Policy Document

Reference: C28

University Hospitals of North Midlands NHS Trust

Management of Thrombo-Prophylaxis

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Policy Author:	**VTE Steering Group**
Executive Lead:	**Medical Director**

Version Control Schedule

Version	Issue Date	Comments
1	August 2009	Ratified Developed to ensure that all adult patients admitted to hospital have their risks of VTE assessed within 24 hours and that appropriate prophylaxis is prescribed and administered in line with NICE Guidance 92 – VTE Reducing the Risk (2010) and the Guidance Notes for VTE Data Collection, Department of Health May 2010.
2	August 2011	Updated to include and reflect the monitoring table for the requirements of NHSLA Assessment.
3	January 2013	Updated to reflect changes in Medical Guidelines and to reflect the requirements of NHSLA Assessment. Department of Health Guidance – Using the Commissioning for Quality, Innovation (CQUIN) Payment Framework: Guidance on New National Goals 2012-2013.
4	May 2015	Integration of Royal Stoke & County Hospitals policies and incorporating recommendations from All Party Parliamentary Thrombosis Group annual survey results 2014
5	November 2015	Amendment of timing on page 8 to read 60 mins rather than 30 to reflect information in Appendix 4
6	March 2019	Review and updated in line with NICE Guidance 89: Venous thromboembolism in over 16's: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism.
7	June 2019	
8	March 2021	

Statement on Trust Policies

The latest version of 'Statement on Trust Policies' applies to this policy and can be accessed here

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1. INTRODUCTION

The purpose of this policy is to provide clear guidance for all healthcare professionals in the prevention, detection and treatment of venous thromboembolism – a major cause of avoidable deaths in hospital (National Institute for Health and Clinical Excellence (NICE 2010). The major goals are to reduce the incidence of venous thromboembolism (VTE) and to reduce the morbidity and mortality from confirmed cases at the University Hospitals of North Midlands.

The primary objective of this policy is to prevent venous thromboembolism in hospitalised patients. It does not cover the management of patients with confirmed VTE, as this is outlined in the Trust Medical Guidelines – (Appendix 12, and 13). These can be found on the Trust intranet site and are monitored yearly through the clinical audit programme.

The University Hospitals of North Midlands NHS Trust (UHNM) is committed to the provision of high quality healthcare. As part of their objective, the Trust has a duty to limit the potential impact of clinical and non-clinical risks, and to put into place robust and transparent systems when managing patient safety incidents.

The Trust also has a statutory duty to ensure that it is open and transparent with patients and/or their relatives when certain incidents occur (in relation to the care and treatment provided) and may face criminal proceedings if it fails to discharge its statutory duties under the legislation. The Health and Social Care Act 2008 (Regulated Activities) Regulations 2014 amend a framework created by the 2010 Regulations of the same name.

The introduction of a statutory duty of candour in November 2014 is an important step towards ensuring an open, honest and transparent culture is adopted across the whole NHS, something that was previously lacking and was highlighted in the Francis Inquiry (2013).

An “Equality Impact Assessment” has been undertaken and no actual or potential discriminatory impact has been identified relating to this document.

Venous thrombo-embolism (VTE) comprises of deep venous thrombosis (DVT), pulmonary embolus (PE) and the related sequelae of post – thrombotic syndrome (PTS) and pulmonary hypertension (PH).

Hospital associated VTE has been reported to be a widespread problem resulting in significant morbidity and mortality.

The NICE Clinical Guideline 89 – ‘Venous thrombo-embolism in over 16’s - reducing the risk of hospital – acquired deep vein thrombosis or pulmonary embolism’ recommends that **all patients** admitted to the hospital aged 16 and over should undergo mandatory risk assessment and should be considered for thrombo-prophylaxis measures.

The policy of the Trust is that all staff involved in performing risk assessment for VTE, prescribing and administering thrombo-prophylaxis measures within the Trust are familiar with those sections of this policy and procedures which apply to them and comply with them at all times.

This policy should be cross referenced with a number of Trust policies including:

- C12 Trust Policy for Ensuring Correct Patient Identification
- C36 Policy for the Protection of Adults from Abuse
- C36a Staffordshire & Stoke-on-Trent Adult safeguarding enquiry procedures
- C43 Consent to treatment (incorporating Mental Capacity Act)
- G14 Trust Policy for the Implementation of NICE Guidance
- G15 Trust Policy for Clinical Audit
- MDM02 Policy for the Use of Medical Devices/Equipment
- MDM03 Trust Policy for Managing Medical Device Development, Modification & Trials
- MDM04 Trust Policy for Managing the Maintenance & Inventories of Medical Devices
- MM03 Policy for the Storage, Prescription, Supply & Administration of Medicines

- MM05 Policy for the Supply & Administration of Medicines via PGD
- SP02 Policy for the Standardisation of Medical Devices
- RM07 Trust Policy for Reporting and Management of Untoward Incidents including Serious Incidents
- RM12 Duty of Candour
- Trust Medical Guidelines (2018-2019): http://uhns/clinicians/clinical-guidance/clinical-guidelines/medical/

2. SCOPE

This policy applies to all those disciplines across the Trust who is in any way involved in the VTE risk assessment, prescribing and administering thromboprophylaxis measures.

3. DEFINITIONS

3.1 Registered Practitioner

The term Registered Practitioner as used in this policy includes nurses, midwives, operating department practitioners and all those professionals involved in VTE risk assessment and administration of thrombo-prophylaxis measures.

3.2 Medical Officer

The term Medical Officer as used in this policy refers to doctors registered with the General Medical Council.

3.3 Nurse Practitioner

A nurse who has been declared competent in the clerking of patients. They may additionally be registered non-medical prescribers with the prescription of anti-coagulation within their identified scope of practice

3.4 Patient

The term Patient used in this policy refers to all patients aged 16 and over, including pregnant women.

4. ROLES AND RESPONSIBILITIES

4.1 Role of Senior Medical Staff:

- It is the responsibility of the senior medical staff to ensure that the mandatory risk assessment proforma is completed for every adult patient admitted under their care.

- It is the responsibility of the senior medical staff to ensure that appropriate thrombo-prophylaxis measures are undertaken for all patients admitted under their care. These measures and some suggested regimens are specified in the risk assessment proforma including the use of extended prophylaxis when appropriate. The proforma also highlights contra-indication and precautions to be undertaken whilst instituting these measures. **If the suggested thromboprophylaxis measures are not implemented the reasons for doing so should be documented in the medical notes/care plan of the patient.**

- The senior medical staff can delegate some or all of the process to junior staff within the clinical teams but it is their overall responsibility to ensure that the mandatory risk assessment and appropriate thrombo-prophylaxis measures are undertaken for all patients admitted under their care.

- The designated Consultant in charge of the patient's care will be informed if any patient under their care has developed a hospital associated VTE (Department of Health definition: any hospital admission within previous 90 days of VTE confirmation). The designated consultant is responsible for

ensuring that any Root Cause Analysis (RCA) (Appendix 5) is responded to within four weeks. If the designated consultant has left the Trust, the RCA will be forwarded to the clinical lead for delegation as appropriate.

- On identification of the Hospital Associated Thrombosis, the incident is logged via the Trust Datix System under the category of 'Venous Thromboembolism'

- The RCA tool is initiated by the Clinical Quality Improvement Facilitator for VTE and forwarded (via email) to the designated Consultant in charge of the patient during the time frame when the Thrombosis would have developed.

- The Clinical Quality Facilitator completes the initial part of the form to allow the Consultant to easily identify the patient and the hospital admission to be reviewed.

- The Consultant completes the RCA and concludes whether the VTE was unavoidable or avoidable, establishes learning outcomes and initiates an improvement plan.

- For a VTE deemed avoidable, the Consultant in charge of the patient's care will attend an RCA hearing in front of the VTE steering group to present their findings, learning outcomes and actions taken. Those deemed unavoidable with some learning identified will be reviewed for validity in a monthly RCA Review meeting.

4.2 Role of Junior Medical staff/Nurse Practitioner

- Junior medical staff and the nurse practitioner will be required to undertake the VTE risk assessment as part of the clerking process for all inpatients admitted under their clinical teams within 12 hours of admission. They would also be expected to prescribe (Nurse practitioners must be registered non-medical prescribers) appropriate thrombo-prophylaxis measures after ensuring that:

- The patient has had an explanation of the risk of venous thrombosis, the benefits and drawbacks of the thrombo-prophylaxis measures and instituting any such measures for the patient.

- The patient has given a verbal consent for these measures to be instituted.

- They have ensured that the patient does not have any contra-indications for any of these measures.

- That they have undertaken any precautions required prior to these measures being instituted. These precautions and contra-indications have been specified in the risk assessment proforma.

- It is also the responsibility of the junior doctor/nurse practitioner to review the thrombo-prophylaxis measures regularly throughout the patient's stay. This should be at the point of consultant review or if the patient's medical condition changes. In addition, the Trust Adult Prescription chart provides fourteen days of medications, if patients are required to remain in hospital after this period a repeat VTE risk assessment and prophylaxis should be undertaken as a new prescription chart is re-written.

- It is also the responsibility of the junior doctors/nurse practitioner to look out for and identify any complications that the patient may be developing as a consequence of these thrombo-prophylaxis measures. This is particularly so for patients who have undergone major surgery. The common side effects and complications of these thrombo-prophylactic measures are also listed on the VTE risk assessment proforma on page 2 of the Trust Adult Prescription Chart.

- The junior doctor has a responsibility to follow the Trust clinical guidelines in all cases where venous thromboembolism (VTE) is suspected (see appendix 12 / 13)

- The junior doctor has a responsibility to follow the approved care pathway for anticoagulation for any patient confirmed as having either a DVT/PE (see appendix 14).

- The junior doctor also has a responsibility to participate as required in the completion of Root Cause Analysis documentation (Appendix 8) in all cases of hospital associated venous thromboembolism.

4.3 Role of the Registrant

- The Registrants are responsible for instituting thrombo-prophylaxis measures which have been prescribed by the medical staff or nurse practitioners (non-medical prescribers).

- They are also responsible for ensuring that the VTE risk assessment has been completed for each patient and for escalating the need for an assessment to an appropriate health professional. If the patient is identified as being 'at risk' they need to ensure a clinical decision has been made of the required treatment and that this is documented accordingly.

- The Registrant will also ensure that the thrombo-prophylaxis measures are reviewed at least once a week (after the initial assessments carried out within the first 24 hours) or sooner if the clinical condition of the patient changes.

- Registrants will also be responsible (joint responsibility with the medical staff) for the early identification of any side effects or complications of thrombo-prophylaxis measures instituted for these patients.

- The Registrant (joint responsibility with the medical staff) will be responsible for ensuring that the patient has been provided with and has read and understood the patient information leaflet about the risk of venous thrombosis, the benefits and drawbacks of the thrombo-prophylaxis measures and instituting any such measures for the patient. In addition, the Registrants are responsible for ensuring that an adequate stock of the patient information leaflet is available on the ward.

4.4 Role of senior nursing staff and sisters/charge nurses

It is the responsibility of senior nursing staff and sisters/charge nurses to ensure that:

- All clinical areas where patients can be admitted directly to, have risk assessment proforma available at all times within the Trust Adult Prescription Chart.

- All nursing staff are trained in instituting appropriate thrombo-prophylaxis measures.

- To identify any shortcomings in the training of nursing and junior medical staff and to report this to the Hospital Thrombosis Steering group / Quality improvement facilitator for VTE.

- Participate as required in the completion of Root Cause Analysis documentation in all cases of hospital associated venous thromboembolism.

- To participate in monitoring and reporting of VTE assessment and prophylaxis data, audit and participation in the RCA process

4.5 Role of the Hospital Thrombosis Steering group and Quality improvement facilitator for VTE

The Hospital Thrombosis Steering group and Quality Improvement facilitator for VTE is responsible for:

- Reviewing thrombo-prophylaxis, policies and procedures.

- Reviewing the arrangements for training of staff in thrombo-prophylaxis assessment and intervention.

- Reviewing adverse incidents as a result of thrombo-prophylaxis measures including new venous thrombosis in hospitalised patients.

- Reviewing and updating the risk assessment proforma and making recommendations about thrombo-prophylaxis measures.

- Recommending corrective action in thrombo-prophylaxis measures, where indicated and feed back to clinical areas.

- Promoting continuing education in venous thrombo-thrombosis for all relevant members of staff.

- Monitoring Hospital Associated Thrombosis (HAT's) and report monthly to commissioners.

- Report all hospital associated thrombosis via the Trust Datix System under the category of 'Venous Thromboembolism'

- Conducting hearings for Root Cause Analysis (RCA's) of HAT's which are deemed avoidable.

- Reviewing learning outcomes and action plans of RCA's, providing feedback to all appropriate staff.

4.6 Role of the Patient Safety Group and the Quality and Safety Oversight Group

- The Trust Medical Director will be responsible for signing off that the VTE risk assessment being used at local level is fully compliant with the NICE guidance 89 and all risk factors have been taken into account (see appendix 8 & 9). **Patients included in the agreed cohort groups (Appendix 10) will not require an actual paper assessment but will need to be counted in the actual numbers of patients having had an assessment performed (for any data collection procedures).**

- The Quality & Safety oversight group on behalf of the Executive Committee are responsible for ensuring that health care professionals are informed of and follow the Trust policy, procedure and guidelines on Prevention of Venous Thrombo-embolism in hospitalised patients through its arrangements for healthcare governance.

- One identifiable member of staff should be appointed by the Trust Board to be responsible for setting local policies for prevention of venous thrombo-embolism recognising training of the staff involved in thrombosis prevention and procedures.

- Review the VTE Steering Group Highlight Report and the VTE Quality Performance Report

5. EDUCATION/TRAINING AND PLAN OF IMPLEMENTATION

- All training should be recorded in staff personal records, ideally on ESR.

- VTE training does not form part of the organisations Statutory and Mandatory training programme; however staff may access on line training as part of their professional development. Where additional training is required to support the reduction in risk of VTE events, staff should identify their learning need to their line manager.

- All staff involved in the VTE risk assessment, prescription and institution of thrombo-prophylaxis measures must be competent to do so.

- [redacted]All staff who are responsible for the fitting and monitoring of GCS should be aware of the Trust Standard Operating Procedure for the fitting and monitoring of Graduated Compression Stockings and receive training during their induction to the ward/department and attend updates delivered by the company educator/trainer. A training video is available to access via the Trust Intranet [redacted]

- Health care professionals adhere to the Trust policies and procedures at all times.

6. MONITORING AND REVIEW ARRANGEMENTS

The Thrombosis Steering group will monitor the implementation of this policy:

- via the review of adverse incidents at each meeting and where deficiencies are identified actions plans put into place
- By review of the VTE Risk Assessment Performance (CQUIN data)
- By review and sharing of lessons learned from completed RCA's for Hospital Associated VTE
- Failure to comply with the principles as set out within the policy may be subject to disciplinary action.

C28 Policy for the Management of Thrombo-prophylaxis Monitoring Table					
Aspect of compliance or effectiveness being monitored	Monitoring method	Individual or department responsible for the monitoring	Frequency of the monitoring activity	Group/committee/ forum which will receive the findings/monitoring report	Committee/ individual responsible for ensuring that the actions are completed
The process/risk assessment for identifying patients at risk of venous thromboembolism	Safety Thermometer Audit Nursing Indicators Database	Corporate Nursing	Monthly	Trust Thrombosis Committee and Professional Advisory Group	Clinical Directors and Matrons
The prophylactic treatment regime for high risk patients	Safety Express audits (once a month-includes all inpatients) Spot check audits – sample of patient records per ward per month (across both sites)	Ward Sisters/ Charge Nurses Clinical Audit	Monthly Monthly	Trust Assurance Framework Meetings , CQRM meetings and Trust Thrombosis Committee	Clinical Directors and Matrons Trust Thrombosis Steering group
The procedure to be followed if venous thromboembolism is suspected	Follow Medical (pages 161-175) or Surgical Guidelines (pages 218-232) Reviewed by the Senior Medical staff on ward rounds	Consultant in Charge	Monthly	Divisional Quality and Safety Forum Meetings	Divisional Quality and Safety Forum Meetings
The management of the patient once a positive diagnosis has been made	For patients identified as having a Hospital Associated VTE, (reported via radiology) an RCA is initiated by Clinical Quality Improvement Facilitator for VTE & forwarded to the appropriate Consultant for completion & recommendations Pharmacy team	Quality Improvement Facilitator for VTE	RCA's sent when reported	RCA's discussed at Trust Thrombosis Steering group meetings on a bi monthly basis Avoidable RCA's heard within the VTE Steering Group meetings	Trust Thrombosis Steering group

	monitor a sample of prescription charts daily for appropriate anticoagulation as part of their daily routine work (Monday – Friday only)	Ward Pharmacist	Daily	Divisional Quality and Performance Meetings	Trust Thrombosis Steering group

REVIEW

This policy will be reviewed at least every three years post ratification, unless changes in national legislation override this or there has been a specific request to review sooner.

7. REFERENCES

Department of Health (2010) Prevention of Venous Thromboembolism (VTE) in Hospitalised Patients, Gateway Reference Number 14338

Department of Health (2010) DH Policy Implementaion on VTE risk assessemnt: day case procedure cohorts. Reference:TC/JP/VTE 02

National Insitiutue for Clinical Excellence (2018) Clinical Guideline 89 – Venous thromboembolism in over 16s: reducing the risk of hospital –aquired deep vein thrombosis or pulmonary embolism.

National Insitiutue for Clinical Excellence (2018) NICE Quality Standards (QS3)-Venous thromboembolism in adults: reducing the risk in hospital

The All Party Paliamentary Thrombosis Group / Department of Health: 'Venous theromboembolism prevention: a pateint safety priority.' (June 2009)

The All Party Paliamentary Thrombosis Group: 'Thrombosis – awareness, assessemnt, managemnt and prevention.' Annual audit of Acute Trusts and Clinical Commissioning Groups' (November 2016)

Trust Medical Guidelines(2017-2018):http://uhns/clinicians/clinical-guidance/clinical-guidelines/medical/
Muslim Council of Britain (2004) Informed Choice In Medicine Taking: Drugs Derived from Pigs and their Clinical Alternatives. An Introductory Guide for Patients and Carer

National Institute for Health and Care Excellence (2014) – The geko device for reducing the risk of venous thromboembolism. NICE medical technology guidance 19

APPENDIX 1: CONSENT

Consent is a patient's agreement for a health professional to provide care and /or treatment/or proposed procedure. The consent process is clearly applicable to the initiation of thrombo-prophylaxis.

Where a person lacks the capacity to make a decision for themselves, a decision must be made in that persons best interests. **The Mental Capacity Act 2005**, which came fully into force on 1 October 2007, sets out a statutory framework for making treatment decisions for people who lack the capacity to make such decisions, setting out who can make them and when. It sets out the legal requirements for assessing whether or not a person lacks the capacity to make a decision.

Where the individual does not have English as a first language or may rely on British Sign Language (BSL) to communicate, Staff are to be mindful that this will impact upon the ability to provide valid consent. Staff should engage with the organisation's Communication and Language Support service and all efforts should be made to ensure that communication needs are considered and appropriate support utilised.

Patients need to understand the reasons for, the nature of, the risks of, the benefits of, the discomfort of, the alternatives to and the consequences of not having the treatment or proposed thrombo-prophylaxis intervention, prior to its administration. All patients should receive written information about hospital associated VTE and its prevention. In line with NICE Quality Standards 3 – Venous thrombo-embolism prevention, patients/carers should be offered both verbal and written advice on VTE Prevention as part of the admission process and as part of the discharge process. This information is available as a Trust booklet "Preventing Blood Clots" (Appendix 7). It would be implied that the patient has agreed to accept thrombo-prophylaxis measures once the patient has been provided with written information, that any clarifications are given as required/requested and that the interventions recommended have not been declined by the patient.

Where the patient declines thromboprophylaxis, the responsible healthcare worker, will document the details of this and supporting discussions in the clinical record

APPENDIX 2: VENOUS THROMBOSIS RISK ASSESSMENT

All patients (aged 16 years and over) admitted to hospital will be assessed for their risks of developing VTE on admission (within 12 hours) and reassessed at the point of Consultant review or if their clinical situation changes.

A cohort approach to risk assessment may be considered locally for certain cohorts of patients undergoing certain procedures (see appendix 10) where the cohort of patients share similar characteristics and are **not at risk of VTE** according to the NICE guidance. A cohort approach to risk assessment can only be used when the Trust Medical Director is satisfied that, when reading the NICE guideline and DH/NICE national tool together, use of the Trust VTE Risk Assessment Proforma among the cohort would always result in the determination that the patient is **not at risk of VTE** or that under the NICE guideline no pharmacological or mechanical prophylaxis would be appropriate regardless of the risk factors.

The risk assessment should be performed on the specified Trust VTE risk assessment proforma (Appendix 8) which is based on the Department of Health national template (March 2010) and contained within the Trust Adult Inpatient Prescription Chart (pages 2 & 3 of prescription chart).

A separate VTE Assessment Proforma for maternity patients should be used both during the antenatal period and the post natal period (see Appendix 9). This should also be used for women who have given birth, had a miscarriage or had a termination of pregnancy in the previous 6 weeks.

Prolonged admission

Patients who require prolonged admission (greater than one week) should have regular reassessment of the VTE risk assessment and prophylaxis. The Trust Adult Prescription chart provides fourteen days of medications, therefore if patients are required to remain in hospital after this period a repeat VTE risk assessment and review of prophylaxis should be undertaken as a new prescription chart is re-written.

APPENDIX 3: THROMBO-PROPHYLAXIS MEASURES

Prophylaxis measures will be prescribed in accordance with **NICE Guideline 89 (March 2018).**

A range of thrombo-prophylaxis measures will be offered to the patients. These include:

a. Mechanical methods – graduated compression stockings and intermittent compression devices.
b. Pharmacological methods which include Low Molecular Weight Heparin, unfractionated Heparin, Warfarin or oral thrombo-prophylaxis prescribed in licensed prophylactic doses.

For those individuals who have experienced a stroke the measures outlined in section 8.4 must be followed.

General measures to reduce the risk of VTE development should be applied to all patients and include ensuring the patient remains hydrated and that good levels of mobility are promoted (within patient's medical management plan/limitations).

Graduated compression stockings /intermittent pneumatic compression (IPC) devices

Graduated compression stockings (GCS) provide graduated circumferential compression from the distal to the proximal regions of the leg; they are specifically designed to reduce the risk of DVT.

Where GCS are considered appropriate, the patient must be measured for the correct size of stocking in accordance with the manufacturer's instructions. staff who are required to fit the graduated compression stockings should be trained in the fitting and monitoring of these. GCS should be worn from the day of admission until the day of discharge. Patients admitted on the day of surgery should have their GCS fitted before proceeding to theatre

GCS **should not be** offered to patients in the following circumstances:

- Suspected or proven peripheral arterial disease. Where suspected an ABPI reading should be taken and recorded in clinical record
- Peripheral arterial bypass grafting
- Peripheral neuropathy or other causes of sensory impairment
- Any local conditions in which the stockings may cause damage for example fragile 'tissue paper' skin, dermatitis, gangrene or recent skin graft
- Known allergy to material of manufacture
- Severe leg oedema
- Unusual leg size or shape
- Major limb deformity preventing correct fit

Use caution and clinical judgement when applying anti-embolism stockings over venous ulcers or wounds.

Where anti-embolism stockings are not deemed to be appropriate an entry must be made in the clinical record

Where an individual develops leg oedema or post-operative swelling it is essential that their legs are re-measured and graduated compression stockings refitted. Similarly where weight loss or reduction in oedema occurs during the hospital stay the patient/service use's legs must be re-measured and graduated compression stockings refitted.

Patients should be encouraged to wear their stockings for twenty-three and a half hours a day until they no longer have significantly reduced mobility.

Where GCS are worn, they must be removed at least daily for hygiene purposes and to inspect the skin condition. In individuals with significant reduction in mobility, poor skin integrity or pressure ulcer risk, the skin must be inspected more frequently, particularly over the heels and bony prominences

The use of GCS should be stopped if there is marking, blistering or discolouration of the skin, particularly over the heels and bony prominences or in the patient/service user experiences pain or discomfort.

If a patient is advised to wear stockings for a period of time after discharge, the Patients and their relatives or carers should be shown how to correctly apply the stockings and be made aware of checks that are required to ensure that deterioration in skin integrity is identified early.

Patients undergoing surgery should also be considered for intermittent pneumatic compression devices intra-operatively and postoperatively for major surgical interventions. These devices use an air pump to improve venous circulation, increase venous outflow and reduce stasis within the leg veins.

Intermittent pneumatic compression devices should **not** be used with those who have a known allergy to the material of manufacture.

Staff should monitor and record daily in the nursing care plan the patient's skin integrity whilst the devices are in place and any other issues associated with the use of the devices and should receive training on the fitting and monitoring of these.

Low Molecular Weight Heparin (LMWH)

Low Molecular Weight Heparin (LMWH) is a class of anticoagulation medication used in the prevention and treatment of blood clots.

- The indications, cautions and contraindications for the use of LMWH are contained in the latest version of the British National Formulary (BNF).

- LMWHs should be considered for all medical and surgical patients at high risk of VTE

- LMWH should be prescribed in line with Trust Administration of Medicines Policy (MM03) and NICE 2018 Guidelines.

- Where severe renal impairment, or during the recovery phase from it and established renal failure exists, chemical prophylaxis will be adjusted accordingly

- Where an individual is of extreme weight (underweight or overweight/bariatric) the dose of chemical thromboprophylaxis should be adjusted accordingly to ensure appropriate prophylaxis. Where doubt exists regarding prophylactic dosage, advise must be sought e.g. Haematology Consultant.

- Withholding LMWH may be appropriate where the risks of bleeding outweigh the potential benefit from reduction of VTE risk and should be clearly documented within the patient records.

- Extended courses of LMWH's (after discharge) are indicated on the Trust VTE risk assessment proforma (see appendix 8) and can also be at the discretion of the admitting consultant. The nursing staff should support the patient / relatives in learning how to administer this treatment whilst an inpatient.

- Where chemical thromboprophylaxis needs to be continued at home the discharging doctor/Advanced Nurse Practitioner and nursing team must ensure that:

- The discharge letter includes information regarding thromboprophylaxis treatment (name of drug), dose of medication, duration of treatment, including the length of time anti-embolism stockings should be worn.
- The patient/service user and their family/carer understand how long treatment will continue.
- Staff must actively engage with patients and their carers regarding self/carer administration when at home. Provision of community nursing support should be considered if self/carer administration has been excluded as an option.

APPENDIX 4: RELIGIOUS, CULTURAL AND LIFESTYLE CONSIDERATIONS – CHEMICAL PROPHYLAXIS

Those staff responsible for the prescription of VTE thromboprophylaxis must be mindful of religious, cultural and lifestyle choices when prescribing VTE chemical prophylaxis. Similarly nursing staff administering this medication must be equally mindful of these facts and ensure that patients are aware of all facts and provide valid consent to treatment.

- Low Molecular Weight and Unfractionated Heparins are derived from animal products. These products are prepared by chemical removal from porcine intestine, porcine lung and bovine lung.

- For some people taking medication derived from sources that are forbidden or excluded due to religious or lifestyle choice could present dilemmas for patients, carers and healthcare providers.

- The issue is not straightforward, however, with religious leaders exercising judgement and exempting such medication when there is no alternative and where there is a medical need. The process of deciding which medications are acceptable under religious law generally requires discussion by informed religious leaders who interpret the religious scriptures and determine whether exemption applies.

- In Judaism, porcine derived medications are only an issue for medicines taken by mouth. There are no restrictions or prohibitions on the injection or parenteral methods of administration of non-kosher products of porcine or bovine origin.

- The individual's dietary needs, choices and habits (including cultural or religious requirements) will be noted on admission. Where an individual requires VTE prophylaxis and it is clear that use of animal/porcine/bovine products is contrary to these needs the ward doctor/ANP must discuss this matter with the patient and, with their permission, their family or carers.
  - The patient and their relatives or carers (with permission) must be made aware of:
  - The fact that the treatment is derived from animals
  - The consequences of non-treatment
  - Alternative treatments and how these compare in efficacy against traditional treatment choices
  - Their rights to choose or decline treatment

- Patients should be encouraged to seek advice from religious leaders to support their decision making.

- Alternatives for treatment (synthetic products) may be available and advice must be sought from the Medicines Management Team. It should be noted that in some instances synthetic alternatives do not yet exist.

APPENDIX 5: PREVENTATIVE MEASURES (THROMBOPROPHYLAXIS) IN STROKE

- The use of anti-embolism stockings is **not** recommended for individuals who have experienced a recent stroke.
- Use of chemical thromboprophylaxis must be used with caution in patients who have had a recent stroke. Prophylactic dose of LMWH (or unfractionated heparin in those with severe renal impairment or established renal failure) can be considered if:
  - A diagnosis of haemorrhagic stroke has been excluded, and
  -The risk of bleeding (haemorrhagic transformation of stroke or bleeding into another site) is assessed to be low, and
  The patient/service user has one or more of:
  -Major restriction of mobility
  -Previous history of VTE
  -Dehydration
  -Comorbidities, such as malignant disease

- Intermittent pneumatic compression (IPC) may be considered for VTE prophylaxis in immobile individuals who are admitted within 3 days following an acute stroke.

- IPC, where deemed appropriate, should be provided for up to 30 days or until the patient is mobile or discharged, whichever is sooner.

- Where IPC is in use it is important that skin inspection is carried out at least twice a day, so as to ensure pressure damage or skin breaks do not occur as a result of this therapy

- Where ALL chemical thrombophrophylaxis and IPC is contraindicated, or unable to be tolerated, a neuromuscular electrical stimulation device (GEKO) may be considered in the context of research. The GEKO device activates the venous pumps of the calf and foot via low intensity transcutaneous electrical nerve stimulation of the common peroneal nerve located in the popliteal fossa and should only be used according to the NICE medical technology guidance 19. The device must be prescribed in the relevant section of the Adult prescription chart and fitted by staff that have received appropriate training and have read the Standard Operating Procedure for the use of GEKO.

APPENDIX 6: END OF LIFE/PALLIATIVE CARE

- It is important that there is a distinction made between those individuals who are terminally ill i.e. approaching death, and those who can be described as a palliative patient i.e. any person with an incurable disease at any point on the disease pathway or journey.

- Clinicians should consider VTE risk and offering appropriate thromboprophylaxis to palliative patients, particularly where the individual may have potentially reversible pathology.

- The clinician must take into account potential risks and benefits and the views of the patients, their relatives or carers and the multidisciplinary team when determining their course of action. They must always act in the best interests of the patient.

- It is not recommended that those patients admitted for terminal care or who are in the last few days of life are offered mechanical or chemical VTE prophylaxis.

University Hospitals of North Midlands NHS Trust

Patient Information Leaflet

Preventing Blood Clots

Acknowledgement
We are grateful to www.patient.co.uk and Dudley Group of Hospitals for allowing us to use material from their website and patient information booklet in producing this leaflet.

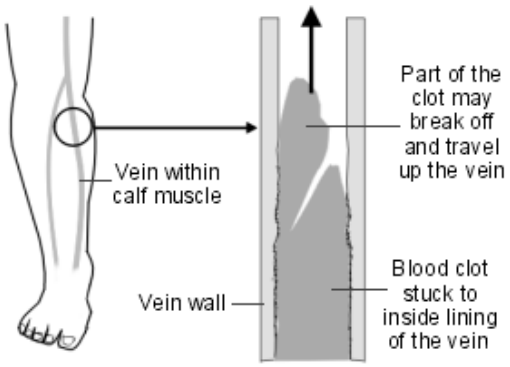
What is a deep vein thrombosis?

This is a blood clot that forms in the deep leg vein. (Veins are blood vessels that take blood towards the heart).

The larger veins that go through the muscles of the calf and thighs are different to those that you see just below the skin.

A DVT causes the blood flow to partially or completely block the vein either partially or completely filling the width of the vein.

The calf vein is the most commonly affected. It is rare for other deep veins in the body to form blood clots. A serious complication can occur if part of the blood clot breaks off and, in some cases, travel to the lungs. This is called a pulmonary embolus (PE). Appropriate treatment given can reduce this risk by about 50%.
.



Deep vein thrombosis

Why do blood clots form in leg veins?

Movement of the legs is important as the muscle action squeezes the vein to help the blood flow smoothly ensuring it does not clot as it passes through the veins. Not moving can cause the blood to flow slower through the veins. Sometimes a DVT can occur for no apparent reason.

What increases the risk of a DVT?

- A common cause is after an operation of more than 30 minutes due to lack of leg movement.
- An illness or injury that causes immobility.
- Plan, train, or car journeys etc., lasting over 4 hours.
- Women taking ‘the pill’ or ‘HRT’ containing oestrogen, as these cause the blood to clot more easily.
- Varicose veins, Phlebitis or if you have already had a DVT as these may have caused damage and inflammation to the lining of the vein (vasculitis).
- Chemotherapy drugs can sometimes damage the vein and increase the risk
- People who are obese (BMI over 30)
- Some inflammatory bowel, lung and heart conditions
- Cancer or heart failure
- Older people are at risk if they do not move around regularly.
- Pregnancy and women in the first six weeks of having a baby.
- Inherited conditions that cause the blood to clot more easily than normal such as Nephrotic syndrome, antiphospholipid syndrome and SLE (lupus).

What are the symptoms of a deep vein thrombosis?

- Pain, tenderness and swelling of the calf.
- The calf may become red and warm

A DVT can sometimes only be diagnosed if a complication occurs such as a pulmonary embolus which causes difficulty in breathing and pain in the chest.

Preventing Blood Clots in Hospital

You are at risk if you are in Hospital, especially if you are going to have surgery, however all patients are assessed for the risk of developing blood clots. As part of the assessment, your age and personal history of blood clots is taken into consideration along with any underlying medical conditions that may be present.

What measures can be taken to help prevent blood clots?

- Remain as mobile as possible
- Make sure you walk or exercise your legs as much as you can, even when sitting in a chair or lying in bed.
- Do not cross your legs for long periods of time
- Drink plenty of water.
- You may be measured and given a pair of anti-embolism stockings which need to be worn night and day. By gently compressing your legs, the stockings increase the blood flow in your legs thus preventing a blood clot from forming. Do not allow the stockings to roll down as it may affect blood flow. Report any concerns you may have i.e. redness, swelling or breaks in the skin. **If you are sent home with stockings**- Remove the stockings daily to check your skin and wash at least every 3 days by hand or machine (40 degrees) in warm water. Do not wring. They can be tumble dried. Do not bleach.
- Your doctor may prescribe a foot/ leg pump (pneumatic compression device) to help increase the blood flow or a GEKO device which stimulates the nerve at the side of the knee to activate the calf and foot muscles in increasing blood flow.

What are the risks of low molecular weight heparin (LMWH)?

You may be prescribed this drug which helps prevent your body from forming blood clots. It is usually given daily as an injection under the skin by a nurse. As Heparin is of animal origin, please discuss any concerns withyour Nurse / Doctor.
If necessary for this treatment to carry on for a period of time after discharge from hospital you will be shown how to inject yourself but if you are not confident in doing this, arrangements can be made for a district nurse to visit you.

LMWH is generally well tolerated and has very few side effects. Rarely would it result in bleeding. If you are aware of an allergy to heparin or have a bleeding disorder, please inform your doctor. Sometimes your doctor may arrange for your platelet counts to be checked to identify any rare complications of heparin.

After leaving the Hospital:

- **Remember** the best way to reduce the chances of developing a blood clot is to **exercise your legs**. Remain as active as possible and drink plenty of water.
- If advised, wear the stockings and have the daily LMWH injection for the agreed period of time.
- **If you develop calf swelling, pain or tenderness, contact your doctor.**
- **If you develop shortness of breath, chest pain or cough up blood, contact your nearest emergency department or call an ambulance**.

For further information:
Visit National Institute of Health and Clinical Excellence at NICE.org.uk

PATIENT SURNAME _____ FIRST NAME _____ HOSPITAL UNIT NO _____

VENOUS THROMBOSIS RISK ASSESSMENT

(Only for inpatients aged >18 yr). Use obstetric risk assessment for pregnant and postpartum patients

Tick risk factors in A, select prophylaxis regimen in B and complete form in C

A. Risk factors: Tick all that apply (as record of all important risk factors)

- ☐ Aged >60 yr.
- ☐ Obesity (BMI >30 kg/m²)
- ☐ Personal or 1st degree relative with history of VTE
- ☐ Medical patient with reduced mobility for >3 days
- ☐ Medical comorbidities (dehydration, heart disease, metabolic, endocrine, respiratory, acute infectious or inflammatory conditions)
- ☐ Surgical procedures lasting >90 min
- ☐ Surgery involving pelvis or lower limb lasting >60 min
- ☐ Acute surgical patient with inflammatory or intra-abdominal condition
- ☐ Surgical: if significant immobility expected
- ☐ Active cancer or ongoing cancer treatment
- ☐ Varicose veins with phlebitis
- ☐ Critical care admission
- ☐ Current use of sex hormones (combined oral) Contraceptive or Hormone replacement therapy)
- ☐ Inherited thrombophilia (hyperhomocysteinaemia, Protein C, S and antithrombin deficiencies, factor V Leiden or Prothrombin 20210A gene mutation)
- ☐ Acquired thrombophilia (antiphospholipid syndrome, Behcet's disease, myeloproliferative disease, nephrotic syndrome, paraproteinaemia, paroxysmal nocturnal haemoglobinuria)

Signature .....

B. Circle number in 'prophylaxis regimen' column most closely matching operation type and, if appropriate, the presence/absence of at least 1 risk factor

Type of surgery or medical admission	Prophylaxis regimen: At least one risk factor	Prophylaxis regimen: No risk factor present
Medical (excluding Stroke)	1	GM
Stroke	GM +/- IPC	GM +/- IPC
Active cancer (non-ambulant patient)	1	1
Surgery		
Hip replacement/fracture/revision	5	5
Total knee replacement	4	4
Multiple trauma or haemorrhagic surgical patient	6	6
Other orthopaedic surgery	3	2
Lower limb Plaster cast	3	GM
Gastro Intestinal / Bariatric surgery (procedure lasting >60 min)	3	2
Laparoscopic surgery	3	2
Neurosurgery and spinal surgery (unless patient has ruptured vascular malformation or acute haemorrhage)	6	2
Cardiac surgery (unless patient already anticoagulated)	3	2
Cancer surgery (abdominal /pelvis)	5	5
Gynaecological/Thoracic/Urological surgery (excluding Caesarean)	3	2
Day surgery	3	2
Vascular surgery	3	2

Assess risks and benefit of thromboprophylaxis for each patient and exercise clinical judgement
(for abbreviations and contraindications see overleaf)

Signature .....

C. Arrange prophylaxis, complete and sign

Regimen	Suggested prophylaxis regimen details
1	GM + LMWH (until discharge)
2	GM + GCS
3	GM + GCS + LMWH (until mobile, ~ 5–7 days)
4	GM + GCS + LMWH* for 10 days
5	GM + GCS + LMWH* for 28 days
6	GM + GCS + LMWH (start 48 hr post-op and only when CVS stable and clotting normal)

*New oral anticoagulants can be used instead of LMWH in hip/knee replacement surgery

GM = General measures
GCS = Graduated compression stockings
IPC = Intermittent Pneumatic Compression
LMWH = Low molecular weight heparin

Contraindications to GCS? Yes/No (please circle)
Contraindications to LMWH? Yes/No (please circle)
- *Is the patient already anti-coagulated?*

Contraindications to IPC Yes/No (please circle)
Contraindications to all of the above Yes/No (please circle)

If YES - consider use of the Geko device *(contraindications in stroke patients other than for research purposes)*

Tick all relevant interventions you have arranged

Risk assessment (A & B) completed ☐
GCS prescribed ☐
LMWH prescribed ☐
IPC prescribed ☐
Geko prescribed ☐

Name of prescriber _____ Bleep _____
Job title _____ Date _____
Signature _____ Time _____

Read information overleaf before signing
For further information see Medical Guidelines - Prophylaxis against Venous Thromboembolism

A VTE **re-assessment** should be completed within 24 hours of admission of hospital and when the patient's medical condition changes. Good practice also indicates a **VTE re-assessment** when the prescription chart needs to be re-written, usually after 1-4 days.

Date and time of re-assessment	Location	Number of prophylaxis regimen identified	Signature	Date and time of re-assessment	Location	Number of prophylaxis regimen identified	Signature

VERSION 4 Sept. 2016

PATIENT SURNAME _____ FIRST NAME _____ HOSPITAL UNIT NO _____

GRADUATED COMPRESSION STOCKINGS		Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
YES / NO (please circle)															
Start date __/__/__	Stop date __/__/__	Presc. sig. Authorisation section signed?					Nurses - assess fit, compliance and skin integrity on each shift and document in the care plan (see Trust SOP for the Application Anti-Embolism stockings).								

Graduated compression stockings (GCS)

- Unless contraindicated offer all surgical inpatients knee length class 2 graduated compression / anti-embolism stockings on admission
- Show patient how to wear compression stockings correctly and monitor their use
- Encourage patients to wear GCS from admission until returning to their usual levels of mobility

Contraindications to arterial GCS

- Peripheral arterial disease
- Cellulitis
- Severe dermatitis / tissue paper skin
- Recent skin graft
- Peripheral neuropathy
- Major leg deformity / Severe Oedema
- Known allergy to material of manufacture

INTERMITTENT PNEUMATIC COMPRESSION DEVICES		Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
YES / NO (please circle)															
Start date __/__/__	Stop date __/__/__	Presc. sig. Authorisation section signed?					Nurses - assess fit, compliance and skin integrity on each shift and document in the care plan (see Trust SOP for the Application Intermittent Pneumatic Compression Devices).								

Intermittent Pneumatic Compression (IPC) devices

- Surgical Patients - post-operatively as advised by consultant
- Stroke Patients - immobile patients following acute stroke as advised by consultant

Contraindications to IPC

- Known arteriosclerosis, peripheral neuropathy or peripheral vascular disease
- Massive oedema of the legs or pulmonary oedema secondary to congestive heart failure
- Local leg infection, dermatitis, vein ligation or skin graft
- Extreme deformity of leg
- Suspected pre-existing DVT or acute DVT
- Presence of malignancy in legs

GEKO DEVICE		Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
YES / NO (please circle)															
Start date __/__/__	Stop date __/__/__	Presc. sig. Authorisation section signed?					Nurses - assess fit, compliance and skin integrity on each shift and document in the care plan (see Trust SOP for the Application of the Geko Device).								

Geko Device

The patient must have been identified as being contraindicated to the use of other forms of mechanical and chemical prophylaxis before the Geko device can be used. The device **must be changed every 24 hours.**

Contraindications to the Geko device

- Confirmed or suspected VTE
- Sore, infected or inflamed areas, broken skin or skin eruptions, e.g. phlebitis, thrombophlebitis, varicose veins

Low molecular weight heparin (LMWH) *Contraindications*

Active bleeding		Known bleeding disorder		Previous heparin induced thrombocytopenia	
Risk of significant bleeding		Allergy to heparin/LMWH		Anticoagulated with warfarin or a oral DOAC	
Platelet count $<75 \times 10^9$/L		Haemorrhagic stroke		Uncontrolled hypertension (>230 mmHg systolic or >120 mmHg diastolic)	
Coagulopathy (e.g. acute liver failure)		Renal impairment (reduce dose LMWH or UFH)		Acute infective endocarditis	

Dosing and precautions with LMWH

- **Be aware that Low Molecular Weight Heparins are of animal origin and this may be of concern to some people** (See Religion or belief: a practical guide for the NHS / C28 Thrombo Prophylaxis policy)
- If LMWH contraindicated prescribe GCS or for stroke patient, IPC/Geko
- If patient normally on anticoagulant and INR sub-therapeutic contact anticoagulation team, ext 74252. Out-of-hours, contact oncall haematologist (via call centre)
- Monitor for any bleeding
- If renal function deteriorates, reduce dose of LMWH or use UFH
- Do not undertake insertion of a spinal/epidural catheter, lumbar puncture or a deep peripheral nerve block within 12 hr following administration of prophylactic LMWH. LMWH can be administered 4 hours following withdrawal of a spinal/epidural catheter
- Monitor for HIT in surgical patients and if patient has received UFH (refer to trust guidelines)

Medical patient

- **Standard thromboprophylaxis dose:** as per pharmaceutical guidelines to start as soon as possible and within 14 hours of admission
- If CrCl <30ml/min OR patient weight <45 kg – use a reduced dose as per guidelines

Surgical patient

- **Dose:** dalteparin 2500-5000 units S/C once daily. Dose decided by case and risk by senior surgeon, to start as soon as possible and within 14 hours of admission

Weight

- Where an individual is of extreme weight (underweight or obese) the dose of pharmacological thromboprophylaxis may need to be adjusted to ensure adequate prophylaxis. Where doubt exists regarding prophylactic dosage, advice should be sought from a Haematologist.

Patients aged 16-18

- For pharmacological VTE prophylaxis, in people under 18, follow the recommendations on apixiban, aspirin, dabigatran etexilate, fondaparinux sodium, low-molecular-weight heparin (LMWH), and rivaroxaban as within the NICE Guidance - Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism (NG89).

Surgical Patients

- If due for afternoon surgery consider IV fluids but ideally ensure they take clear fluids liberally until 1130 hr - **see Pre-operative fasting principles guideline in Surgical guidelines**
- If appropriate, consider using regional anaesthesia (risk of VTE higher with general anaesthesia)
- If patient has existing or recent (within 1 month) VTE and if anticoagulation contraindicated, consider vena-cava filter
- Encourage patient to mobilise. If immobilised, arrange leg exercises as soon as possible after surgery

General Measures (GM)

- Do not allow patient to become dehydrated
- Encourage patient to mobilise

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NHS Trust

Antenatal assessment and management (to be assessed at booking and repeated if admitted, excluding admissions if there is imminent labour/ delivery)

Obstetric thromboprophylaxis risk assessment and management

Patient Identifiable Sticker	Date	Risk score	Suggested prophylaxis	Signature

Previous VTE on long term anticoagulation Previous recurrent VTE Antithrombin deficiency Antiphospholipid syndrome with previous VTE Mechanical heart valve	**VERY HIGH RISK** **Antenatal high dose LMWH** Specialist management by experts in haemostasia and pregnancy
1. Single previous VTE+ • Thrombophilia • Family history • Unprovoked/estrogen-related 2. Thrombophilias- Homozygous FVL Combined thrombophilia defects/Prothrombin or homozygon or gene mutation Heterozygous prothrombin C	**HIGH RISK** Requires antenatal prophylaxis with LMWH Refer to trust- nominated thrombosis in pregnancy expert/team
MEDICAL CO-MORBIDITIES, e.g. Heart or lung disease, SLE, cancer,inflammatory Conditions, nephritic syndrome, sickle cell disease, user, surgical procedure, eg. appendicectomy and ovarian Hyperstimulation Syndrome Heterozygous FV Leiden Heterozygous prothrombin gene mutation	**INTERMEDIATE RISK** 1. Requires antenatal TEDs 2. Requires antenatal prophylaxis with intravenous drug LMWH when an inpatient, excluding admissions if there is imminent labour/delivery 3. If any concerns seek advice from the Thrombosis in Pregnancy expert/team via Trust switchboard
Age > 35 years Obesity (BMI > 30kg/m2) Parity ≥ 3 Smoker greater than 15 per day Gross varicose veins Current systemic infection Immobility, e.g. paraplegia, SPD, long-distance travel greater than 4 hours Pre-eclampsia Dehydration/hyperemesis Multiple pregnancy or ART	3 or more risk factors/2 or more if admitted <3 risk factors **Lower risk** Mobilisation and avoidance of dehydration

Postnatal assessment and management (to be assessed on delivery suite)

- Any previous VTE
- Anyone requiring antenatal LMWH
- High-risk thrombophilia
- Low-risk thrombophilia + FHx

→ **HIGH RISK**
At least 6 weeks' postnatal prophylactic LMWH

- Caesarean section in labour
- BMI ≥ 40 kg/m²
- Readmission or prolonged admission (≥ 3 days) in the puerperium
- Any surgical 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 I DM with nephropathy, sickle cell disease, current IVDU

→ **INTERMEDIATE RISK**
At least 10 days' postnatal prophylactic LMWH

NB If persisting or > 3 risk factors consider extending thromboprophylaxis with LMWH

- 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
- Preterm 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

Two or more risk factors → **INTERMEDIATE RISK** (see above)

Fewer than two risk factors →

LOWER RISK
Early mobilisation and avoidance of dehydration

Antenatal and postnatal prophylactic dose of LMWH

Weight < 50 kg – 20 mg enoxaparin/2500 units dalteparin/3500 units tinzaparin daily
Weight 50–90 kg – 40 mg enoxaparin/5000 units dalteparin/4500 units tinzaparin daily
Weight 91–130 kg – 60 mg enoxaparin/7500 units dalteparin/7000 units tinzaparin daily
Weight 131–170 kg – 80 mg enoxaparin/10000 units dalteparin/9000 units tinzaparin daily
Weight > 170 kg – 0.6 mg/kg/day enoxaparin/ 75 u/kg/day dalteparin/ 75 u/kg/day tinzaparin

Information and assessment

Provide patient information leaflet on '**preventing Blood clots'**

General Measures (GM)

- Do not allow patients to become dehydrated
- Encourage patients to mobilise, or arrange leg exercises if immobilised, as soon as possible after surgery
- Consider using regional anaesthesia if appropriate (Risk of VTE is higher with general anaesthesia)

Graduated Compression Stockings (GCS)

- On admission to hospital, offer all inpatients graduated compression stockings, unless contraindicated (see below).
- Staff trained in the use of compression stockings should show the patient how to wear them correctly and monitor their use
- Encourage patients to wear GCS from admission until they return to their usual levels of mobility

- **CONTRAINDICATIONS TO GCS**

Peripheral Vascular disease	Severe dermatitis	Leg deformity
	Recent skin graft	Peripheral neuropathy

Low Molecular Weight Heparin (LMWH)

CONTRAINDICATIONS AND PRECAUTIONS WITH LMWH

Active bleeding		Known bleeding disorder		Previous Heparin induced thrombocytopenia	
Platelet count <75X10^9/L		Allergy to Heparin/LMWH		On anticoagulation in therapeutic range	
		Haemorrhagic Stroke in last 4 weeks		Uncontrolled Hypertension (>200 systolic or >120 diastolic)	
Coagulopathy		Renal Impairment (reduce dose)		Acute bacterial Endocarditis	

- Stop LMWH if any vaginal bleeding or labour begins
- Discontinue prophylactic LMWH on the day of planned delivery
- High prophylactic dose or therapeutic dose- change to prophylactic dose on the day before the planned delivery
- Do not administer LMWH within 4 hours of inserting or withdrawing a spinal catheter
- Regional techniques should not be used until 12hrs after the previous prophylactic dose of LMWH and the epidural catheter should not be removed within 10-12 hrs of the most recent LMWH

- **Standard thromboprophylaxis dose**

Early Pregnancy weight	Dalteparin
<50kg	2500 Units OD
50-90kg	5000 Units OD
91-130 kg	7500 Units OD
131-170 kg	10000 Units OD
> 170 Kg	75 units/kg/day
High prophylactic dose	Wt corresponding dose× BD
Treatment dose	100 units/kg/12 hourly

APPENDIX 10

DH POLICY IMPLEMENTATION ON VTE RISK ASSESSMENT – DAY CASE PROCEDURES

Patients who fall into the categories below are for the purposes of VTE risk assessment defined as not requiring thromboprophylaxis and will be counted within the "cohort approach" (unless the they unexpectedly require overnight admission to hospital in which case they should no longer be treated as a day case and assessed according to standard practice).

Medical day case patients

- Medical day case reviews not associated with any invasive interventional procedure e.g. results or general review, blood transfusion, intravenous infusion therapies e.g. bisphosphonates, monoclonal antibody, immunoglobulin infusions
- Haemodialysis
- Diagnostic and therapeutic interventional cardiology day case procedures
- Endoscopy, including sigmoidoscopy, colonoscopy and gastroscopy
- Bronchoscopy
- Routine day case chemotherapy
- Pain team local and regional anaesthetics
- Medical minor day case procedures performed under local anaesthetic e.g. simple joint injections, bone marrow examination, aspiration of pleural fluid or ascites, lumbar puncture
- Interventional radiological procedures e.g. CT guided biopsy
- Lithotripsy

Surgical day case patients

- Patients undergoing a surgical procedure with local anaesthetic local infiltration with no limitation of mobility
- Ophthalmological procedures with local anaesthetic/regional/sedation and not full general anaesthetic
- Endoscopy procedures – cystoscopy, upper and lower GI endoscopy
- Other similar minor procedures lasting less than 90 minutes which require regional anaesthetic or sedation and not full general anaesthetic to be signed off by the Medical Director

All patients admitted for intra-abdominal or lower limb day case surgery lasting for greater than 90 minutes require VTE assessment and pharmacological prophylaxis if clinically appropriate.

All surgical patients undergoing a procedure that will impair their mobility post procedure require VTE assessment and treatment where indicated. In some patients this therapy will need to be continued for 5 days or longer.

This is general guidance and, as ever, clinical judgement in individual patients overrides.

The Trust Medical Director has devolved the task of agreeing additional cohort patients (other than those mentioned in Department of Health letter dated July 2010, 'DH Policy Implementaion on VTE risk assessment: day case procedure cohorts') to the Deputy Medical Director.

This takes place following discussion and debate at the Trust Thrombosis Steering Group

List of Additional Cohort Patients and their Specialities at University Hospital of North Midlands

- RPD patients – patients undergoing sleep studies
- Ambulatory heart failure patients attending SHINE clinic as a day case
- Obstetric patients undergoing medical review
- Gynaecology patients undergoing LA for hysteroscopy, endometrial biopsy +/- insertion of Mirena +/- polypectomy, endometrial ablation, hysteroscopic sterilisation "Essure", Versapoint resection / ablation of submucous fibroid, hysteroscopic retrieval of missed IUCD
- Ophthalmology patients – day case local/general anaesthetic - (surgery less than 90 minutes - cataracts, squints and some corneal procedures) with no other risk factors and no effects on mobility
- Day case admissions to the Surgical Day Case Unit - local/general anaesthetic - (surgery less than 60 minutes)– and with no impact on mobility – cystoscopy, vasectomy cystoscopy, epididymal cyst, other minor urological surgery hysteroscopy, laparoscopy, vulval biopsies, evacuations, sterilisations, other minor gynaecological surgery, minor dental procedures, minor ENT procedures, minor plastics procedures, incision & drainage of abscess, pilonidal sinus, anal fistula, minor day case colo-rectal surgery, procedures for chronic pain patients, minor breast surgery, non-inguinal hernia repair, all LA procedures
- Orthopaedic day case admissions

Hospital- Associated PE / DVT RCA Tool

NHS
University Hospitals of North Midlands
NHS Trust

VTE – Root Cause Analysis (RCA)			
Please Complete the fields below			
Patients Name:			
Unit Number:		Datix REF/ID:	REF
Date of Birth:			
Date of Relevant admission to which VTE episode related to:	Click Here		
Ward VTE episode relates to:	Click Here	Pod/Theatre Number:	
Name of consultant for relevant VTE admission:			
Division:	Click Here		
Directorate:	Click Here		
Type of VTE:	Click Here		
Patient Deceased	Click Here **If Yes please state DOD:** Click Here		
Diagnostic Information:	Result: Please complete the below RCA to determine if all appropriate Thromboprophylaxis was Assessed for, Prescribed and Administered during the admission period.		
Assessment			
Type of admission:	Click Here		
Reason for admission:			
VTE risk assessment completed on admission:	Click Here		
Was the VTE Risk assessment completed fully and appropriate to the patients level of risk?	Choose an item.		
Prophylaxis Regimen selected *(Part B of VTE Risk Assessment)*	Choose an item.		
Were Contraindications to any Thromboprophylaxis considered? *(found in section C of VTE Risk Assessment)*	Choose an item.		
Was the VTE risk re-assessed at the point of Consultant review	Click Here		
Did any Thromboprophylaxis treatment change as a result of the re-assessment?	Click Here	***If Yes, Give details:***	
Patient Weighed:	Click Here	**If yes weight:**	
Thromboprophylaxis			
Low Molecular Weight Heparin (LMWH) prescribed:	Click Here		
Date first dose prescribed:	Click here to enter a date.		
Please state type, dose and frequency of Chemical Thromboprophylaxis prescribed:	**Type:**	Choose an item.	
	Dose:		
	Frequency:		

PROUD TO CARE

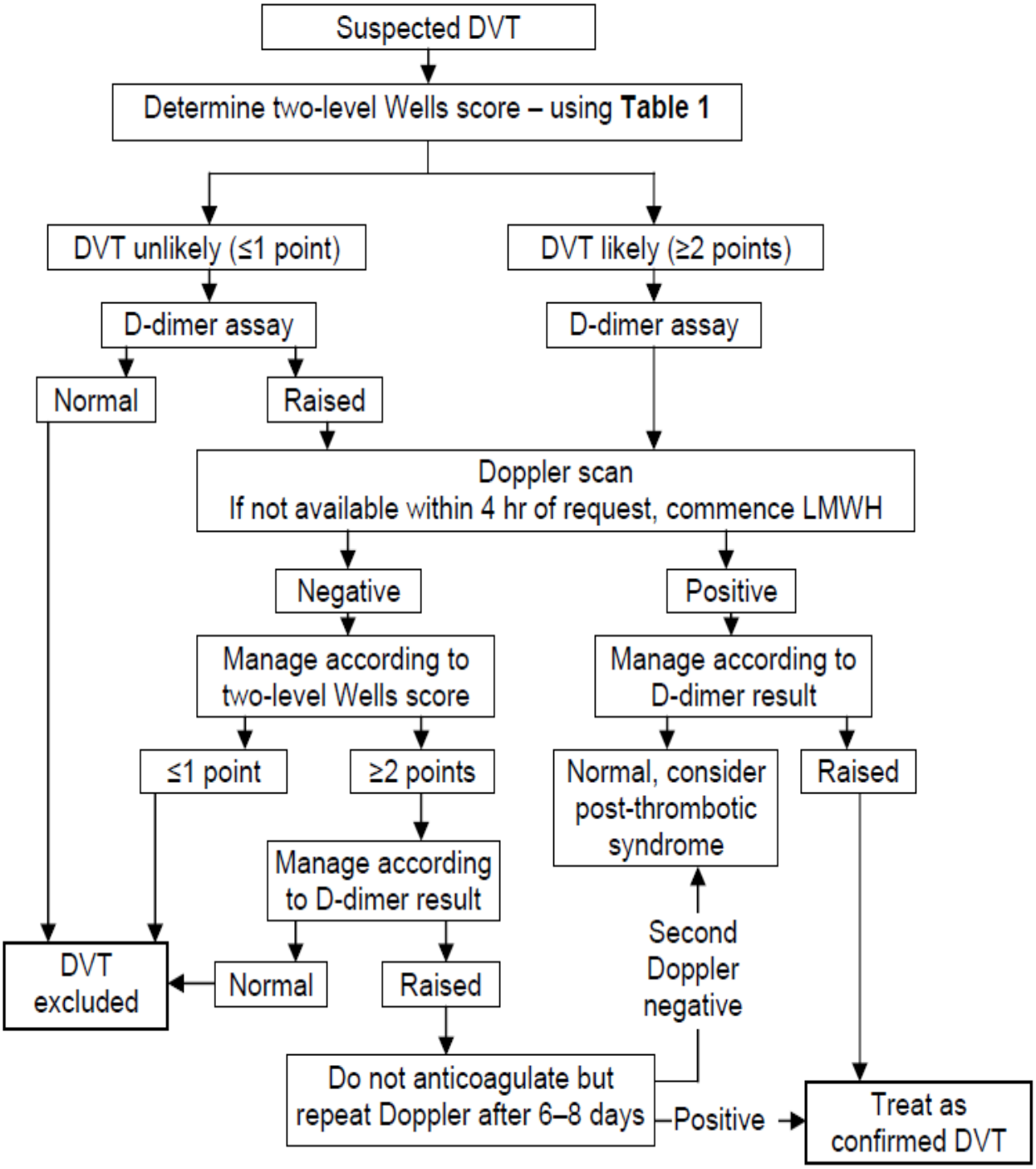
VTE RCA form Version 2 2020

All doses administered:	Click Here
If no, Number of doses missed:	Choose an item.
Is there evidence of rationale for these omissions in the medical notes or in the prescription chart (e.g. correct codes used)?	Choose an item. *If other, provide details:*
Mechanical Thromboprophylaxis required according to Prophylaxis Regimen?	Click Here
Mechanical Thromboprophylaxis prescribed appropriately and signed for daily by Nursing Staff?	Choose an item.
Mechanical Thromboprophylaxis used:	Choose an item.
Duration of Thromboprophylaxis:	Choose an item.
Root Cause	
Root Cause:	Choose an item.
Conclusions:	Click Here
NB. VTE deemed potentially avoidable if any aspects of VTE care were missing e.g. no risk assessment, incorrect risk assessment, inadequate Thromboprophylaxis (TP), no documentation or incorrect duration of mechanical TP (if indicated)	
Comments:	
RCA Completed by:	
Date RCA Completed:	Click Here
Official Use Only (Quality Improvement Facilitator – VTE)	
Outcome:	Click Here
Date RCA presented:	Click Here
Has Duty of Candour been Triggered:	Click Here
Details of what patient/family have been told:	
Has written notification been sent to the patient as per policy (RM12):	Click Here
Duty of candour date:	Click Here
Datix Updated:	
Reported as Serious Incident (SI)	Click Here on Click Here

APPENDIX 12

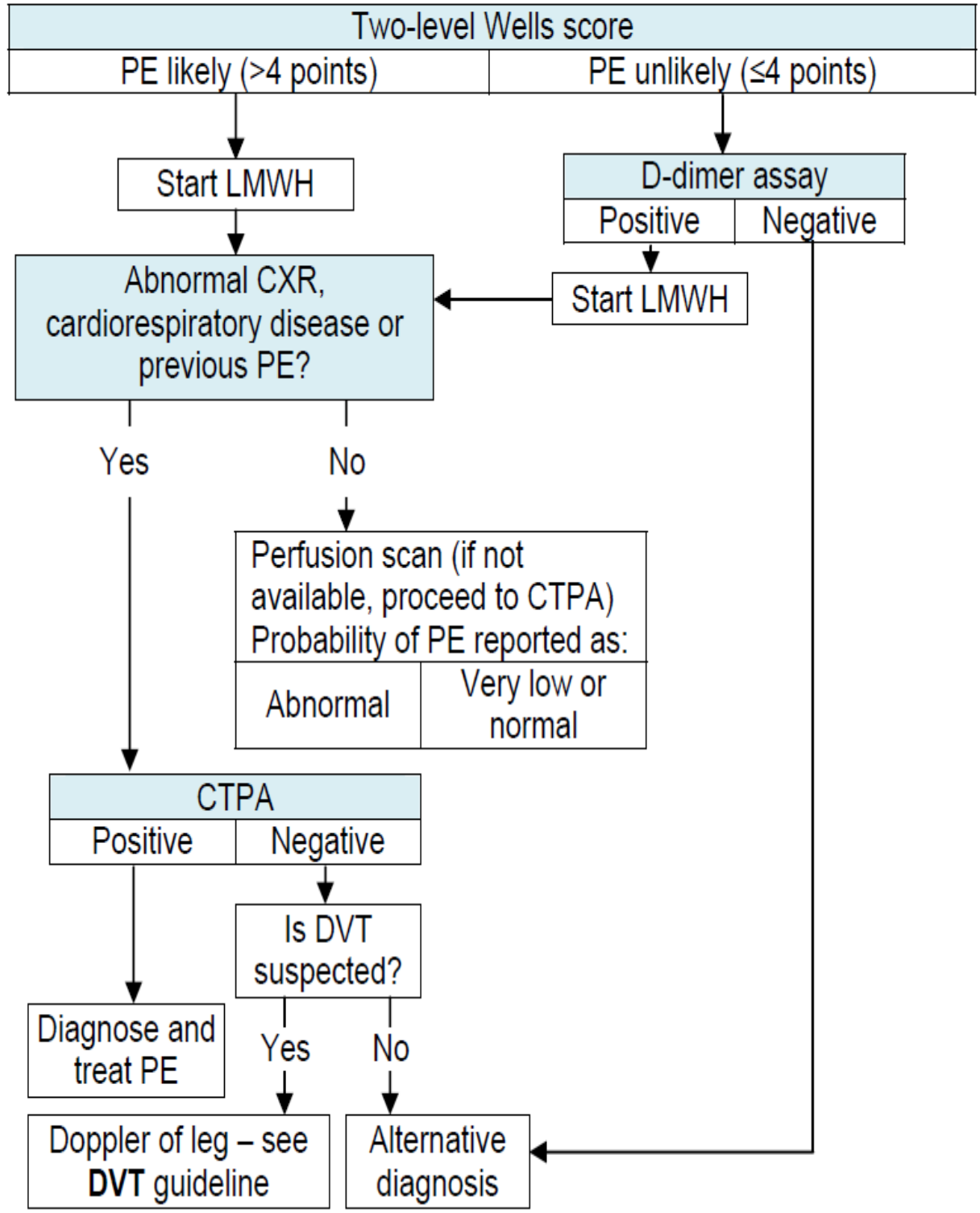
DEEP VENOUS THROMBOSIS (DVT)

Algorithm for DVT management



SMALL-TO-MODERATE PULMONARY EMBOLISM

Flowchart for diagnosis of non-massive PE



Management of patient once VTE confirmed

Acute Venous Thromboembolism Referral Pathway (PE/DVT)

If you require specific advice or have any queries then you can contact the Staffordshire Thrombosis and Anticoagulation Centre (STAC) 01782 674252 or Clinical advice 07623616911

Standard Operating Procedure (SOP)

C28-SOP-1 Application of Anti-Embolic Stockings
March 2021

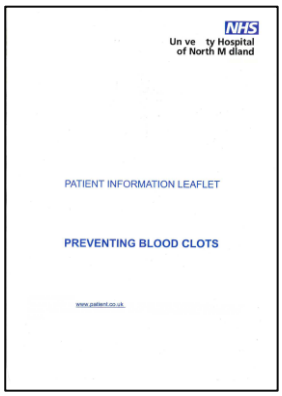
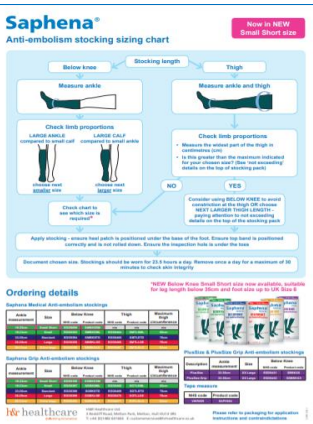
University Hospitals of North Midlands NHS Trust

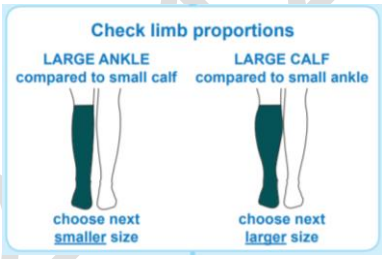
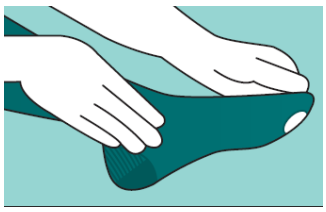
The purpose of this SOP is to set out a standard process for ensuring that all patients provided with anti-embolism stockings have them fitted and monitored correctly and that staff are appropriately trained.

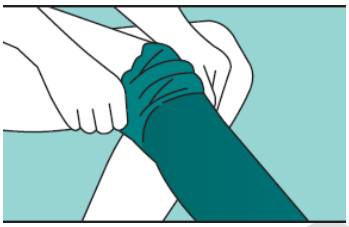
This Document applies to ALL clinical (nursing/midwifery/operating department practitioners/medical) staff at the University Hospitals of North Midlands

This SOP links to Trust Policy C28 - An Organisation-wide Policy for the Management of Thrombo-prophylaxis

Part A: Description of Procedural Steps

No.	Description of Procedural Steps	
1	All adult patients aged 16 years of age or over must be risk assessed for VTE and bleeding risk on admission to hospital using the UHNM VTE Risk Assessment Proforma which is based on the national tool and NICE Guidance 89: Venous thromboembolism in over 16's: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism.	
2	If the patient has been identified as requiring prophylaxis in the form of anti-embolism stockings then these must be fitted by a member of staff who has received the appropriate training and is aware of and has read the 'Standard Operating Procedure for the Application of Anti-embolism Stockings'	
3	Ensure that the patient receives an explanation of the care required whilst wearing the stockings both verbally and in written format (Trust information leaflet, 'Preventing Blood Clots').	
4	An appropriate member of staff from the ward/department (can be clinical support worker or registered nurse/midwife) should then measure and fit the patient with anti-embolism stockings in accordance with manufacturer's instructions as follows: See intranet for visual assistance	

No.	Description of Procedural Steps	
5	**Procedure for the application of stockings :** -Measure the patient's ankle in centimetres (two fingers width above ankle bone)	
	-Choose the appropriate size according to the ankle measurement identified on the packaging (small, standard, large and extra-large, bariatric)	Saphena Grip Anti-embolism stockings Ankle measurement / Size / Below Knee (NHS code, Product code) / Thigh (NHS code, Product code) / Maximum thigh circumference 19-23cm — Small Short — EGD9100 — SGBKSSM — n/a — n/a — n/a 19-23cm — Small — EGD8397 — SGBKSML — EGD8468 — SGTLSML — 65cm 23-26cm — Standard — EGD8398 — SGBKSTD — EGD8469 — SGTLSTD — 70cm 26-29cm — Large — EGD8399 — SGBKLGE — EGD8470 — SGTLLGE — 78cm 29-33cm — Extra large — EGD8400 — SGBKXLG — EGD8471 — SGTLXLG — 82cm
	-Review calf size in proportion to ankle measurement and select appropriate stocking size. Refer to manufacturer's compression table if required. Document the measurements and stocking type in the patient's care plan	
	Check that the garment is not inside out -Insert hand into the foot of the stocking, as far as the heel pocket -Grasp the centre of the heel pocket and keeping hold of it, turn the stocking inside out -Turn back to heel area only -Carefully position the stocking over the foot **making sure that the heel patch is aligned under the heel**. This will need to be checked when the stocking is in place. -Taking hold of the turned down stocking at the front of the foot, gently ease the stocking over the ankle and up the leg, taking care not to drag the fabric against the skin	
	-Smooth out any excess material causing creases on the foot by pulling the open toe section of the stocking forward -Ensure the top of the toes are covered and the open toe section is comfortably located under the toes area. **It is important not to push the toes through the open toe section**	
	-Pull the stocking up over the calf, ensuring that any wrinkles are smoothed out and that the band at the top is flat and not rolled over -Make sure that the stocking finishes two fingers width down below the back of the knee joint. This is important to ensure the safe flow of blood	
6	**For thigh length stockings: Firstly follow the**	

No.	Description of Procedural Steps	
	steps above: -Pull the stocking over the knee, making sure that the darker colour of the stocking ends below the knee -Ease the remaining section past the knee to the thigh. The top band should rest in the upper thigh area below the buttocks -If the patient's thigh is extra-long stretch out the upper part of the stocking gently until it fits the desired length -Smooth out any wrinkles in the stockings and ensure the top support band sits flat against the thigh and not rolled over It is important to check that the non-graduated knee area and heel section are in the correct place	 
7	**Ensure stockings are not rolled down the leg or the toe section is folded back on itself. This will reduce the flow of blood in the legs and put the patient at risk of developing a blood clot in the leg**	
8	To remove the stocking – grasp the top of the stocking and pull gently, but firmly down the calf and over the heel and foot. Please take care if there are any wounds or areas of weak/delicate skin.	
9	Patients should wear the stockings for 23 hours a day, taking them off once a day to have a bath/shower/wash. Skin must be dried properly before re-applying the stockings and heels and toes checked for any discolouration or swelling. For patients deemed at higher risk of pressure damage, heels should be visually checked at least three times a day for any signs of pressure damage. Findings should be documented /recorded in the care plan.	
10	If the patient or nurse/midwife reports any signs of leg swelling or oedema then the patient should be re-measured. If an increase in size is indicated this should be documented within the care plan and reported to the medical staff.	
11	**It is important to make sure that if any other brand of anti-embolism stockings are used then the manufactures instructions for measuring and application should be followed**	
12	The patients should **not** wear anti-embolism stockings if they have any of the following contraindications: • Known peripheral vascular disease or peripheral neuropathy • Absent/weak foot pulses • History of intermittent claudication on rest • Leg/foot ulceration • Fragile 'tissue paper skin' • Leg oedema or pulmonary oedema from congestive cardiac failure (CCF) • Cellulitis • Known allergies to components / materials of the stockings	

No.	Description of Procedural Steps
	• Heel pressure sores
13	If the patient refuses to wear the stockings, the Registered Nurse/Midwife in charge of the patient's care should firstly discuss the risks and benefits of wearing the stockings with the patient and secondly, document the discussions and outcome within the patient's care plan. This should also be reported and discussed with the medical staff.
14	The Ward Manager should ensure that there is a robust system in place to record the numbers of staff that have received training in the application of anti-embolism stockings and all new staff should receive training in the fitting of anti-embolism stockings as part of their induction.

Standard Operating Procedure (SOP)

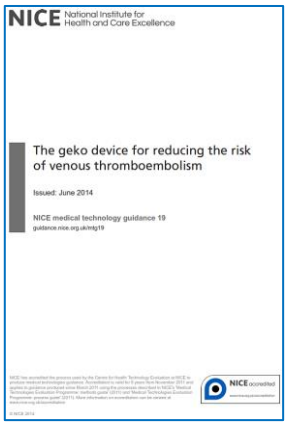
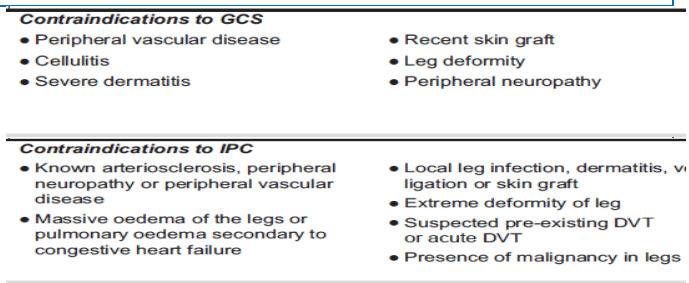
C28-SOP-2 Application of GEKO Device
March 2021

University Hospitals of North Midlands NHS Trust

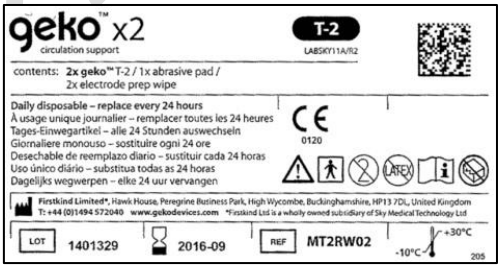
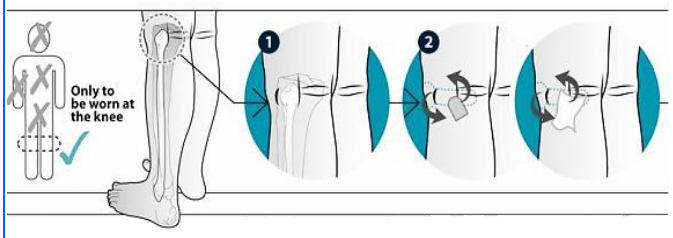
The purpose of this SOP is to set out a standard process for ensuring that all patients provided with the **Geko™** (OnPulse) (as part of their VTE prophylaxis) have them fitted and monitored correctly and that staff are appropriately trained.

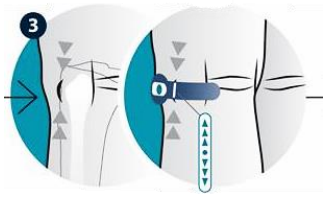
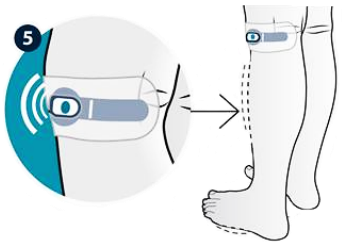
This Document applies to ALL clinical (nursing/midwifery/operating department practitioners/medical) staff at the University Hospital of North Midlands.

This SOP links to Trust Policy C28 - An Organisation-wide Policy for the Management of Thrombo-prophylaxis

No.	Description of Procedural Steps	
1	All adult patients aged 16 years of age or over must be risk assessed for VTE and bleeding risk on admission to hospital using the University Hospitals of North Midlands VTE Risk Assessment Proforma which is based on the NICE Guidance 89: Venous thromboembolism in over 16's: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism.	
2	The **Geko™**device should **only be used according to the 'NICE medical technology guidance 19' which states that "the device is supported for use in patients who have a high risk of venous thromboembolism and for whom other mechanical and pharmacological methods of prophylaxis are impractical or contraindicated."**	
3	**The patient must have been identified as being contraindicated to the use of other forms of mechanical prophylaxis such as anti-embolism stockings and sequential compression devices following the VTE assessment process** before the **Geko™**device can be used (see guidance on contraindications to mechanical thrombo-prophylaxis and chemical thrombo-prophylaxis with Low Molecular Weight Heparin (LMWH) found on page 3 of the patient prescription chart)	

No.	Description of Procedural Steps	
		Low molecular weight heparin (LMWH) *Contraindications* Active bleeding; Known bleeding disorder; Previous heparin induced thrombocytopenia Risk of significant bleeding; Allergy to heparin/LMWH; Anticoagulated with INR in therapeutic range Platelet count <75 x 10^9/L; Haemorrhagic stroke; Uncontrolled hypertension (>230 mmHg systolic or >120 mmHg diastolic) Coagulopathy (e.g. acute liver failure); Renal impairment (reduce dose LMWH or UFH); Acute infective endocarditis **Dosing and precautions with LMWH** • If LMWH contraindicated prescribe GCS or for stroke patient, IPC • If patient normally on anticoagulant and INR sub-therapeutic contact anticoagulation team, ext 74252. Out-of-hours, contact on-call haematologist (via call centre) • Monitor for any bleeding • If renal function deteriorates, reduce dose of LMWH or use UFH • **Do not** undertake insertion of a spinal/epidural catheter, lumbar puncture or a deep peripheral nerve block within 12 hr following administration of prophylactic LMWH. LMWH can be administered 4 hours following withdrawal of a spinal/epidural catheter • **Monitor for HIT** in surgical patients and if patient has received UFH (refer to trust guidelines) **Medical patient** • **Standard thromboprophylaxis dose:** dalteparin 5000 units S/C once daily • If eGFR 10–30 mL/min **OR** patient weight <45 kg – use dalteparin 2500 units S/C once daily **Surgical patient** • **Dose:** dalteparin 2500–5000 units S/C once daily. Dose decided by case and risk by senior surgeon
4	If the patient has been identified as requiring VTE prophylaxis in the form of the **Geko™**device, this must be identified on the VTE proforma and also **prescribed in the relevant section of the patient's prescription chart** (page 3)	GEKO DEVICE | Date … Date YES / NO (please circle) Start date __/__/__ | Stop date __/__/__ | Presc. sig. Authorisation section signed? | Nurses - assess fit, compliance and skin integrity on each shift and document in the care plan (see Trust SOP for the Application of the Geko Device). **Geko Device** The patient must have been identified as being contraindicated to the use of other forms of mechanical and chemical prophylaxis before the Geko device can be used. The device **must be changed every 24 hours.** ***Contraindications to the Geko device*** • Confirmed or suspected VTE • Sore, infected or inflamed areas, broken skin or skin eruptions, e.g. phlebitis, thrombophlebitis, varicose veins
5	The **Geko™**device should **only be used according to the NICE medical technology guidance 19.** **It is not indicated for use within the University Hospitals of North Midlands in the following:** • for the prevention and treatment of oedema • for promoting wound healing • for the treatment of venous insufficiency and ischemia • for promoting the healing of tendon and ligament injuries **The Trust cannot take any responsibility for any issues that may arise if the device is used in cases that are not included in the relevant NICE guidance. The responsibility for ensuring the correct usage lies with the Consultant in charge of the patient's care**.	
6	If the patient has been identified as requiring VTE prophylaxis in the form of the GEKO device then this must be used and fitted by a member of staff who has received the appropriate training and who has been deemed competent to fit the device and is aware of and has read the 'Standard Operating Procedure for the Use of **Geko™** Device.'	
7	**It is important that these devices are not fitted to patients with confirmed or suspected VTE.** Clinicians should assess patients and consider any additional risks associated with increasing the blood flow e.g. following surgery where muscle contractions may disrupt the healing process	
8	**Health and Safety Issues** -Specialist medical opinion should be obtained before the device is used on patient's with implanted electronic devices such as a cardiac pacemaker -Medical advice should be sought when the patient is pregnant, has diagnosed heart conditions or epilepsy, or following surgery where muscle contractions may disrupt the healing process -The device should be removed before the patient undergoes MRI as it contains ferromagnetic components	

No.	Description of Procedural Steps
	-The device should be switched off during ECG monitoring using leg electrodes as it may interfere with ECG leg electrode signals -Do not use in proximity (i.e. within 1m) of short wave/microwave equipment, as this may affect the device -Portable and mobile RF communications equipment can affect medical electrical equipment -Do not use on patients connected to high frequency surgical equipment, as this may result in burns or damage to the device -Do not use if packaging is open or appears damaged. -Do not use a device that appears to be damaged. -Do not use the device in close proximity to heat sources, such as fires or radiant heaters, as excess heat may affect the performance of the device
9	**Geko™** is intended for use on a single patient as part of a single course of treatment. The device may be temporarily removed and reapplied if necessary, for example to prevent the device getting wet during bathing or showering.
10	There is a bar code/label on the carton/foil pouch of the device packaging (lot number). This must be removed and secured in the patient's medical records as evidence that the device has been used and to provide traceability if any issues/problems are encountered whilst using the device. 
11	**The Geko™** device can be used on one or both legs. The date and time that the device was applied should be recorded on the device and signed in the prescription chart as the device will need to be changed in 24 hours as the battery life cannot be guaranteed after 24 hours. 
12	The device is to be secured on the outside of the leg, just below the level of the knee, at the centre of the fibula head. The fibula head can be felt as a round protrusion at the very top of the fibula bone Using grey abrasive pad, gently exfoliate area of skin that will make contact with the electrodes (DO NOT over exfoliate especially if skin is fragile damaged through abrasion). Wipe thoroughly with the electrode preparation wipe. For best results, remove any excess hair. 

No.	Description of Procedural Steps	
13	After 30 seconds peel off the protective film and secure the device to a straight leg so that the raised indicator line on the device (marked with arrows) is positioned at the centre of the fibula head. The head of device should be positioned towards the front of the leg – with the tail of the device wrapped around and to the rear of the leg below the crease of the knee	
14	For additional adhesion, apply one of the supplied adhesive strips over the device	
15	Use a short press/click of the button (0.5 seconds) to activate the device and further short clicks to set the appropriate level. You can tell when this is reached when there is a discernible movement of the specified muscles in the lower leg – need to look at patient's leg	
16	To accommodate any variation in stimulus due to leg position changes, simply turn the setting up or down. There are 7 levels (indicated by the flashing light). In most cases levels 3 or 4 are ideal. To reduce the levels, one by one, use a longer click (1 to 2 seconds)**.**To turn off the device completely, hold the button down until the light stops flashing	
17	To remove the device, lift the tail end first and applying a constant gentle force. Excessive force may damage the device.	
18	The patient must be given both verbal and written information about the **Geko™** including what they can do to help themselves with VTE prevention and to aid compliance with the use of the device.	
19	On each shift the Nurse in Charge of the patient's care should check that the patient's **Geko™ device/s** are in place correctly and that they are not having any pain or discomfort. This should be documented in the care plan. If the patient or nurse/midwife reports any signs of leg swelling or oedema then the use of the **Geko™** device/s should be discontinued. It should be documented within the care plan and reported to the medical staff.	

No.	Description of Procedural Steps
20	The patients should not have the **Geko™** device applied if they have any of the following: • sore, infected or inflamed areas, • broken skin or skin eruptions, e.g. phlebitis, thrombophlebitis, • varicose veins • Confirmed or suspected VTE
21	If the patient refuses to have the **Geko™** device applied, then the Registered Nurse/Midwife in charge of the patient's care should firstly discuss the risks and benefits of using the device with the patient and secondly, document the discussions and outcome within the patient's care plan. This should also be reported and discussed with the medical staff.
22	It is important to remember that the GEKO device must be used and fitted by a member of staff who has received the appropriate training and who has been deemed competent to fit the device and is aware of and has read the 'Standard Operating Procedure for the Use of **Geko™** Device.'
22	The Ward Manager should ensure that there is a robust system in place to record the numbers of staff that have received training in the use of the **Geko™** device and all new staff should receive training in the use of the **Geko™ device/s** as part of their induction if utilized within their clinical area

Standard Operating Procedure (SOP)

C28-SOP-3 Application of Sequential Compression Devices
March 2021

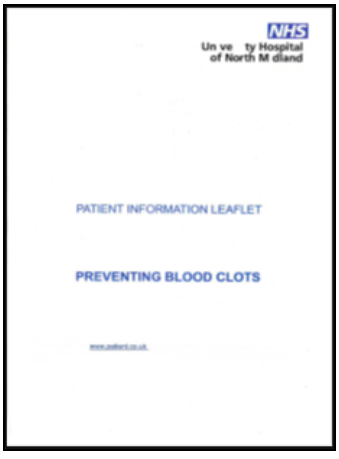
University Hospitals of North Midlands NHS Trust

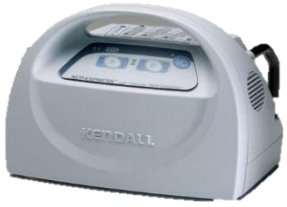
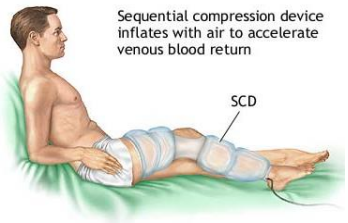
The purpose of this SOP is to set out a standard process for ensuring that all patients provided with sequential compression devices & sleeves (as part of their VTE prophylaxis) have them fitted and monitored correctly and that staff are appropriately trained.

This Document applies to ALL clinical (nursing/midwifery/operating department practitioners/medical) staff at the University Hospitals of North Midlands

This SOP links to Trust Policy C28 An Organisation-wide Policy for the Management of Thromboprophylaxis

Part A: Description of Procedural Steps

No.	Description of Procedural Steps	
1	All patients aged 16 years of age or over must be risk assessed for VTE and bleeding risk on admission to hospital using the UHNM VTE Risk Assessment Proforma which is based on NICE Guidance 89: Venous thromboembolism in over 16's: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism.	
2	If the patient has been identified as requiring prophylaxis in the form of a sequential compression sleeve then the device and sleeve must be used and fitted by a member of staff who has received the appropriate training and is aware of and has read the 'Standard Operating Procedure for the Use of Sequential Compression Devices.'	
3	Within the Acute Stroke Unit use of the sequential compression device has been highlighted as 'best practice' in all cases of acute stroke with immobility (defined as: patients who cannot walk to the toilet without the help from another person) with the publication of the CLOTS 3 trial. The Acute Stroke Unit will be using the device on appropriate patients for as long as they remain immobile.	
4	The patient must be given both verbal and written information about the compression device & sleeve, including what they can do to help themselves with VTE prevention and to aid compliance with the use of the device.	 NHS Un ve ty Hospital of North M dland PATIENT INFORMATION LEAFLET PREVENTING BLOOD CLOTS
5	**It is important that these devices are not fitted to patients with confirmed or suspected VTE.**	

6	The system consists of the compression pump, **non-disposable tubing** and single patient use leg sleeves. The compression pump and non-disposable tubing will be stored in the equipment libraries	  NON DISPOSABLE TUBING 
7	The compression sleeve contains three bladders to deliver, circumferential, sequential and gradient compression to ensure clearance of the deep veins without the risk of distal blood trapping. The sleeve is anatomically designed with adjustable sleeve closure offering a customized fit for each patient. The sleeves are available in thigh or knee length and are latex free.	 
8	An appropriate member of staff from the ward/department (can be clinical support worker or registered nurse/midwife) should measure and fit the patient with the compression sleeve and pump device The size of compression sleeve required is indicated by measuring the upper thigh circumference at the gluteal furrow for thigh length sleeves and the calf circumference at the greatest portion for knee length sleeves **(see device leaflet for assistance)**	SCD™ Compression System Thigh Length Thigh Circumference / Size / Item Code: Soft Sleeve / SCD EXPRESS / Tear-Away Up to 22" Small 5345 9545 9545T 22"–28" Medium 5330 9530 9530T 28"–36" Large 5480 9780 9780T Up to 28" Sterile 5336 9736 Knee Length Calf Circumference / Size / Item Code: Soft Sleeve / SCD EXPRESS Up to 21" Medium 5329 9529 19"–26" Large 5489 9789 22"–32" X-Large 5490 9790
9	Each of the intermittent pneumatic compression sleeves will have a label indicating which side of the sleeve needs to be placed against the back of the patient's leg. It also shows which end of the sleeve is the thigh end Once, fastened, the sleeve should feel reasonably tight, but still be able to slide two fingers under the top of the sleeve	

	The sleeve is attached to one end of the non-disposable tubing and the other end of the tubing is attached to the compression device, making sure the connection snaps properly into place **As this tubing is non-disposable it needs to be labelled as such by the staff on the ward to ensure that it is not disposed. If the tubing is disposed of the ward/department will have to pay the costs of a replacement.**	
10	Once the compression pump is switched on it will self-regulate to apply the correct pressure to the patient's leg The compression sleeve should be worn 24 hours a day and only be removed for bathing and to inspect skin condition **If the sleeve has been left off for 3 hours or more DO NOT REPLACE THE SLEEVE BEFORE TAKING ADVICE FROM THE MEDICAL STAFF** The use of the compression sleeves should be discontinued once normal or improved mobility has returned or as indicated/requested by the medical staff.	
11	**Health and Safety Issues** No staff should use this device unless training has been given either by company representative or cascade trainer There are several alarms on the machine which staff should be familiar with prior to using the devise (see machine and poster with alarm codes on) The non-disposable tubing should be placed out of the way of the patient's feet to prevent tripping or any other obstacles/equipment that could squash or damage it (eg. beds, chairs) The compression device needs to be plugged into the mains for the majority of the time to enable the 'vascular refill detection' to function adequately The battery will last up to 8 hours before requiring charging and as the compression device has a lithium ion battery in place this will charge immediately the machine is connected to the mains supply The compression device and non-disposable tubing can be cleaned with most detergents and hypochlorite solutions. Staff must check the tubing daily for any signs of wear and tear. Alcohol based products should be avoided as prolonged use can cause the tubing to crack.	
12	On each shift the Nurse in Charge of the patient's care should check that the patient's compression sleeves are in place correctly and that they are not having any pain or discomfort. This should be documented in the care plan. If the patient or nurse/midwife reports any signs of leg swelling or oedema then the use of the compression device & sleeve should be discontinued. It should be documented within the care plan and reported to the medical staff.	

13	Patients should **not** wear Sequential Compression Sleeves if they have any of the following contraindications: • **Known arteriosclerosis, peripheral neuropathy or peripheral vascular disease** • **Massive oedema of the legs or pulmonary oedema secondary to congestive heart failure** • **Local leg infection, dermatitis, vein ligation or skin graft** • **Extreme deformity of leg** • **Suspected pre-existing DVT or acute DVT** • **Presence of malignancy in legs** For patients undergoing operative procedures that need to be placed in the Lloyd Davis position, the use of these devices should be reviewed by the surgeon as there is a risk of the patient developing compartment syndrome due to additional pressure being placed on the calf.
14	If the patient refuses to wear the compression sleeves, the Registered Nurse/Midwife in charge of the patient's care should firstly discuss the risks and benefits of wearing them with the patient and secondly, document the discussions and outcome within the patient's care plan. This should also be reported and discussed with the medical staff.
15	The Ward Manager should ensure that there is a robust system in place to record the numbers of staff that have received training in the use of the compression device and sleeves and all new staff should receive training in the use of the compression devices and fitting of the compression sleeves as part of their induction.

Standard Operating Procedure (SOP)

C28-SOP-4 Hospital Associated Thrombosis RCA Process
March 2021

University Hospitals of North Midlands NHS Trust

The purpose of this SOP is to set out a standard process for conducting RCA's into all HAT's ensuring clearly identified responsibility for identification of need for RCA and subsequent completion.

This Document applies to any member of staff involved with the identification and investigation of HATs. All patients aged 16 years of age or over, diagnosed with hospital associated thrombosis; require a RCA to be completed.

This SOP relates to Trust Policy C28 Thromboprophylaxis policy

Part A: Description of Procedural Steps

No.	Description of Procedural Steps
1	Quality Improvement Facilitator to review daily the 'Hospital Associated Deep Vein Thrombosis (DVT) Radiology Report'. Identification of Hospital Associated Thrombosis (HAT) arises from confirmation of a Venous Thrombo-Embolism (VTE) within a current inpatient stay (minimum 72hrs) or within 90 days of a previous inpatient admission.
2	• The HAT incident is logged via the Trust Datix System under the category of 'Venous Thromboembolism' by the Quality improvement Facilitator. A VTE RCA is requested via email from the lead Consultant and the Directorate/Divisional Team.
3	The RCA will be completed by the lead consultant and returned via email to the Quality Improvement Facilitator within 4 weeks of receipt
4	The Quality Improvement Facilitator will monitor completion timescales of the RCA. 2 week reminders are sent via email
5	At 4 weeks, non-completion of RCA's will be escalated via relevant Clinical Directors and at 6 weeks via Divisional Chairs and VTE steering group.
6	RCA's with the outcome of being avoidable will be heard within the VTE Steering Group. All unavoidable outcomes with some learning identified are reviewed monthly, those deemed to have significant learning are heard within the VTE Steering Group
7	All completed RCAs are uploaded to Datix and the investigation section of the Datix is completed once the outcome has been determined
8	Level of harm, Result and Duty of Candour are all determined at the RCA hearing by the VTE Steering Group

Trust Contact: VTE Steering Group
Date of Review: March 2024

PROUD TO CARE