proximal DVT or unprovoked PE, depending on review of the risks and benefits to the individual patient.

For detailed clinical guidelines relating to the use of VKA Anticoagulants including cautions and contraindications and the management of bleeding / adverse events please refer to Anticoagulant Guidance.

All patients who are newly initiated on to VKA therapy in acute care areas will be provided with a NPSA Oral Anticoagulation Therapy patient information pack and alert card prior to discharge from hospital. Refer to Policy and Process for the provision of patient information for newly initiated Vitamin K Antagonist Oral Anticoagulation [Medicines Code].

Patients with unstable PE (syncopal, hypotensive or hypoxic) should be considered for further tests including measurement of Right Ventricle (RV) and Left Ventricle (LV) transverse diameter on CTPA. Where RV > 90% of LV a same day ECHO should be arranged. A Troponin test should also be considered.

The indications for pharmacological systemic thrombolysis for treatment of acute PE include: Patients presenting with systolic BP < 90mmHg without a high bleeding risk and patients with a low bleeding risk who are deemed at risk of developing hypotension following commencement of treatment, particularly where there is significant RV dysfunction and raised Troponin level or BNP. The decision to administer systemic thrombolysis must be made by a senior clinician.

At ESHT the first line fibrinolytic drug for systemic thrombolysis is Alteplase. Refer to the Summary of Product Characteristics (SPC) of the drug for further guidance.

Detailed clinical guidance aimed at doctors in the use of Vena Caval Filters (IVC), anticoagulant use (including monitoring) and the use of Graduated Compression Stockings (GCS) for the management of Post Thrombotic Syndrome are currently included in a separate document, refer to Anti-coagulant Guidance available via Quick Links on the extranet home page.

Catheter directed thrombolytic therapy (CDTT) may be considered for patients diagnosed with iliofemoral deep vein thrombosis (DVT) where bleeding risk is low and the onset of symptoms is less than 14 days duration. The decision to use CDTT will be made by the consultant radiologist liaising with the senior clinician in line with NICE CG144.
To manage the risks of long term Post Thrombotic Syndrome (PTS) Below knee Graduated Compression Stockings (GCS) with an ankle pressure >23mmHg will be offered to patients diagnosed with either proximal DVT or PE one week following diagnosis, providing the swelling has reduced and there are no contraindications. Patients should be advised to wear GCS on the affected leg (if DVT) or both legs (PE) for a period of two years. GCS should be used in accordance with the manufacturer’s instructions. This has been agreed as a GP responsibility in line with the Commissioning Group’s DVT Assessment and Treatment Scheme.

Inferior Vena Caval Filters (IVCF) may be considered for use by senior doctors where pharmacological anticoagulants are contraindicated or for patients diagnosed with a recurrent proximal DVT / PE despite appropriate anticoagulation therapy. The decision to insert an IVCF should be made after considering an increase in the target INR or switching to LMWH and should be discussed with a Consultant Haematologist where possible. A plan for removal of the IVCF should be clearly documented in the notes with appropriate referral to Radiology.

5. Equality and Human Rights Statement

This policy endeavours to support the delivery of care which is fair and respectful to patients regardless of age, gender, race, ethnicity, religion / belief, sexual orientation and or disability. The policy has been reviewed against the Trust's core values of promoting Equality and Human Rights.

6. Training

Doctors are required to complete the E-learning VTE Module as part of the Induction process, compliance will be monitored and records held by Post Graduate Medical Education (PGME).

Basic VTE prevention training is provided for clinical staff including nurses and Healthcare Assistants within the new starters induction programme and recorded on the Electronic Staff Record.

Bespoke specialty specific training programmes are available for nurses upon request and are delivered by the Medicines Management and VTE Nurse.

All relevant training records of attendance for permanent staff should be held on the Trust’s Electronic Staff Record (ESR) system. Records are input on to ESR by Learning and Development.

Training programmes are in place to support the correct use of both Anti-embolic Stockings and Intermittent Pneumatic Compression Devices facilitated by the Medical Devices Educators in line with Trust policy for Medical Devices Training.

An Anti embolic Stockings training video is also available on the intranet for staff.

RNs, RMs, ODPs are required to attend VTE training relevant to their role. In areas where nurse led risk assessment has been introduced, bespoke training programmes incorporating mechanical thromboprophylaxis are in place.
7. Monitoring Compliance with the Document

8.1. Process for Monitoring Compliance

Compliance with DH and national requirements to risk assess adult patients on admission will be monitored by the Clinical Unit Leads, General Managers, Heads of Service and Service Managers, Heads of Nursing and Ward Matrons with support from the Medicines Management Nurse via the Trust's Executive Information System (EIS). EIS will be monitored and reported to the Chief Operating Officer, Deputy Chief Operating Officer, Director and Deputy Director of Nursing on a weekly basis and reported on at the VTE Group.

Compliance with the implementation of this policy will be monitored by the nominated Clinical Unit representatives at the VTE Group meetings supported by the Medicines Management / VTE Nurse.

Where doctors are failing to comply with Trust requirements for VTE prevention and management, the Medicines Management / VTE Nurse should be informed and this will be escalated via the Clinical Unit General Managers and Heads of Service / Service Managers who will raise issues of noncompliance with the relevant CU Leads.

Where necessary the CU Leads will alert the consultant lead. If junior doctors persistently fail to undertake their responsibilities in relation to VTE prevention, this will be escalated to Clinical Management Executive and disciplinary action may be taken in accordance with Trust policy.

Where there is a failure to comply by nursing, midwifery and administration staff, the Medicines Management Nurse should be made aware and the Assistant Director of Nursing, Head of Nursing or relevant Ward Matron will be contacted to take further action as necessary.

All clinical incidents arising from the use of chemical and mechanical thromboprophylaxis will be reported following the Trust's Incident Reporting procedures and will be investigated with involvement by Medicines Management / VTE Nurse, Pharmacists, Medical Devices Educators, Tissue Viability Nurses and Vascular Nurse Specialist where appropriate.

Monitoring of prescribing practices of anti-coagulant drugs is undertaken by Pharmacists who address prescribing and safety issues direct with the prescriber as part of the prescription chart safety screening process.

The Trust is currently not required to assess neonate or paediatric patients for VTE risk, however if mechanical thromboprophylaxis is requested for any individual deemed at risk, every effort will be made to meet this clinical need.

8.2. Monitoring this Policy: Standards/Key Performance Indicators

Department of Health national VTE goal compliance data (95% of adult patients admitted receive a risk assessment for VTE and bleeding risk on admission to acute care areas) is submitted on a monthly basis via UNIFY in line with DH and Commissioner requirements - the results are disseminated to the Clinical Unit managers to facilitate continuous monitoring at C.U level and within each Specialty.
Venous Thromboembolism Diagnosis, Treatment and Prevention Policy and Procedure

The NHS Standard Contract for Acute Services requires acute care providers to perform regular audits of ‘appropriate thromboprophylaxis’, in line with NICE CG92, currently the Trust has not been asked to provide reports to Commissioners. Regular audits will be planned at Clinical Unit / Speciality level to meet this requirement.

The individual Clinical Unit management teams are responsible for ensuring that these audits are conducted within each Clinical Unit. Regular reporting will be direct to the Medicines Management / VTE Nurse who will be responsible for reporting on audit evidence to external bodies.

The NHS Standard Contract for Acute Services requires acute care providers to perform Root Cause Analysis where patients are admitted to hospital with a diagnosis of VTE if previously admitted to hospital within a preceding ninety day period. Root Cause Analysis should also be performed where patients develop a VTE whilst in hospital for a non-related condition.

Root Cause Analysis processes for fatal Hospital Acquired Thrombosis (HAT) to comply with the Standard Contract for Acute Services, Service Condition 20 are currently under development and will be incorporated into this policy document once the processes have been piloted and evaluated.
<table>
<thead>
<tr>
<th>Element to be Monitored</th>
<th>Lead</th>
<th>Tool for Monitoring</th>
<th>Frequency</th>
<th>Responsible Individual/Group/Committee for review of results/report</th>
<th>Responsible individual/group/committee for acting on recommendations/action plan</th>
<th>Responsible individual/group/committee for ensuring action plan/lessons learnt are implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>95% of patients admitted will be risk assessed for VTE and bleeding on admission</td>
<td>Ian Bourns</td>
<td>EIS with monthly reporting via UNIFY to DH</td>
<td>Monthly</td>
<td>VTE Group</td>
<td>Clinical Unit Management Teams General Managers / Service Managers</td>
<td>Clinical Unit Management Teams</td>
</tr>
<tr>
<td>Appropriate Thromboprophylaxis in line with NICE CG92</td>
<td>Ian Bourns</td>
<td>Audit</td>
<td>Quarterly</td>
<td>VTE Group</td>
<td>Clinical Unit Management Teams General Managers / Service Managers / Clinical Unit Leads / Heads of Nursing</td>
<td>Clinical Unit Management Teams</td>
</tr>
<tr>
<td>Root Cause Analysis for Hospital Acquired Thrombosis</td>
<td>Ian Bourns</td>
<td>RCA records</td>
<td>Quarterly</td>
<td>VTE Group &amp; PSCIG / Commissioners as required</td>
<td>Clinical Unit Management Teams</td>
<td>Clinical Unit Management Teams</td>
</tr>
<tr>
<td>Training for staff (VTE)</td>
<td>Ian Bourns</td>
<td>ESR Report &amp; Training Records from PGME</td>
<td>Annual</td>
<td>VTE Group</td>
<td>Learning and Development &amp; PGME</td>
<td>Clinical Unit Management Teams</td>
</tr>
<tr>
<td>VTE Policy document</td>
<td>Ian Bourns</td>
<td></td>
<td>Annual</td>
<td>VTE Group / ADNs / Medical Director Governance</td>
<td>Clinical Unit Management Teams</td>
<td>Clinical Management Executive</td>
</tr>
</tbody>
</table>
9. References

http://chestjournal.chestpubs.org/content/141/2_suppl/7S.full.html


www.dh.gov.uk

Department of Health (2009) Using the Commissioning for Quality and Innovation (CQUIN) payment framework  

Department of Health (2010) Guidance Notes on VTE Data Collection  

Huntleigh Flowtron Universal User Instruction Manual

www.kingsthrombosiscentre.org.uk/…/kingsthrombosis/cquin.pl

Kings Thrombosis Centre (2010) VTE Risk Assessment Tool adapted from Department of Health  
www.kingsthrombosiscentre.org.uk


www.nhsla.com/NR/rdonlyres/E974091E-036C-4D5E-A28F-229687E08461/0/201011AcuteSPCTStandardsFINAL.doc

www.nice.org.uk/aboutnice/qualitystandards/vtepvention

NICE (2010) Venous thromboembolism: reducing the risk of venous thromboembolism (deep vein thrombosis and pulmonary embolism) in patients admitted to hospital Clinical Guideline 92  
www.nice.org/guidance/CG92

# Venous Thromboembolism Diagnosis, Treatment and Prevention Policy and Procedure

## Appendix A – VTE Risk Assessment Tools (Adults on Admission)

### All patients should be assessed on admission to hospital. Patients should be reassessed within 24 hours of admission and whenever the clinical situation changes.

### 1: ASSESS MOBILITY

Assess all patients admitted to hospital for level of mobility (tick one box). All surgical patients, and all medical patients with significantly reduced mobility, should be considered for further risk assessment.

<table>
<thead>
<tr>
<th>(Tick one box)</th>
<th>Tick</th>
<th>Medical patient expected to have ongoing reduced mobility relative to normal state</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical patient</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2: ASSESS THROMBOSIS RISK

Review the patient-related factors shown on the assessment sheet against thrombosis risk, ticking each box that applies (more than one box can be ticked).

Any tick for thrombosis risk should prompt thromboprophylaxis according to NICE guidance. The risk factors identified are not exhaustive. Clinicians may consider additional risks in individual patients and offer thromboprophylaxis as appropriate.

<table>
<thead>
<tr>
<th>Patient related</th>
<th>Tick</th>
<th>Admission related</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active cancer or cancer treatment</td>
<td></td>
<td>Significantly reduced mobility for 3 days or more</td>
</tr>
<tr>
<td>Age &gt;60</td>
<td></td>
<td>Hip or knee replacement</td>
</tr>
<tr>
<td>Dehydration</td>
<td></td>
<td>Hip fracture</td>
</tr>
<tr>
<td>Known thrombophilies</td>
<td></td>
<td>Total anaesthetic + surgery time &gt;90 minutes</td>
</tr>
<tr>
<td>Obesity (BMI &gt;30kg/m²)</td>
<td></td>
<td>Critical care admission</td>
</tr>
<tr>
<td>One or more significant medical comorbidities (e.g. heart disease; metabolic; endocrine or respiratory pathologies; acute infectious diseases; inflammatory conditions)</td>
<td></td>
<td>Surgery involving pelvis or lower limb with a total anaesthetic + surgery time &gt;60 minutes</td>
</tr>
<tr>
<td>Personal history of first-degree relative with a history of VTE</td>
<td></td>
<td>Surgery with a significant reduction in mobility</td>
</tr>
<tr>
<td>Use of hormone replacement therapy</td>
<td></td>
<td>Acute surgical admission with inflammatory or intra-abdominal condition</td>
</tr>
<tr>
<td>Use of oestrogen-containing contraceptive therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicose veins with phlebitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnancy or &lt;6 weeks post-partum (see NICE guidance for specific risk factors)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3: ASSESS BLEEDING RISK

Review the patient-related factors shown against bleeding risk and tick each box that applies (more than one box can be ticked).

Any tick should prompt clinical staff to consider if bleeding risk is sufficient to preclude pharmacological intervention.

<table>
<thead>
<tr>
<th>Patient related</th>
<th>Tick</th>
<th>Admission related</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active bleeding</td>
<td></td>
<td>Neurosurgery, spinal or eye surgery</td>
</tr>
<tr>
<td>Acquired bleeding (such as acute liver failure)</td>
<td></td>
<td>Other procedure with high bleeding risk</td>
</tr>
<tr>
<td>Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with INR&gt;2)</td>
<td></td>
<td>Lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours</td>
</tr>
<tr>
<td>Acute stroke</td>
<td></td>
<td>Lumbar puncture/epidural/spinal anaesthesia expected within previous 4 hours</td>
</tr>
<tr>
<td>Thrombocytopenia (platelets &lt;75x10⁹/l)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncontrolled hypertension (230/120 mmHg or higher)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Untreated inherited bleeding disorders (such as haemophilia and von Willebrand’s disease)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Physician must review recommended prophylaxis and check for contra-indications before prescribing appropriate thromboprophylaxis on drug chart – document decision below:

Prophylaxis indicated: Yes [ ] No [ ]

Chemical / Mechanical Prophylaxis contra-indicated: Yes [ ] No [ ]

(Circle as appropriate)

Document any reason for deviation from recommended guideline: .................................................................

<table>
<thead>
<tr>
<th>Prescriber’s name: BLOCK CAPITALS</th>
<th>Prescriber’s signature:</th>
<th>Date:</th>
</tr>
</thead>
</table>

### Changes:

<table>
<thead>
<tr>
<th>Re-assessed by: BLOCK CAPITALS</th>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
</table>
### Appendix B – Obstetrics Risk Assessment Tool Risk Assessment Profile for Thromboprophylaxis during Pregnancy, Labour and Post-partum

#### PAS Label

Assess ALL Women On Admission To Hospital:
- Antenatal /Postnatal ward (admissions and readmissions)
- Date of Admission:
- Delivery Suite (in labour)
- Date of Admission:

#### Step One: Assess Mobility

**Step Two**

<table>
<thead>
<tr>
<th>Pre-existing risk factors</th>
<th>Tick</th>
<th>Score</th>
<th>Obstetric risk factors</th>
<th>Tick</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step one: Assess Mobility – ALL Women (tick one box)</strong></td>
<td>Normal Mobility</td>
<td>Reduced Mobility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antenatal Admission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postnatal Admission/Readmission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admitted in Labour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous recurrent VTE</td>
<td>3</td>
<td>Pre-eclampsia</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous VTE – associated with contraceptive or pregnancy</td>
<td>3</td>
<td>Dehydration/hyperemesis</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous VTE – by transient major risk factor no longer present</td>
<td>2</td>
<td>Multiple Pregnancy or Assisted Reproductive Therapy</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family History of VTE (Parent or Siblings)</td>
<td>1</td>
<td>Caesarean Section in labour</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Known thrombophilia</td>
<td>2</td>
<td>Elective caesarean section</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Co-morbidities</td>
<td>2</td>
<td>Mid-cavity or rotational forceps</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age over 35years</td>
<td>1</td>
<td>Prolonged Labour (more than 24hours)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI 30-39 (based on booking weight)</td>
<td>1</td>
<td>PPH more than 1 litre or transfusion</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI 40 or above (based on booking weight)</td>
<td>2</td>
<td><strong>Transient Risk Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parity more than or equal to 3</td>
<td>1</td>
<td>Current systemic infection</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoker</td>
<td>1</td>
<td>Immobility</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Gross Varicose Veins** | 1 |

**Add total from both columns (Score of 2 or more = High Risk)**
**Step three Assess Bleeding Risk**

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncontrolled hypertension (blood pressure &gt;200mmHg systolic or &gt;120 mm diastolic)</td>
<td>Latent or established labour</td>
</tr>
<tr>
<td>Thrombocytopenia (Platelet count &lt;75 X 10^3 – seek advice from Haematologist) – HELLP or acute fatty liver</td>
<td>Induction of Labour</td>
</tr>
<tr>
<td>Haemophilia or other known bleeding disorder (Von Willebrand’s or acquired coagulopathy)</td>
<td>Epidural or spinal analgesia expected within the next 12 hours</td>
</tr>
<tr>
<td>Active antenatal or postpartum bleeding Women considered at increased risk of major obstetric haemorrhage (e.g. placenta praevia)</td>
<td>LMWH not to be given within 4 hours of epidural or spinal procedure</td>
</tr>
<tr>
<td>Severe liver disease</td>
<td>Sever renal disease</td>
</tr>
</tbody>
</table>

**Step 4 for action see over page**

<table>
<thead>
<tr>
<th>Risk of VTE 2 or more = High risk</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Score (with Low risk of bleeding)</td>
<td>AES + LMWH + early Mobilisation + adequate hydration</td>
</tr>
<tr>
<td>High Score (with significant risk of bleeding)</td>
<td>AES + early Mobilisation + adequate hydration</td>
</tr>
<tr>
<td>Low risk (score under 2)</td>
<td>Early Mobilisation + adequate hydration</td>
</tr>
</tbody>
</table>

**Decision**

Middle Grade Obstetrician must review recommended prophylaxis and check for contra-indications before prescribing appropriate thromboprophylaxis on drug chart – document decision below:

Prophylaxis indicated:   F  Yes   F  No

Prophylaxis contra-indicated: F  Yes   F  No

Document any reason for deviation from recommended guideline:

........................................................................................................................................

Prescriber’s name: (BLOCK CAPITALS)  
Prescriber’s signature:  
Date:

Reassess risks of VTE and bleeding within 24 hours of admission and whenever clinical situation changes – document below:
All heparins are porcine derived – inform women and if an alternative is required consider Fondaparinux only if intolerant to heparin which is artificially manufactured. However, Fondaparinux is contraindicated if creatinine clearance <20ml/min. If advice is needed contact the Haematology service.

**Rationale:**
The aim of this risk assessment is to assess all women using the maternity service, based on clinical evidence where available, regarding the prevention of VTE during pregnancy, birth and following delivery.

The National Institute for Health and Clinical Excellence (NICE) guideline on venous thromboembolism (November 2009) includes pregnancy and the puerperium as risk factors and the present guideline aims to be consistent with the clinical practice recommendations included in the NICE guideline.

ROCOC Green-top Guideline No. 37 November 2009 REDUCING THE RISK OF THROMBOSIS AND EMBOLISM DURING PREGNANCY AND THE Puerperium states that:

‘All women should undergo a documented assessment of risk factors for venous thromboembolism (VTE) in early pregnancy or before pregnancy. This assessment should be repeated if the woman is admitted to hospital for any reason including labour or develops any other problems.’
Appendix C - Preoperative Assessment Nurse Led Risk Assessment Tool

ASSESSMENT FOR VENOUS THROMBOEMBOLISM (VTE)

All patients should be risk assessed on admission to hospital. Patients should be reassessed within 24 hours of admission and whenever the clinical situation changes.

Pre-assessment nurse’s pre-assessment of VTE risk: Thrombosis risk

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Y / N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active cancer or cancer treatment</td>
<td>Y / N</td>
</tr>
<tr>
<td>Age &gt; 60</td>
<td>Y / N</td>
</tr>
<tr>
<td>Dehydration</td>
<td>Y / N</td>
</tr>
<tr>
<td>Known thrombophilies</td>
<td>Y / N</td>
</tr>
<tr>
<td>Obesity (BMI &gt; 30kg/m²)</td>
<td>Y / N</td>
</tr>
<tr>
<td>One or more significant medical comorbidities:</td>
<td>Y / N</td>
</tr>
<tr>
<td>- heart disease</td>
<td></td>
</tr>
<tr>
<td>- metabolic</td>
<td></td>
</tr>
<tr>
<td>- endocrine</td>
<td></td>
</tr>
<tr>
<td>- respiratory pathologies</td>
<td></td>
</tr>
<tr>
<td>- acute infectious diseases</td>
<td></td>
</tr>
<tr>
<td>- inflammatory conditions</td>
<td></td>
</tr>
<tr>
<td>Personal history of VTE (Deep Venous Thrombosis or Pulmonary Embolism)</td>
<td>Y / N</td>
</tr>
<tr>
<td>First-degree relative with a history of VTE (Deep Venous Thrombosis or Pulmonary Embolism)</td>
<td>Y / N</td>
</tr>
<tr>
<td>Varicose veins with phlebitis</td>
<td>Y / N</td>
</tr>
</tbody>
</table>

Women patients only

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Y / N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of hormone replacement therapy</td>
<td>Y / N</td>
</tr>
<tr>
<td>Use of oestrogen-containing contraceptive therapy</td>
<td>Y / N</td>
</tr>
<tr>
<td>Pregnancy or &lt;8 weeks post partum</td>
<td>Y / N</td>
</tr>
</tbody>
</table>

Bleeding risk

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Y / N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquired bleeding (such as acute liver failure)</td>
<td>Y / N</td>
</tr>
<tr>
<td>Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with INR&gt;2)</td>
<td>Y / N</td>
</tr>
<tr>
<td>Thrombocytopenia (platelets&lt;75x10⁹/l)</td>
<td>Y / N</td>
</tr>
<tr>
<td>Uncontrolled hypertension (220/120 mmHg or higher)</td>
<td>Y / N</td>
</tr>
<tr>
<td>Unremitting inherited bleeding disorders (such as haemophilia and von Willebrand’s disease)</td>
<td>Y / N</td>
</tr>
</tbody>
</table>

Also, be aware: OTHER ACTION NEEDED FROM PRE-ASSESSMENT:

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Present?</th>
<th>Action?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the patient on Warfarin, which might need to be stopped?</td>
<td></td>
<td>Y / N</td>
</tr>
<tr>
<td>Is the patient on Clopidogrel and does this need to be stopped?</td>
<td></td>
<td>Y / N</td>
</tr>
<tr>
<td>Is the patient on oestrogen-containing contraceptive therapy and having a lower leg procedure, and should the OCP be stopped 4 weeks before surgery, with alternative methods discussed?</td>
<td></td>
<td>Y / N</td>
</tr>
<tr>
<td>Is patient a smoker (increased clotting risk) East Sussex Slrip Smoking Service 0800 9178896</td>
<td></td>
<td>Y / N</td>
</tr>
<tr>
<td>Renal failure or dehydration MAY NEED A REDUCED DOSE OF PROPHYLAXIS</td>
<td></td>
<td>Y / N</td>
</tr>
</tbody>
</table>

Pre-assessment nurse’s name: (BLOCK CAPITALS) Signature: Date:

Comments:

VTE RISK DISCUSSED and VTE PATIENT INFORMATION SUPPLIED YES / NO / REFUSED

STEP ONE: ASSESS MOBILITY
Access: all patients admitted to hospital for level of mobility (tick one box). All surgical patients, and all medical patients with significantly reduced mobility, should be considered for further risk assessment.

STEP TWO: ASSESS THROMBOSIS RISK
Review the patient-related factors shown on the assessment sheet against thrombosis risk, ticking each box that applies (more than one box can be ticked).

STEP THREE: ASSESS BLEEDING RISK
Review the patient-related factors shown against bleeding risk and tick each box that applies (more than one box can be ticked). Any tick should prompt clinical staff to consider if bleeding risk is sufficient to preclude pharmacological intervention.
## ASSESSMENT FOR VENOUS THROMBOEMBOLISM (VTE)

Any tick for thrombosis risk should prompt thromboprophylaxis according to NICE guidance. Detailed guidance on thromboprophylaxis options for patients identified as being at risk of VTE is available within the Trust Policy "Anticoagulant Guidance" on the intranet. Summary details are available within the junior doctors' handbook and on posters around the hospital. If advice is required please contact the haematology or medicines information services.

### Mobility – all patients (tick one box)

<table>
<thead>
<tr>
<th>Tick</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical patient expected to have ongoing reduced mobility relative to normal state</td>
</tr>
<tr>
<td></td>
<td>Medical patient NOT expected to have significantly reduced mobility relative to normal state</td>
</tr>
</tbody>
</table>

### Thrombosis risk

<table>
<thead>
<tr>
<th>Patient related</th>
<th>Admission related</th>
<th>tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active cancer or cancer treatment</td>
<td>Significantly reduced mobility for 3 days or more</td>
<td></td>
</tr>
<tr>
<td>Age &gt; 60</td>
<td>Hip or knee replacement</td>
<td></td>
</tr>
<tr>
<td>Dehydration</td>
<td>Hip fracture</td>
<td></td>
</tr>
<tr>
<td>Known thrombophilia</td>
<td>Total anaesthetic + surgical time &gt; 90 minutes</td>
<td></td>
</tr>
<tr>
<td>Obesity (BMI &gt; 30kg/m²)</td>
<td>Surgery involving pelvis or lower limb with a total anaesthetic + surgical time &gt; 60 minutes</td>
<td></td>
</tr>
<tr>
<td>One or more significant medical comorbidities (e.g. heart disease; metabolic; endocrine or respiratory pathologies; acute infectious diseases; inflammatory conditions)</td>
<td>Acute surgical admission with inflammatory or intra-abdominal condition</td>
<td></td>
</tr>
<tr>
<td>Personal history or first-degree relative with a history of VTE</td>
<td>Critical care admission</td>
<td></td>
</tr>
<tr>
<td>Use of oestrogen-containing contraceptive therapy</td>
<td>Surgery with significant reduction in mobility</td>
<td></td>
</tr>
<tr>
<td>Varicose veins with phlebitis</td>
<td>Orthopaedic</td>
<td></td>
</tr>
<tr>
<td>Pregnancy or &lt;6 weeks post partum (see NICE guidance for specific risk factors)</td>
<td>Orthopaedic</td>
<td></td>
</tr>
</tbody>
</table>

### Bleeding risk

<table>
<thead>
<tr>
<th>Patient related</th>
<th>Admission related</th>
<th>tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active bleeding</td>
<td>Neurosurgery, spinal surgery or eye surgery</td>
<td></td>
</tr>
<tr>
<td>Acquired bleeding (such as acute liver failure)</td>
<td>Other procedure with high bleeding risk</td>
<td></td>
</tr>
<tr>
<td>Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with INR&gt;2)</td>
<td>Lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours</td>
<td></td>
</tr>
<tr>
<td>Acute stroke</td>
<td>Lumbar puncture/epidural/spinal anaesthesia within the previous 4 hours</td>
<td></td>
</tr>
<tr>
<td>Thrombocytopenia (platelets&lt;75x10⁹/L)</td>
<td>Lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours</td>
<td></td>
</tr>
<tr>
<td>Uncontrolled hypertension (230/120 mmHg or higher)</td>
<td>Lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours</td>
<td></td>
</tr>
<tr>
<td>Untreated inherited bleeding disorders (such as haemophilia and von Willebrand’s disease)</td>
<td>Lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours</td>
<td></td>
</tr>
</tbody>
</table>

### Decision

Physician must review recommended prophylaxis and check for contra-indications before prescribing appropriate thromboprophylaxis on drug chart – document decision below:

- **Prophylaxis indicated:**
  - F Yes
  - F No

- **Prophylaxis contra-indicated:**
  - F Yes
  - F No

Document any reason for deviation from recommended guideline:

<table>
<thead>
<tr>
<th>Prescriber’s name:</th>
<th>Prescriber’s signature:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(BLOCK CAPITALS)</td>
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</tr>
</tbody>
</table>

### Reassess risks of VTE and bleeding within 24 hours of admission + whenever clinical situation changes – document below:

**Changes:**

<table>
<thead>
<tr>
<th>Reassessed by – name:</th>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(BLOCK CAPITALS)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All heparins are porcine derived – inform patients and if an alternative is required consider Fondaparinux which is artificially manufactured. However, Fondaparinux is contraindicated if creatinine clearance <20ml/min. If advice is needed contact the Haematology service.

**Monitoring:** Monitor FBC – check platelets on day 5 of treatment due to risk of thrombocytopenia. Re-check every 2-4 days. For specific sub-specialty, check guidance.
Appendix D – Risk Assessment for Venous Thromboembolism (VTE) in Patients with Below-Knee Plaster

Name: Hospital No:  
DOB: Diagnosis:  

Patients who are non-weight bearing and have either one major or two minor risk factors should be considered for Enoxaparin 40mg daily until allowed to weight bear provided they are not at increased risk of bleeding.

**Thrombosis risk**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight bearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major risk factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal history of VTE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI &gt; 30 kg/m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active cancer or cancer treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnancy or &lt; 6 weeks post partum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age &gt; 80 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plaster with ankle in equinus due to Achilles tendon rupture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor risk factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age &gt; 60 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant medical comorbidities (e.g. heart disease, metabolic, endocrine, or respiratory pathologies; acute infectious disease; inflammatory conditions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First degree relative with history of VTE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On hormone replacement therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On Oestrogen containing contraceptive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicose veins with phlebitis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Contra-indications/Bleeding Risk**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active bleeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquired bleeding (such as liver failure)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concurrent use of anticoagulants known to increase the risk of bleeding (such as Warfarin with INR &gt; 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrombocytopenia (platelets &lt; 75x10^9/l)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncontrolled systolic hypertension (220/120 mmHg or higher)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Untreated inherited bleeding disorder (such as haemophilia and Von Willebrand's disease)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prophylaxis indicated: Yes [ ] No [ ]  
Prophylaxis Contra-indicated: Yes [ ] No [ ]  
Patient Information Leaflet provided: Yes [ ] No [ ]  
Patient consents and competent to self-inject: Yes [ ] No [ ]  
Prescriber's name: Prescriber’s signature: Date:  
Comments

All heparins are porcine derived- inform patients and if an alternative is required consider Fondaparinux which is artificially manufactured. Fondaparinux is contraindicated if creatinine clearance < 20ml/min.
Appendix E - PE Diagnosis and Treatment Pathway

**If imaging is not immediately available consider discharge on LMWH with next day recall for CTPA (or Doppler U/S) as MAU ward attender, as in patients with uncomplicated DVT.**
Appendix G – PE Investigation Proforma

Please note that the latest version of the PE Investigation Proforma can be found at this link on the ESHT Extranet.
Appendix I – DVT Investigation Proforma

Please note that the latest version of the DVT Investigation Proforma can be found at this link on the ESHT Extranet.
Appendix J – Patient Information Leaflet – Preventing Hospital-acquired Bloodclots

Preventing hospital-acquired blood clots

What are hospital acquired blood clots?
This leaflet explains more about blood clots, which can form after illness and surgery.

A hospital-acquired blood clot occurs in patients when they are in hospital and up to ninety days after a hospital admission. There are two kinds:

1. **Deep vein thrombosis (DVT):** a DVT is a blood clot (also known as a thrombosis) that forms in a deep vein, most commonly in your leg or pelvis. It may cause no symptoms at all or cause swelling, redness and pain.
2. **Pulmonary embolism (PE):** If a clot becomes dislodged and passes through your blood vessels it can reach your lungs, this is called a PE. Symptoms include coughing (with blood stained phlegm), chest pain and breathlessness. Health professionals use the term venous thromboembolism (VTE), to cover DVT and PE.

If you develop any of these symptoms either in hospital or after you go home, please get medical advice immediately.

Are blood clots common?
Blood clots occur in the general population in about one in 1000 people every year. You may have heard about DVT in people who have been on an aeroplane, but you are much more likely to get a blood clot after going into hospital. In fact, about two thirds of all blood clots occur during or after a stay in hospital. The Government recognises hospital-acquired blood clots are an important problem and has asked hospital doctors and nurses and pharmacists to assess each patient’s risk. If you are at risk, your doctor or nurse will talk with you about what will be done to offer you protection against clots.

Who is at risk?
Any unwell adult admitted to hospital is at risk; that covers most adults. Other factors that put people at greater risk include:

- A previous clot
- A recent diagnosis of cancer
- Certain ‘sticky blood’ conditions such as antiphospholipid syndrome or Factor V Leiden
- Being overweight
- Being immobile
- Oestrogen containing contraceptives and hormone replacement therapies
- Having an operation
- Significant injury or trauma
- During and after pregnancy
What can be done to reduce my risk?

**Stockings:** In hospital you might be measured and fitted with anti-embolism stockings for your legs. You should be shown how to wear them and told to report any new pain or discomfort in your feet or legs to a health professional. Your stockings will be removed for a short time every day so that you can have a wash and check for any skin problems.

**Inflatable sleeves:** The clinical team may ask you to wear calf or foot pumps; special inflatable sleeves around your legs or feet while you are in bed or sat still in a chair. These will inflate automatically and provide pressure at regular intervals, increasing blood flow out of your legs.

**Blood thinners:** Most patients at risk will be prescribed a small dose of an anticoagulant (blood thinner). These reduce the chance of having a blood clot by thinning your blood slightly. If you need to take these medicines when you leave hospital, you will be told how long to take them for. The blood thinner most often used is a type of heparin, which is given by injection. Blood thinning tablets will be given if you are having your knee or hip replaced.

To be effective, these methods of prevention must be used correctly. If you have any questions or concerns, please ask your doctor or nurse.

What can I do to help myself?

If possible, before coming into hospital: Talk to your doctor about contraceptive or hormone replacement therapy. Your doctor may consider stopping them in the weeks before an operation and will provide advice on temporary use of other methods if your usual contraceptive is stopped.

- Keep a healthy weight.
- Do regular exercise.
- Try to keep hydrated by drinking plenty of fluid

When in hospital: Keep moving or walking and get out of bed as soon as you can after an operation-ask your nurse or physiotherapist for more information.

Ask your doctor or nurse: “What is being done to reduce my risk of blood clots?”
Drink plenty of fluid to keep hydrated.

What should I do when I go home?

Until you return to your usual level of activity, you may need to wear anti-embolism stockings after you go home. Your nurse will make sure they are suitable for you and will tell you how to put them on and what you should check your skin for.

If you need to continue blood thinner injections at home, your nursing team will teach you how to do this. If you have any concerns make sure you speak to a nurse before you leave.

Until your mobility returns to normal, it is a good idea for you to consult your GP before going on any long journeys lasting longer than three hours, particularly where your movement will be restricted and you are confined to a seat in an aeroplane, coach or car. If you cannot avoid travel, try to keep moving as often as you can, for
example, breaking up your journey with a short walk or leg exercises at regular intervals.

It is very important to keep hydrated and keep moving whenever possible.

- Please ask your doctor or nurse for more information on VTE.
- For Medicines Information please call either: 01424 757067 (Conquest Hospital, Hastings) or 01323 413785 (Eastbourne DGH).
- NHS choices website patient information on blood clots. Visit: www.nhs.uk
- Department of Health website patient information on blood clots including travel related DVT. Visit: www.dh.gov.uk
- Lifeblood: The Thrombosis Charity also has more information. Please visit: www.thrombosis-charity.org.uk

The information in this leaflet is for guidance purposes only and is not provided to replace professional clinical advice from a qualified practitioner.

Your comments
We are always interested to hear your views about our leaflets. If you have any comments please contact our Patient Advice and Liaison Service (PALS) – details below.

Hand hygiene
The trust is committed to maintaining a clean, safe environment. Hand hygiene is very important in controlling infection. Alcohol gel is widely available at the patient bedside for staff use and at the entrance of each clinical area for visitors to clean their hands before and after entering.

Other formats
This information is available in alternative formats such as large print or electronically on request. Interpreters can also be booked. Please contact the Patient Advice and Liaison Service (PALS) offices, found in the main reception areas:

Conquest Hospital
Email: esh-tr.palsh@nhs.net - Telephone: 01424 758090

Eastbourne District General Hospital
Email: esh-tr.palse@nhs.net - Telephone: 01323 435886
After reading this information are there any questions you would like to ask? Please list below and ask your nurse or doctor.

Reference
Written by: VTE Exemplar Centres and Lifeblood Thrombosis Charity (April 2011).

The following clinicians have been consulted and agreed this patient information: VTE Prevention Group, Jonathon Palmer, Clinical Pharmacy Manager

Consultation with the public took place during the VTE Awareness event held at EDGH in May 2011 comparing the PIL with other leaflets on VTE, this PIL was reviewed favourably against the other leaflets available.

The directorate group that have agreed this patient information leaflet:
VTE Prevention Group

Date agreed: November 2011 (version 1)
Review date: November 2014
Date agreed: January 2015 (version 2)
Review Date: January 2018

Responsible clinician/author: Emma Jones-Davies, Medicines Management / VTE Nurse
Appendix K– Patient Information Leaflet - Deep Vein Thrombosis and Legs in Plaster Casts

What is Deep Vein Thrombosis (DVT)?
Blood clotting is a natural mechanism to stop you bleeding from a cut. It is triggered by the body when you have a cut to stop you from bleeding too much. A DVT is a blood clot that forms within a vein, usually in the legs. This blocks the normal flow of blood through the leg veins.

Who is most at risk?
There are several factors which increase your chance of developing a DVT. Some of the risk factors for DVT include:
- Previous DVT or pulmonary embolism (PE). A PE is a blood clot in the lung.
- Major Orthopaedic operations.
- Trauma.
- Paralysis or immobilisation of lower limbs.
- Family history of DVT or PE.
- Faulty blood clotting.
- Active cancer.
- Recent medical illness (e.g. heart or lung disease, kidney disease/failure or recent heart attack).
- Smoking.
- Obesity/overweight (e.g. BMI>30kg/m2).
- Pregnancy.
- Age over 60 years.
- The contraceptive pill or HRT which contain oestrogen.
- Very large varicose veins (not operated on).

What are the risks of developing DVT following plaster casts?
Fractures and lower limb plaster casts on the leg for any foot and ankle injuries are associated with a small risk of DVTs in the leg. The risk is very low. Your treating doctor will assess and discuss your risk of developing blood clots with you.

If you are at high risk of developing DVT you may be given blood thinning tablets or injections as a prophylaxis whilst the plaster cast is on. There are some complications with this which will be explained by the treating doctor.

What are the symptoms of DVT?
Typical symptoms of DVT include pain, calf tenderness and swelling in the whole leg compared to unaffected leg. The calf may be warm and red. Sometimes it is difficult for a doctor to be sure of the diagnosis as there are other causes of a painful and swollen calf especially when you have injured your leg.
Sometimes there are no symptoms in the leg and the DVT is only diagnosed if a complication occurs in the form of a Pulmonary Embolism (PE). A PE is a blood clot which has dislodged from the wall of the vein and travelled to the lung. PE is rare following application of plaster casts; the symptoms include shortness of breath, chest pain and rapid pulse. This can cause a serious problem and if you experience these symptoms you will need to come straight to the Emergency Department at hospital.

What are the symptoms of DVT continued?
You will normally be seen urgently at hospital if you have a suspected DVT or PE. Tests will be carried out to confirm the diagnosis.
How do I prevent a DVT with my leg in a plaster cast or after removal of cast?
1. Stop smoking.
2. Keep hydrated.
3. Do regular exercises (moving your toes, walk around with the help of crutches etc.)
4. You may be advised to take preventative treatment in the form of blood thinning tablets or injections depending on your risk factors.

What should I do if I get a painful swollen calf within the plaster cast or after removal of the cast?

Some amount of swelling is expected over the initial period following injury to your leg and a plaster cast. If you feel that swelling is increasing within the plaster cast rather than settling down you need to be seen soon by plaster technicians or in the Emergency department to make sure plaster cast is not too tight and also to rule out possibly developing DVT.

If you notice increasing swelling in your whole leg and pain in your calf after removal of the plaster cast, you will need to come in to hospital to rule out a possible DVT.

If I get DVT can it be treated?

DVT is a treatable condition. The aim of treatment is to prevent the clot spreading up the vein and also to prevent serious complication of PE. Your doctor will explain the treatment for DVT with you once investigations have been carried out.

Other sources of information
Conquest Hospital - Tel: (01424) 755255
Plaster Room, ext 8546
Eastbourne District General Hospital - Tel: (01323) 417400
Casting Department, ext 4038

Important information
Please remember that this leaflet is intended as general information only. It is not definitive. We aim to make the information as up to date and accurate as possible, but please be warned that it is always subject to change. Please, therefore, always check specific advice on the procedure or any concerns you may have with your doctor.

After reading this information are there any questions you would like to ask? Please list below and ask your nurse or doctor.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Reference
The following clinicians have been consulted and agreed this patient information:
Mr O Keast-Butler, Clinical Lead for Orthopaedics
Mr A Butler-Manuel, Orthopaedic Consultant
Mr A V Bonnici, Orthopaedic Consultant
Mrs S A McNally, Orthopaedic Consultant
Mr P Mestha, Staff Orthopaedic Surgeon
Mr M Dunning, Orthopaedic Consultant
Mr Yousef Ghassan, Emergency Department Consultant
Senior Sister Angela Barnes, Fracture Clinic
Emma Jones-Davies, Medicines Management Nurse / VTE

Date Agreed: 16th February 2012
Review Date: February 2015
Responsible Clinician: Mr P Mestha, Staff Orthopaedic Surgeon (version one)
Mr M Dunning, Orthopaedic Consultant (version two).

Hand Hygiene
In the interests of our patients the Trust is committed to maintaining a clean, safe
environment. Hand hygiene is a very important factor in controlling infection. Alcohol gel is
widely available throughout our hospitals at the patient bedside for staff to use and also at
the entrance of each clinical area for visitors to clean their hands before and after entering.

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Service (PALS) offices, found in the main reception areas:

Conquest Hospital
Email: palsh@esht.nhs.uk - Telephone: 01424 758090

Eastbourne District General Hospital
Email: palse@esht.nhs.uk - Telephone: 01323 435886

After reading this information are there any questions you would like to ask? Please
list below and ask your nurse or doctor.
Enoxaparin Dose Banding for the Treatment of VTE - Acute Deep Vein Thrombosis (DVT) / Pulmonary Embolism (PE)

Treatment dose of Enoxaparin (Clexane®) for VTE is 1.5mg/kg once daily in patients with an eGFR ≥30ml/min. Enoxaparin should be continued until INR is within therapeutic range for 24 hours, and for at least 5 days unless patient unsuitable to receive oral anticoagulants. Haematology advice should be sought regarding the need for Anti-Xa measurement and whether therapeutic anticoagulation with LMWH (reduced dose) or UFH is indicated in patients with renal impairment - obtain advice as below.

60mg/0.6ml Enoxaparin & 80mg/0.8ml Enoxaparin & 100mg/1ml Enoxaparin
Syringes are imprinted with graduated markings: 0.1mL = 10mg

120mg/0.8ml Enoxaparin & 150mg/1ml Enoxaparin
Syringes are imprinted with graduated markings: 0.1mL = 15mg

<table>
<thead>
<tr>
<th>Patient weight (kg)</th>
<th>eGFR ≥30ml/min 1.5mg/kg ONCE DAILY</th>
<th>Volume to administer</th>
<th>Suggested pre-filled syringe(s) to be used</th>
<th>Renal impairment eGFR 20-30ml/min 1mg/kg ONCE DAILY*</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-46kg</td>
<td>60mg</td>
<td>0.6ml</td>
<td>60mg/0.6ml Enoxaparin</td>
<td>40mg (0.4ml of 40mg Enoxaparin)</td>
</tr>
<tr>
<td>47-59kg</td>
<td>80mg</td>
<td>0.8ml</td>
<td>80mg/0.8ml Enoxaparin</td>
<td>50mg (0.5ml of 60mg Enoxaparin)</td>
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<tr>
<td>60-74kg</td>
<td>100mg</td>
<td>1ml</td>
<td>100mg/1ml Enoxaparin</td>
<td>60mg (0.6ml of 60mg Enoxaparin)</td>
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<tr>
<td>75-89kg</td>
<td>120mg</td>
<td>0.8ml</td>
<td>120mg/0.8ml Enoxaparin</td>
<td>80mg (0.8ml of 80mg Enoxaparin)</td>
</tr>
<tr>
<td>90-110kg</td>
<td>150mg</td>
<td>1ml</td>
<td>150mg/1ml Enoxaparin</td>
<td>100mg (1ml of 100mg Enoxaparin)</td>
</tr>
<tr>
<td>111-119kg</td>
<td>180mg</td>
<td>1ml using 100mg/1ml Enoxaparin &amp; 0.8ml using 80mg/0.8ml Enoxaparin</td>
<td>120mg (1ml of 120mg Enoxaparin)</td>
<td></td>
</tr>
<tr>
<td>120-130kg</td>
<td>190mg</td>
<td>1ml using 100mg/1ml Enoxaparin &amp; 0.9ml using 100mg/1ml Enoxaparin</td>
<td>120mg (1ml of 120mg Enoxaparin)</td>
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</tbody>
</table>

For patients who weigh >130kg please contact the Haematology Consultants or Medicines Information (MI EDGH Ext: 3785 Conquest Ext: 7067) for advice

*Patients with an eGFR of 20-30 ml/min should have a Creatinine Clearance calculated and Unfractionated Heparin should be considered-obtain advice from Haematology where possible.
Appendix M – Current List of Agreed Cohort Groups who do not require full VTE Risk Assessment – Guidance for Clinical Staff and Ward Co-ordinators

Current List of Agreed Cohort Groups who do not require full VTE Risk Assessment – Guidance for Clinical staff and Ward Co-ordinators

Critical Care Unit admissions (VTE prevention and bleeding risk is part of the care bundle)-Re-assessment of risk to be undertaken on transfer to general care area in line with NICE CG92 and Trust Policy.

The rationale for cohort decisions is based on patient groups accepted as low risk or where the risk of bleeding outweighs the risk of clotting.
All agreed cohort groups have been agreed by the Medical Director and based on nationally accepted guidance from East of England Strategic Health Authority (2010).

In exceptional circumstances where a patient reverts to an overnight stay due to clinical complications, the receiving ward is responsible for ensuring that a VTE Risk Assessment is carried out on transfer.

Where patients are admitted for planned surgery, having attended Pre-operative Assessment Clinic, the W/C may enter the ‘Nurse led VTE Risk Assessment’ as done on OASIS / PAS, however the doctor will be required to re-assess the patient on transfer from theatre to the ward using VitalPAC VTE.

All patients risk assessed on VitalPAC VTE will be entered onto OASIS / PAS by the Ward Clerk who can access the compliance monitoring information from the VitalPAC Clinical Screen.

<table>
<thead>
<tr>
<th>Day Case Medical Procedures</th>
<th>Day Case Surgery procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergy challenges /allergy desensitisation</td>
<td>Dupidytrons contracture (Local Anaesthetic-LA)</td>
</tr>
<tr>
<td>Blood Transfusions</td>
<td>Carpel Tunnel Decompression (LA)</td>
</tr>
<tr>
<td>DVT follow up (Ambulatory Care)</td>
<td>Zadeks / toenail excisions (LA)</td>
</tr>
<tr>
<td>PE attendance for CTPA / VQ (Ambulatory Care)</td>
<td>Vasectomy (LA)</td>
</tr>
<tr>
<td>Cellulitis Day Attenders (Ambulatory Care)</td>
<td>Excision of lipomas / sebaceous cysts / superficial lesions / moles (LA)</td>
</tr>
<tr>
<td>Lumbar puncture</td>
<td>Trigger finger release (LA)</td>
</tr>
<tr>
<td>Lung biopsy</td>
<td>Partial fasciectomy (LA)</td>
</tr>
<tr>
<td>Pleural Taps (Pleural Effusion drainage / Pleural Biopsies)</td>
<td>Inguinal Hernia Repairs (LA)</td>
</tr>
<tr>
<td>Thoracoscopies (+/- pleurodesis)</td>
<td>Spinal probes</td>
</tr>
<tr>
<td>Tunnelled chest drain (eg Pleur-X) insertions</td>
<td>All Ophthalmic procedures NOT under General Anaesthetic</td>
</tr>
<tr>
<td>Endoscopy patients staying overnight post procedure</td>
<td>Non-cancer ENT surgery lasting &lt; 90 minutes NOT under GA</td>
</tr>
<tr>
<td>Cont’d overleaf</td>
<td>Circumcisions (LA)</td>
</tr>
<tr>
<td>Day Case Medical Procedures Cont’d</td>
<td>Day Case Surgery procedures</td>
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<td>-----------------------------------</td>
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<tr>
<td>Liver biopsy</td>
<td>Epydidimal cysts</td>
</tr>
<tr>
<td>Drainage of ascites</td>
<td>Hydrocele Repairs</td>
</tr>
<tr>
<td>PEG changes</td>
<td>Orchidectomy Non cancer Maxillo-</td>
</tr>
<tr>
<td>GI Endoscopy (OGD, Sigmoidoscopy, colonoscopy)</td>
<td>Facial surgery lasting &lt; 90 minutes NOT under GA</td>
</tr>
<tr>
<td>ERCP</td>
<td>ESWL</td>
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<tr>
<td>Apomorphine Tests</td>
<td>Banding of Haemorrhoids</td>
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<tr>
<td>Tension Test</td>
<td></td>
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<tr>
<td>Botulinium toxin injections</td>
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<tr>
<td>Chemotherapy (Ward Attenders)</td>
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<tr>
<td>Platelet Transfusions</td>
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<tr>
<td>Immunoglobulin Infusions</td>
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<td>Iron Infusions</td>
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<tr>
<td>Illoprost Infusions</td>
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<tr>
<td>Monoclonal Antibody Infusions (e.g Infliximab, rituximab)</td>
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<tr>
<td>Bone Marrow sampling (Trephine / Aspirate)</td>
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<tr>
<td>Portacath / Groshong Line Insertion</td>
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<tr>
<td>Once Daily IV Antibiotic infusions</td>
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<tr>
<td>Pamidronate Infusions</td>
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<tr>
<td>Short Synacthen Tests</td>
<td></td>
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<tr>
<td>Glucose Tolerance and fasting tests</td>
<td></td>
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<tr>
<td>Dynamic Endocrine Tests</td>
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<tr>
<td>Haemodialysis day cases</td>
<td></td>
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<tr>
<td><strong>Planned Angiograms</strong></td>
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<tr>
<td>Bronchoscopy, thoracoscopy, pleurodesis and tunneled chest drain patients staying overnight.</td>
<td></td>
</tr>
</tbody>
</table>

Should you have any queries or concerns, please contact Emma Jones-Davies, Medicines Management & VTE Nurse on Trust mobile 07825 995784 / Ext 13 3501.
Clinical Guideline for Thromboprophylaxis and Treatment of Venous Thromboembolism in Maternity

<table>
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<th>V2.0</th>
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<tr>
<td>Ratified by:</td>
<td>Women's Health, Reproductive and Sexual Health Services Clinical Unit Business Meeting</td>
</tr>
<tr>
<td>Date ratified:</td>
<td>August 2016</td>
</tr>
<tr>
<td>Name of author and title:</td>
<td>Dexter Pascall Consultant Obstetrician Cathy O’Callaghan Specialist Midwife Practice Development Midwife Anne Watt Risk Manager</td>
</tr>
<tr>
<td>Date Written:</td>
<td>November 2015</td>
</tr>
<tr>
<td>Name of responsible committee/individual:</td>
<td>Dexter Pascall Chair of the Guideline Implementation Group for Maternity Services</td>
</tr>
<tr>
<td>Date issued:</td>
<td>September 2016</td>
</tr>
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<td>2016179</td>
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<td>Review date:</td>
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<td>All Staff</td>
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<td>9, 11, 12,</td>
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<tr>
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<tr>
<td>Compliance with any other external requirements (e.g. Information Governance)</td>
<td>RCOG Green top guideline 37a April 2015</td>
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Clinical Guideline for Thromboprophylaxis and Treatment of Venous Thromboembolism in Maternity

Version Control Table

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<td>January 2003</td>
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<td>Sandra Fessey et al</td>
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<td>Gayle Clarke</td>
<td>Clinical Update. Renamed to Thromboprophylaxis and Treatment of Venous Thromboembolism in Maternity</td>
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Consultation Table

This document has been developed in consultation with the groups and/or individuals in this table:

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<th>Name of Individual or group</th>
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<tr>
<td>Professional Midwifery Forum</td>
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<td>Oct 2004</td>
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<tr>
<td>Dr R Grace &amp; Dr J Beard</td>
<td>Consultant Haematologists</td>
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<td>Obstetrics and Gynaecology</td>
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<td>Women and Children’s Guideline Implementation Group</td>
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</table>
Table of Contents

1. Introduction .................................................................................................................. 4
2. Rationale ......................................................................................................................... 4
3. Scope ................................................................................................................................ 4
4. Definitions ....................................................................................................................... 4
5. Accountabilities ............................................................................................................. 5
   5.1. Midwives & Obstetricians ....................................................................................... 5
   5.2. Management ............................................................................................................. 5
6. Process ........................................................................................................................... 5
   6.1. Pre-pregnancy ........................................................................................................ 5
   6.2. Pregnancy ............................................................................................................... 5
   6.3. Risk Factors .......................................................................................................... 5
   6.4. Thromboprophylaxis in pregnancy ...................................................................... 6
   6.5. Women with a history of venous thromboembolism, family history of thromboembolism +/- thrombophilia .................................................................................. 7
   6.6. Women without a previous VTE or thrombophilia should be managed according to the following recommendations ......................................................... 8
6.7. Intrapartum management of women receiving thromboprophylaxis in Labour 8
6.8. Elective LSCS ........................................................................................................... 9
6.9. Prophylaxis against Thromboembolism in Caesarean Section ............................ 9
   6.10. Thromboprophylaxis following vaginal birth ..................................................... 10
   6.11. Contraception .................................................................................................... 10
   6.12. Thromboembolic Disease .................................................................................. 11
   6.13. Deep Vein Thrombosis ...................................................................................... 11
   6.14. Diagnosis ............................................................................................................ 11
6.15. Pulmonary Embolism ............................................................................................... 12
6.16. Treatment of Massive Pulmonary Embolism ...................................................... 12
   6.17. Anticoagulation treatment ............................................................................... 13
   6.18. Treatment for Acute phase ............................................................................... 13
   6.19. Treatment for the Chronic Phase ..................................................................... 14
6.20. Follow-up ............................................................................................................. 15
7. Special Considerations ................................................................................................. 15
8. Evidence Base/References ............................................................................................ 15
9. Competencies and Training Requirements ................................................................. 16
10. Monitoring Arrangements .......................................................................................... 16
11. Equality and Human Rights Statement ..................................................................... 18
Appendix A - Antenatal assessment and management (to be assessed at booking and repeated if admitted) .......................................................................................................... 19
Appendix B – Post natal assessment and management (to be assessed on labour ward) ......................................................................................................................... 20
Appendix C - EHRA ........................................................................................................ 21
Clinical Guideline for Thromboprophylaxis and Treatment of Venous Thromboembolism in Maternity

1. Introduction

Early detection and treatment of women at risk or suspected of having thromboembolic disorders will help to prevent the maternal morbidity and mortality from venous thrombosis and pulmonary embolism. Venous thromboembolism is a condition in which a blood clot (thrombus) forms in a vein. It most commonly occurs in the deep veins of the legs; this is a deep vein thrombosis. The thrombus may dislodge from its site of origin to travel in the blood, known as an embolism. Pulmonary embolism remains one of the leading direct causes of maternal death in the UK (CEMACE 2011). Many pulmonary embolisms are preventable with appropriate thromboprophylaxis (RCOG 2009). NICE estimates that Low molecular weight heparin (LMWH) reduces VTE risk in medical and surgical patients by 60% and 70%, respectively (NICE 2010). RCOG (2009) states it is reasonable, therefore, to assume that it may reduce the risk of VTE in obstetric patients by up to two-thirds.

2. Rationale

To provide guidance to clinical staff to ensure that women are appropriately screened for thromboembolic disorders and the need for thromboprophylaxis.

Thromboembolic disorders arise from the thrombosis formation such as deep vein thrombosis (DVT) and pulmonary embolism (PE). Thromboprophylaxis is the use of preventative measures and/or medication to prevent thromboembolic disorders.

3. Scope

This document applies to all staff caring for women within the maternity services at East Sussex Healthcare Trust.

4. Definitions

AESs - Anti-Embolic Stockings
DIC - Disseminated Intravascular Coagulation
DVT - Deep Vein Thrombosis
GA - General Anaesthetic
LMWH - Low Molecule Weight Heparin
LSCS - Lower Segment Caesarean Section

Maternity Training Needs Analysis
The process used to identify the type of training required, the staff group it applies to, the frequency of the training, the effective ways to deliver the training, the minimum duration to meet the training need, the provider of the training, and the process for recording and monitoring the training that has taken place.

PE - Pulmonary Embolism
PPH - Post-Partum Haemorrhage
PTE - Pulmonary Thromboembolism
VTE - Venous Thromboembolism
5. Accountabilities

5.1. Midwives, Maternity staff nurses, Obstetricians and Anaesthetists

- To access, read, understand and follow this guidance
- To use their professional judgement in application of this guideline

5.2. Management

- To ensure the guideline is reviewed as required in line with the Trust and National guidelines
- To ensure the guideline is accessible to all relevant staff
- To monitor the audit process

6. Process

6.1. Pre-pregnancy

Counsel women with a past history of thromboembolism or greater risk from thromboembolism and plan care accordingly if they attend for pre-conceptual care.

6.2. Pregnancy

All pregnant women should have an assessment of their risk of thromboembolism at:

- Booking – if high risk identified the consultant will be notified and they will make a decision on an on-going management plan.
- Antenatal ward admission
- Admission in labour
- Postpartum (immediate, discharge and re-admission).
- Change in clinical situation

Women with family history of unprovoked VTE should have thrombophilia screening.

6.3. Risk Factors

TABLE 1 (RCOG Guideline No. 37)

<table>
<thead>
<tr>
<th>Risk factors for VTE in pregnancy and the puerperium (a)(2.3)</th>
<th>Pre-existing</th>
<th>New onset or transient (b)</th>
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<tbody>
<tr>
<td>Previous VTE</td>
<td></td>
<td>Surgical procedure in pregnancy or puerperium e.g. ERPc or postpartum sterilisation</td>
</tr>
<tr>
<td>Thrombophilia</td>
<td></td>
<td>Hyperemesis</td>
</tr>
<tr>
<td>Congenital</td>
<td></td>
<td>Dehydration</td>
</tr>
<tr>
<td>- Antithrombin deficiency</td>
<td></td>
<td>Assisted reproduction</td>
</tr>
<tr>
<td>- Protein C deficiency</td>
<td></td>
<td>Ovarian hyper stimulation syndrome</td>
</tr>
<tr>
<td>- Protein S deficiency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Factor V Leiden deficiency</td>
<td></td>
<td></td>
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<tr>
<td>- Prothrombin gene variant</td>
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</tbody>
</table>
### Acquired (Antiphospholipid syndrome)
- Lupus anticoagulant (LAC)
- Anticardiolipin antibodies (ACA)

- Age > 35 years
- Obesity (BMI \(\geq 30\text{kg/m}^2\)) pre-conceptual or antenatal
- Parity > 4
- Smoking
- Gross varicose veins
- Paraplegia \(\equiv 2\) factors
- Sickle cell disease
- Inflammatory disorders e.g. bowel disease, SLE,
- Some medical disorders e.g. nephritic syndrome, heart failure cancer, Type 1 Diabetes Mellitus with nephropathy
- Myeloproliferative disorders e.g. essential thrombocythaemia, polycythaemia vera

<table>
<thead>
<tr>
<th>Multiple pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe infection e.g. pyelonephritis, endometritis</td>
</tr>
<tr>
<td>Admission or Immobility (&gt; 3 days bed rest)</td>
</tr>
<tr>
<td>Pre-eclampsia</td>
</tr>
<tr>
<td>Excessive blood loss</td>
</tr>
<tr>
<td>Long haul travel (&gt;4 hrs)</td>
</tr>
<tr>
<td>Prolonged labour &gt; 12 hours ©</td>
</tr>
<tr>
<td>Midcavity instrumental delivery ©</td>
</tr>
<tr>
<td>Immobility after delivery ©</td>
</tr>
<tr>
<td>Caesarean section, prolonged labour (&gt;24 hrs)</td>
</tr>
<tr>
<td>If LSCS and major pelvic or abdominal surgery</td>
</tr>
<tr>
<td>Stillbirth</td>
</tr>
<tr>
<td>Operative delivery</td>
</tr>
<tr>
<td>Preterm birth, PPH</td>
</tr>
</tbody>
</table>

- Although these are all accepted as thromboembolic risk factors, there are few data to support the degree of increased risk associated with many of them

- 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

- Risk factors specific to postpartum VTE only

### 6.4. Thromboprophylaxis in pregnancy

All women should have a risk assessment for VTE at booking, every hospital admission including when in labour and immediately after delivery.

Any woman with four or more current risk factors shown in Table 1 (other than previous VTE or thrombophilia) should be considered for prophylactic LMWH throughout the antenatal period and will usually require prophylactic LMWH for 6 weeks postnatally but a postnatal risk reassessment should be made. This should be started as soon as possible in pregnancy.

Any woman with three current risk factors shown in Table 1 (other than previous VTE or thrombophilia) should be considered for prophylactic LMWH from 28 weeks and will usually require prophylactic LMWH for 6 weeks postnatally but a postnatal risk reassessment should be made.

Any woman with two current risk factors shown in Table 1 (other than previous VTE or thrombophilia) should be considered for prophylactic LMWH for at least 10 days postpartum.
Women admitted to hospital when pregnant (including to the gynaecology ward with hyperemesis gravidarum or ovarian hyperstimulation syndrome) should usually be offered thromboprophylaxis with LMWH unless there is a specific contraindication such as risk of labour or active bleeding.

Both unfractionated and LMWH are safe in early pregnancy, as they do not cross the placenta. LMWH is a safe alternative to unfractionated heparin as an anticoagulant in pregnancy.

- Reduced risk of thrombocytopenia (however it is still recommended that the platelet count should be checked one week after starting LMWH
- Lower risk of osteoporosis and fractures

Experience of enoxaparin in the puerperium reports no adverse effects on the baby resulting from breastfeeding.

Aspirin is not recommended for Thromboprophylaxis in pregnancy

Graduated elastic compression stockings and pneumatic compression have equal effects independently.

Document an individual management plan in the maternity records of women who require thromboprophylaxis or treatment for diagnosis of VTE.

6.5. **Women with a history of venous thromboembolism, family history of thromboembolism +/- thrombophilia**

These should hopefully have been investigated and a plan made pre-conceptually. This group is best managed in conjunction with the haematologist.

For women with the following conditions management will need to be planned in conjunction with the Haematologists and Physicians:

- Previous Multiple venous thrombo-embolic events
- Antithrombin III deficiency
- Protein S deficiency
- Protein C deficiency
- Abnormal fibrinogen
- Homocystinuria
- Paroxysmal nocturnal haemoglobinuria
- Antiphospholipid syndrome
- Previous thromboembolism in pregnancy
- VTE in present pregnancy
- Any case when the antenatal team is uncertain about thromboprophylaxis

Women with previous VTE (except those with a single previous VTE related to major surgery and no other risk factors) should be offered thromboprophylaxis with LMWH throughout the antenatal period.

Women with recurrent VTE or previous VTE associated with antithrombin deficiency or antiphospholipid syndrome (APS) (who will often be on long-term oral anticoagulation) should be offered thromboprophylaxis with higher dose LMWH (either 50%, 75% or full treatment dose) (see Appendix IV) antenatally and for 6 weeks postpartum or until returned to oral anticoagulant therapy after delivery.
Other heritable thrombophilic defects are lower risk and can be managed with standard doses of thromboprophylaxis.

Warfarin is contraindicated in pregnancy and has different adverse effects in each trimester. However it is required in women with metal artificial valves. A multidisciplinary discussion with the woman should occur preferably preconceptual, if not in early pregnancy.

Wherever possible the therapy should change to sc heparin in consultation with the Haematology department.

In the presence of other risk factors consider antenatal thromboprophylaxis and administer postpartum thromboprophylaxis even with a normal delivery (e.g. low molecular weight heparin combined with Warfarin after 24-48 hours post-delivery)

Continue anticoagulation for a minimum of 6 weeks post-delivery

6.6. **Women with thrombophilia without a previous VTE**

Women with asymptomatic antithrombin, protein C or S deficiency or those with more than one thrombophilic defect (including homozygous factor V Leiden, homozygous prothrombin gene mutation and compound heterozygotes) should be referred to a local expert and antenatal prophylaxis considered. They should be recommended for six weeks’ postnatal prophylaxis even in the absence of additional risk factors.

Women with Heterozygosity for factor V Leiden or prothrombin gene mutation or antiphospholipid antibodies and 3 current or persisting risk factors should be considered for antenatal thromboprophylaxis,

if there are two other risk factors thromboprophylaxis should be considered from 28 weeks and if there is one other risk factor postnatal thromboprophylaxis for 10 days should be considered.

<table>
<thead>
<tr>
<th>Suggested dosages of Clexane for prophylaxis</th>
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<tr>
<td><strong>Body weight</strong></td>
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<tr>
<td>&lt; 50 kg</td>
</tr>
<tr>
<td>50–90 kg</td>
</tr>
<tr>
<td>91–130 kg</td>
</tr>
<tr>
<td>131–170 kg</td>
</tr>
<tr>
<td>&gt;170 kg</td>
</tr>
<tr>
<td>High prophylactic dose for women weighing 50–90 kg</td>
</tr>
</tbody>
</table>

6.7. **Intrapartum management of women receiving thromboprophylaxis in Labour**

Once the woman thinks she is in labour, she should be advised not to inject any further heparin. She should proceed to hospital, be assessed on admission and further doses should be prescribed by medical staff.

Administration of heparin should be suspended on admission to delivery suite in labour or on the morning of induction of labour or elective caesarean section and recommenced after delivery.
Regional techniques should not be employed until at least 12 hours after the previous prophylactic dose of LMWH or 24 hours after the last therapeutic dose. An anaesthetic opinion must be sought in women on therapeutic doses.

Regional anaesthesia is contra-indicated with abnormal clotting studies.

6.8. Elective LSCS

Therapeutic and prophylactic LMWH doses are delayed before caesarean section or induction of labour to limit bleeding risks at delivery and to allow for safe regional analgesia/anaesthesia. All members of the clinical team on labour wards need to be mindful that if inductions or planned caesarean sections are delayed this risks prolonged gaps in women receiving LMWH which can be dangerous. Every effort should be made to prioritize these high-risk women.

The woman should receive a thromboprophylactic dose of LMWH on the day before delivery more than 12 hours prior to surgery.

The morning dose should be omitted on the day of delivery and the LSCS performed in the morning.

The thromboprophylactic dose should be given by three hours postoperatively if GA (or four hours after insertion of spinal or removal of the epidural catheter, if appropriate).

All patients after caesarean section should be encouraged towards early mobilisation, hydration and below knee compression stockings.

All women who have had caesarean sections should be considered for thromboprophylaxis with LMWH for 10 days after delivery.

6.9. Prophylaxis against Thromboembolism in Caesarean Section

Women undergoing LSCS should be formally assessed for risk of thrombosis.

They should receive Thromboprophylaxis for 10 days if they have two risk factors in addition to the emergency LSCS see Appendix B to consider extending if required for 6 weeks.

All women who received antenatal Thromboprophylaxis should continue until 6 weeks post natal.

Consider using mechanical boots for all women undergoing LSCS.

LMWH is the drug of choice in most women requiring prophylaxis until 10th post-operative day.

Women with artificial heart valves, heparin allergy or very active Antiphospholipid syndrome will require Warfarin for anticoagulation.

If a woman is at a bleeding risk post caesarean section and cannot for the foreseeable future be given anticoagulant therapy, additional use of properly applied anti-embolism stockings of appropriate size that provide graduated compression with a calf pressure of 14–15 mmHg is recommended in pregnancy and the puerperium for women who are hospitalised and have a
contraindication to LMWH. Consider also using mechanical boots until the risk has past and anticoagulant therapy can continue. In addition for women with an identified bleeding risk, the balance of risks of bleeding and thrombosis should be discussed in consultation with a haematologist.

If practical re-weighing prior to prescribing is recommended.

Upon discharge the woman must be given the entire prescribed amount either the 10 days or the 6 weeks therefore avoiding the need for repeat prescriptions. This also provides a failsafe as the prescription will be checked by a hospital pharmacist, who ensures the correct weight-appropriate dose is dispensed.

The Community midwife must be informed as part of the discharge and handover of care to the community that the woman is on thromboprophylaxis.

6.10. Thromboprophylaxis following birth

Thromboprophylaxis should be commenced as early as possible after delivery if indicated, preferably within 6 hours, provided there is no postpartum haemorrhage or additional risks that would delay it commencing.

If there has been a postpartum haemorrhage, use AESs initially. Once haemostasis is achieved it is important to re-assess the cause of the PPH. If this is secondary to DIC it may place the patient at increased risk of VTE.

Any woman, who is considered to be at high risk of haemorrhage, and in whom continued heparin treatment is considered essential, they should be managed with intravenous, unfractionated heparin until the risk factors for haemorrhage have resolved. The haematology team should be involved in these cases.

If regional analgesia is used LMWH should be withheld until 4 hours after uneventful insertion or removal (6 hours if traumatic) of the epidural catheter. The first postpartum dose can be given after insertion but before removal. However the catheter should not then be removed within 12 hours of the most recent heparin injection.

When prescribing the first dose of LMWH after delivery, prolonged delays in administration should be avoided – in particular adhering to fixed ward drug rounds can lead to protracted delays, so a stipulated time for the first dose should be given and adhered to.

Charting / prescribing of this first dose and an agreed time of administration is the responsibility of the anaesthetist for women delivered in theatre

VTE risk assessments (including reweighing) should be performed carefully and deliberately before transfer to the postnatal ward with adequate handover given, including before a 6 hour discharge home, or any transfer to the Midwifery led unit.

Women should be advised that neither Heparin nor Warfarin is contraindicated in breastfeeding

6.11. Contraception

Risk factors must be taken into account in discussing contraception. Two deaths followed the prescription of oral contraceptives in overweight women.
The combined oral contraceptive pill should not be prescribed during the first three months postpartum for women with other risk factors for venous thromboembolism. The patient can be advised on effective alternatives such as the progesterone only pill, depot provera or the intrauterine contraceptive device e.g. Mirena.

6.12. Thromboembolic Disease

Symptoms of thromboembolic disease

If a pregnant woman displays chest or leg symptoms a Venogram or ultrasonography (deep vein thrombosis) duplex ultrasound/ ventilation perfusion lung scanning or angiography (pulmonary embolus) should be considered to exclude DVT or potential PE.

In clinically suspected DVT or pulmonary thromboembolism, treatment with unfractionated heparin or low molecular weight heparin should be given until the diagnosis is excluded by objective testing. Treatment should be planned in conjunction with Haematologists

Some of the following signs and symptoms may be found in normal pregnancy. In order to avoid the risks, inconvenience and costs of inappropriate anticoagulation diagnostic imaging should be performed promptly in pregnant women with suspected VTE.

6.13. Deep Vein Thrombosis

Symptoms

- Calf pain
- Pyrexia
- Warmth or coolness of limb with ileo-femoral vein obstruction
- Swelling
- Back pain and swelling of the entire limb can be signs of iliac vein thrombosis
- Redness or discoloration
- May be completely silent

Signs

- Calf tenderness
- Difference between affected and normal limb circumference
- Leg oedema
- The classic sign of tenderness elicited by acute dorsiflexion of the foot is not recommended as it may potentially cause clot fragmentation and migration to the lungs.

The symptoms of venous thromboembolism may occur in women with or without predisposing risk factors.

6.14. Diagnosis

Doppler ultrasound demonstrates clot by failing to compress the vein that contains the clot

Ascending venography may be necessary in some cases to diagnose ilio-femoral thrombosis.
6.15. Pulmonary Embolism

Symptoms

Minor
- Dyspnoea
- Chest pain
- Slight haemoptysis
- Fever
- dizziness

Major
- Sudden collapse
- Dyspnoea
- Cyanosis
- Distress and agitation
- Abdominal pain
- dizziness

Signs
- Tachypnoea
- Hypotension
- Raised Jugular Venous Pressure
- Focal signs on chest auscultation
- Respiratory failure
- Cardiac arrest

Where there is clinical suspicion of acute PTE, ventilation-perfusion (VQ) scanning or CTPA should be performed (if chest X-ray is abnormal).

Women with suspected PTE should be advised that VQ scanning carries a slightly increased 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 (lifetime risk increased by up to 13.6% with CTPA, background risk of 1/200 for study population).

If the mother is breastfeeding and requires a VQ scan she cannot breastfeed for 24hrs following the procedure. All expressed breast milk (EBM) must be discarded for 24 hours following the procedure.

ECG, blood gases and CXR will not confirm the diagnosis of PE but will exclude other acute events such as MI (Myocardial Infraction), Amniotic Fluid Embolism and pneumothorax.

6.16. Treatment of Massive Pulmonary Embolism

Call for immediate senior medical aid

Management should involve a multidisciplinary team including senior physicians, obstetricians and radiologists.
Airway

- Assess
- Maintain patency
- Apply high flow oxygen therapy
- Attach pulse oximeter
- Early tracheal intubation if cardiovascular collapse

Breathing

- Assess
- Ventilate with 100% oxygen if respiratory distress may need positive end expiratory pressure (PEEP) to ventilate

Circulation

- Assess for signs of circulation and BP
- Cardio Pulmonary Resuscitation
- Secure two large bore (16 gauge) cannulae
- Put on ECG and BP monitor
- Treat peri-arrest arrhythmias
- FBC, clotting and Cross match 6 units
- IVI
- Tilt to left if undelivered
- Request CXR, ECG and Arterial Blood Gases

If high probability of PE

- VQ scan
- Anticoagulant

If the VQ scan shows non high probability request pulmonary angiography

If positive diagnosis, manage in intensive care unit, consider pulmonary artery flotation catheter and continue supportive therapy

These women should be managed together with the haematologist and /or the respiratory chest physician

6.17. Anticoagulation treatment

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

6.18. Treatment for Acute phase

IV heparin therapy 200units/kg/12 hours as an initial dose with monitoring as per the anticoagulant guidance

Check APTT 6 hours after starting infusion and adjust heparin dose accordingly.
Table 4

<table>
<thead>
<tr>
<th>APTT Ratio</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 - 2.5</td>
<td>Continue same dose</td>
</tr>
<tr>
<td>&lt; 1.5</td>
<td>Increase infusion rate by 5,000 units/24 hours (Maximum 35,000 units daily).</td>
</tr>
<tr>
<td>2.5 – 4.0</td>
<td>Reduce infusion rate by 5,000 units/24 hours.</td>
</tr>
<tr>
<td>&gt; 4.0</td>
<td>Stop infusion for 2 hours and reduce infusion rate by 5,000 units/24 hours.</td>
</tr>
</tbody>
</table>

Following any dose adjustment the APTT should be rechecked 6 hours later and the heparin dose adjusted accordingly as above.

The APTT should be checked at least daily thereafter and adjustments applied accordingly.

LMWH is a safe effective alternative in pregnancy

LMWH should be given daily in two subcutaneous divided doses with dosage titrated against the woman’s booking or most recent weight. Monitoring with anti-Xa is recommended in women at extremes of weight (<50kg, >90kg), renal impairment or recurrent VTE.

Intravenous unfractionated heparin is the preferred treatment in massive PTE with cardiovascular compromise.

In the initial management of DVT, the leg should be elevated and a graduated elastic compression stocking applied to reduce oedema. Mobilisation with graduated elastic compression stockings should be encouraged.

Consideration should be given to the use of a temporary inferior vena cava filter in the perinatal period for women with iliac vein VTE, to reduce the risk of PTE or in women with proven DVT and who have continuing PTE despite adequate anticoagulation. However, when VTE occurs in the antepartum period, delivery should be delayed, if possible, to allow maximum time for anticoagulation rather than putting in a filter.

6.19. Treatment for the Chronic Phase

After 5-7 days change to LMWH.

Severe life threatening pulmonary embolus may require further measures to be considered: thrombolytic therapy (streptokinase) pulmonary embolectomy, cardiopulmonary bypass.

Treatment of proven DVT/PE in conjunction with haematologist. The haematologist advises on a plan of care for the duration of the pregnancy, intrapartum and postpartum period. The need for postnatal follow up is also highlighted

Anti Xa and platelet monitoring with LMWH should follow the Anticoagulant Guidance.
LMWH is prescribed in a weight adjusted dosage.

Continue throughout pregnancy and at least 6-12 weeks postpartum and until at least 6 months of treatment have been given in total

Management in labour - see 6.8.

Any woman who is considered to be at high-risk of haemorrhage and in whom continued heparin treatment is considered essential should be managed with intravenous, unfractionated heparin until the risk factors for haemorrhage have resolved.

In women receiving therapeutic doses of LMWH, wound drains (abdominal and rectus sheath) should be considered at caesarean section and the skin incision should be closed with staples or interrupted sutures to allow drainage of any haematoma.

Management Postpartum see 6.10

6.20. Follow-up

Women are advised that graduated elastic compression stockings should be worn on the affected leg for 2 years after the acute event, if swelling persists, to reduce the risk of post-thrombotic syndrome.

Women who have developed a VTE during pregnancy or postpartum receive postnatal follow-up via the hematology anticoagulation clinic. This is arranged prior to discharge from the delivery unit. The method of communication between the haematologist and the obstetrician will be decided on an individual basis.

Bone density studies may be performed in women who are on long term heparin therapy.

7. Special Considerations

When using this guideline refer to:

- ESHT Guideline Anticoagulant Guidance on the Trust intranet
- ESHT Guideline Pregnancy Care for Healthy Women
- ESHT Guideline Referral pathways in Maternity
- ESHT Guideline Management of the Obese Pregnant Woman
- ESHT Guideline Cardiovascular disease in pregnancy, labour & postpartum

8. Evidence Base/References


9. Competencies and Training Requirements

See maternity training needs analysis.

Any practice changes that require training will be disseminated through the Specialist Midwife Practice Development.

10. Monitoring Arrangements
## Document Monitoring Table

<table>
<thead>
<tr>
<th>Element to be Monitored</th>
<th>Lead</th>
<th>Tool for Monitoring</th>
<th>Frequency</th>
<th>Responsible Individual/Group/Committee for review of results/report</th>
<th>Responsible individual/group/committee for acting on recommendations/action plan</th>
<th>Responsible individual/group/committee for ensuring action plan/lessons learnt are implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance with the guideline</td>
<td>Clinical unit Lead Consultant Obstetrician for audit</td>
<td>Audit</td>
<td>Every 3 years Or 6-9 months after a practice change.</td>
<td>Obstetrics and Gynaecology audit meetings and any other appropriate meetings, Guideline implementation group, LWF,</td>
<td>Clinical Services Managers Midwifery matrons Clinical unit Obstetrics lead</td>
<td>Consultant Obstetrician Audit lead HOM Service managers and matrons</td>
</tr>
</tbody>
</table>
11. Equality and Human Rights Statement

An assessment of this document has been carried out.
Appendix A Antenatal assessment and management (to be assessed at booking and repeated if admitted)

- **Very high risk**
  - Previous VTE on long-term oral anticoagulant therapy
  - Antithrombin deficiency
  - Antiphospholipid syndrome with previous VTE
  - Medical comorbidities e.g. cancer, heart failure, active SLE, IBD or inflammatory polyarthropathy, nephrotic syndrome, type I DM with nephropathy, sickle cell disease, current IVDU
  - Any surgical procedure e.g. appendicectomy
  - OHSS (first trimester only)

- **High Risk**
  - Requires antenatal prophylaxis with LMWH
  - Refer to trust-nominated thrombosis in pregnancy expert / team

- **Intermediate Risk**
  - Consider antenatal prophylaxis with LMWH

- **Lower Risk**
  - Mobilisation and avoidance of dehydration

- **Four** or more risk factors:
  - Prophylaxis from first trimester

- **Three** risk factors
  - Prophylaxis from 28 weeks

- **Fewer than three risk factors**

- **Transient risk factors:**
  - Dehydration/hyperemesis; current systemic infection; long-distance travel

- **Any previous VTE except a single event related to major surgery**
- Hospital admission
  - Single previous VTE related to major surgery
  - High-risk thrombophilia + no VTE
  - Medical comorbidities e.g. cancer, heart failure, active SLE, IBD or inflammatory polyarthropathy, nephrotic syndrome, type I DM with nephropathy, sickle cell disease, current IVDU
  - Any surgical procedure e.g. appendicectomy
  - OHSS (first trimester only)

- **Age > 35 years**
- **Obesity (BMI ≥ 30 kg/m²)**
- **Parity ≥ 3**
- **Smoker**
- **Gross varicose veins**
- **Current Pre-eclampsia**
- **Immobility, eg paraplegia, PGP**
- **Family history of unprovoked or estrogen-provoked VTE in first-degree relative**
- **Low risk thrombophilia**
- **Multiple pregnancy**
- **IVF / ART**

- **High Risk**
  - Recommend antenatal high-dose LMWH and at least 6 weeks' postnatal LMWH or until switched back to oral anticoagulant therapy
  - These women require specialist management by experts in haemostasis and pregnancy

- **High Risk**
  - Any previous VTE (except a single VTE related to major surgery)
  - Recommend antenatal and 6 weeks' postnatal prophylactic LMWH
Appendix B – Post natal assessment and management (to be assessed on labour ward)

Any previous VTE
Anyone requiring antenatal LMWH
High – risk thrombophilia *
Low – risk thrombophilia + family history

Caesarean section in labour
BMI ≥ 40kg/m²
Readmission or prolonged admission (≥ 3 days)
Any surgical or procedure in the puerperium except immediate repair of the perineum
Medical comorbidities e.g. cancer, heart failure, active SLE, IBD or inflammatory polyarthropathy; nephrotic syndrome, type 1 Diabetes Mellitus with nephropathy, sickle cell disease, current intra venous drug user.

Age > 35 years
Obesity (BMI ≥ 30 kg/m²)
Parity ≥ 3
Smoker
Elective Caesarean section
Family history of VTE
Low risk thrombophilia
Gross varicose veins
Current systemic infection
Immobility, e.g. paraplegia, PGP, Long-distance travel
Current Pre-eclampsia
Multiple pregnancy
Pre-term delivery in this pregnancy (<37+0 weeks)
Stillbirth in this pregnancy
Mid-cavity rotational or operative delivery
Prolonged labour (>24 hours)
PPH > 1 Litre or Blood Transfusion

Very high risk

* High – risk thrombophilia

Intermediate Risk

At least 10 days postnatal prophylactic LWMH
NB if persisting or > 3 risk factors consider extending thromboprophylaxis with LWMH

Lower Risk

Early Mobilisation and avoidance of dehydration

Two or more risk factors

Fewer than two risk factors

High Risk

At least 6 weeks postnatal prophylactic LWMH

Recommend antenatal high-dose LMWH and at least 6 weeks’ postnatal LMWH or until switched back to oral anticoagulant therapy

These women require specialist management by experts in haemostasis and pregnancy

Recommend antenatal and 6 weeks’ postnatal prophylactic LMWH

<table>
<thead>
<tr>
<th>* Very high risk</th>
<th>Previous VTE on long-term oral anticoagulant therapy Antithrombin deficiency Antiphospholipid syndrome with previous VTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk</td>
<td>Any previous VTE (except a single VTE related to major surgery)</td>
</tr>
</tbody>
</table>
Appendix C – EHRA Form

A Due Regard, Equality & Human Rights Analysis form must be completed for all procedural documents used by East Sussex Healthcare NHS Trust. Guidance for the form can be found here on the Equality and Diversity Extranet page.

Due Regard, Equality & Human Rights Analysis

<table>
<thead>
<tr>
<th>Title of document:</th>
<th>Clinical Guideline for Thromboprophylaxis and Treatment of Venous Thromboembolism in Maternity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who will be affected by this work:</td>
<td>Pregnant and Postnatal women</td>
</tr>
</tbody>
</table>

Please include a brief summary of intended outcome: All women that have a high risk medication or obstetric history or the birth they experience generates high risk situations then the women will be offered thrombo prophylaxis as per national guidance.

<table>
<thead>
<tr>
<th>Does the work affect one group less or more favourably than another on the basis of:</th>
<th>Yes/No</th>
<th>Comments, Evidence &amp; Link to main content</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Ensure you comment on any affected characteristic and link to main policy with page/paragraph number)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Age</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>• Disability (including carers)</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>• Race</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>• Religion &amp; Belief</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>• Gender</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>• Sexual Orientation (LGBT)</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>• Pregnancy &amp; Maternity</td>
<td>Y</td>
<td>Early detection and treatment of women at risk or suspected of having thromboembolic disorders will help to prevent the maternal morbidity and mortality from venous thrombosis and pulmonary embolism. Venous thromboembolism is a condition in which a blood clot (thrombus) forms in a vein. Pulmonary embolism remains one of the leading direct causes of maternal death in the UK (CEMACE 2011)</td>
</tr>
<tr>
<td>• Marriage &amp; Civil Partnership</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>• Gender Reassignment</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>• Other Identified Groups</td>
<td>N</td>
<td></td>
</tr>
</tbody>
</table>

2. Is there any evidence that some groups are affected differently and what is/are

<p>| Is there any evidence that some groups are affected differently and what is/are | No |  |</p>
<table>
<thead>
<tr>
<th></th>
<th>the evidence source(s)?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>What are the impacts and alternatives of implementing / not implementing the work / policy?</td>
<td>If at risk women do not receive this treatment that will increase maternal and neonatal mortality and morbidity</td>
</tr>
<tr>
<td>4.</td>
<td>Please evidence how this work / policy seeks to “eliminate unlawful discrimination, harassment and victimisation” as per the Equality Act 2010?</td>
<td>This policy is equal to all pregnant women</td>
</tr>
<tr>
<td>5.</td>
<td>Please evidence how this work / policy seeks to “advance equality of opportunity between people sharing a protected characteristic and those who do not” as per the Equality Act 2010?</td>
<td>N/A</td>
</tr>
<tr>
<td>6.</td>
<td>Please evidence how this work / policy will “Foster good relations between people sharing a protected characteristic and those who do not” as per the Equality Act 2010?</td>
<td>N/A</td>
</tr>
<tr>
<td>7.</td>
<td>Has the policy/guidance been assessed in terms of Human Rights to ensure service users, carers and staff are treated in line with the FREDA principles (fairness, respect, equality, dignity and autonomy)</td>
<td>Yes</td>
</tr>
<tr>
<td>8.</td>
<td>Please evidence how have you engaged stakeholders with an interest in protected characteristics in gathering evidence or testing the evidence available?</td>
<td>N/A</td>
</tr>
<tr>
<td>9.</td>
<td>Have you have identified any negative impacts or inequalities on any protected characteristic and others? (Please attach evidence and plan of action ensure this negative impact / inequality is being monitored and addressed).</td>
<td>No</td>
</tr>
</tbody>
</table>