

<b>Document Details</b>		
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1	February 2017	Review including update assessment form and patient leaflet
2	November 2015	Replace VTE risk assessment form
3	October 2013	Review to Include NICE Quality Standard 29
4	June 2018	Review to Include updated NICE guidance NG89 and to include Registered Nurses undertaking VTE risk assessment

# Reducing the Risk of Venous Thromboembolism Policy

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## 1. Introduction and Background

- 1.1 An estimated 25,000 people in the UK die from preventable hospital-acquired venous thromboembolism (VTE) every year. Treatment of non-fatal symptomatic VTE and related long term morbidities is associated with considerable cost to the health service. A UK survey suggested that 71% of patients assessed to be at medium or high risk of developing deep vein thrombosis did not receive any form of mechanical or pharmacological VTE prophylaxis (NICE 2010).
- 1.2 VTE encompasses a range of clinical presentations that extend in severity from asymptomatic deep vein thrombosis (DVT) to life threatening pulmonary embolus (PE). The high morbidity and mortality linked to VTE identifies it as a key patient safety issue that warrants attention. VTE can also lead to chronic disability such as chronic venous insufficiency, venous leg ulcers and pulmonary hypertension.
- 1.3 The risk of developing VTE depends on the condition and/or procedure for which the patient is admitted and on any predisposing risk factors (such as age, obesity and concomitant conditions). The Department of Health recognizes that VTE is an important problem in hospitals and has advised doctors and nurses that everyone admitted to hospital should have a risk assessment completed. To achieve the standard set out by the Department of Health, at least 95% of all patients admitted to hospital have to be risk assessed for VTE. Shropshire Community Health NHS Trust (SCHT) is committed to maintaining this standard.
- 1.4 SCHT aims to protect patients from VTE by careful assessment of those at risk and appropriate preventative measures. This includes patients admitted directly to our Community Hospitals, and transferred from other providers. It also includes day case surgery wards and people discharged from Minor Injuries Units with lower limb devices such as plaster casts.
- 1.5 This policy provides best practice guidance for prevention and management of patients identified as being at risk of VTE. The Guidance in this policy is underpinned by NICE guidance CG92 (2010), CG144 (2012) and NG89 (2018), the Chief Medical Officer's letter (CEM/CMO/2007/10), National Patient Safety Alert RRR014: reducing treatment dose errors with low molecular weight Heparins (2010), National Patient Safety Alert 18: actions that can make anticoagulant therapy safer (2007), NICE VTE prevention quality standard (2010) and the NICE quality standard for diagnosis and management of venous thromboembolic diseases (2013).

## 2. Purpose

- 2.1 This Policy is intended to ensure that all inpatients, day surgery patients and patients discharged from MIU with lower limb casts, under the care of SCHAT, receive adequate and appropriate thromboprophylactic care to prevent VTE. It also ensures that documentation of VTE risk forms a part of the overall care / assessment of the patient.
- 2.2 This Policy applies to all staff that provide care to patients within SCHAT inpatient units and MIU but in particular Doctors and Nurses who are required to undertake the Risk Assessment. It also includes Doctors and Non-Medical Prescribers who will prescribe preventative treatment and Nurses and Healthcare staff who will be providing daily clinical care to patients.
- 2.3 This policy will provide some guidance on prescribing but the choice of treatment remains the responsibility of the prescriber and this policy must not be used in isolation to make clinical decisions.

## 3. Definitions

- 3.1 Venous thromboembolism: VTE is the name given to either a deep vein thrombosis (DVT) or a pulmonary embolism (PE). VTE is a condition in which a blood clot (a thrombus) forms in a vein. It most commonly occurs in the deep veins of the legs or pelvis; this is called a DVT. The thrombus may dislodge from its site of origin and passes through the circulation to reach the lungs: this is called a PE. Although most cases of PE are linked to DVT, rarely a PE can occur spontaneously in isolation. VTE encompasses a range of clinical presentations.
- 3.2 Thromboprophylaxis: Thromboprophylaxis is the treatment to prevent blood clots forming in veins.
- 3.3 Mechanical thromboprophylaxis: mechanical methods of prophylaxis work to combat venous stasis and include graduated compression stockings, intermittent pneumatic compression devices, venous foot pumps and the Geko electrical stimulation device.
- 3.4 Pharmacological prophylaxis: pharmacological prophylaxis is pharmaceutical intervention to decrease the clotting ability of the blood and includes Heparins, Fondaparinux, Dabigatran, Rivaroxaban, Apixaban and Warfarin.

3.5 Hospital acquired VTE (NICE CG92): Hospital acquired VTE is defined as a VTE presenting more than 48 hours after hospital admission or within 90 days of a previous hospital admission.

#### **4. Duties**

##### **4.1 The Chief Executive**

The Chief Executive or chief Executive Officer has overall responsibility for maintaining staff and patient safety and is responsible for the governance and patient safety programs within the organisation.

##### **4.2 Directors**

Directors of Services are responsible for ensuring the safe and effective delivery of services they manage; this includes securing and directing resources to support the implementation of this policy. They are also responsible for ensuring processes are in place to effectively identify and minimize risk of VTE, and that the organization is compliant with the Care Quality Commission (CQC) and National Health Service Litigation Authority (NHSLA).

Medical Director - Review the policy biennially and update any section which may need altering following changes to national guidance

##### **4.3 Line Managers and Service Leads**

Managers will ensure that a system is in place within the services they are responsible for, for the implementation of this policy and for monitoring its effectiveness.

This will include:

- Clinical audit, where required by this policy.
- Provision of, and attendance at, staff training, where indicated by the Mandatory Training
- Provision of equipment, where this is required.
- Reviewing VTE related incidents where it is appropriate to do so, either

Individually or collectively, and identifying where changes could be made to improve patient care.

##### **4.4 Team Leaders and Ward Managers**

Team Leaders and Ward Managers must ensure team members have access to policy guidelines. This would include education and supervision to ensure safe practice.

Ward Managers are responsible for ensuring adherence to policy and reporting any compliance or system process errors. Ward Manager's responsibilities also include:

- Where VTE occurs the incident must be reported in accordance with the Trust Incident reporting policy. Ward Managers are responsible for investigating the incident to determine the root causes so that lessons learnt are shared across the organisation.
- Monitoring compliance of VTE risk assessment completion using the safety cross.
- Ensuring Safety Thermometer data is collected and reported monthly, with specific actions identified if compliance is reduced.
- Ensuring VTE screening data is collected and reported monthly, with specific actions identified if compliance is reduced.
- To Identify VTE champion(s) and support them in this role.

#### 4.5 **VTE Champions**

- Access VTE training
- Participate in training of colleagues within their clinical area
- Maintain a VTE information file relevant to their clinical area
- Ensure that they keep themselves up to date with any VTE developments
- Undertake or assist with VTE related audit(s)

#### 4.6 **All Clinical Staff**

All clinical staff must ensure that they comply with the arrangements in place to implement and maintain this policy, within the areas they work.

This will include:

- All incidents of confirmed VTE are to be reported via Datix.
- Ensuring all appropriate patients have a VTE risk assessment completed on admission or discharge from MIU
- Ensuring relevant patients receive appropriate thromboprophylaxis / treatment or referral for this is made prior to discharge
- Ensuring all patients receive written and verbal information on VTE on admission and discharge

- Nursing staff to complete the VTE e-learning module as per Trust Training Needs Analysis (TNA)
- Undertake or assist with VTE related audit(s)

#### 4.7 **Ward Clerks**

Ward clerks must ensure that they assist with the implementation of this policy through assistance with VTE data collection and reporting.

### 5. **Assessing the Risks of VTE and Bleeding**

5.1 All patients admitted to hospital should be risk assessed for VTE using the Trust's Thromboprophylaxis Risk Assessment Template in appendix 1, (see exclusions section 5.3). This is adapted directly from the Department of Health Risk Assessment template based on NICE guidance.

#### 5.2 **All Patients:**

- Assess all patients to identify the risk of venous thromboembolism (VTE) and bleeding.
- Balance the person's individual risk of VTE against their risk of bleeding when deciding whether to offer thromboprophylaxis.
- Assess for contraindications before offering mechanical or pharmacological VTE prophylaxis (see section 7).
- VTE risk assessments must be reviewed if there is any significant change in the patient's clinical condition.
- As part of the risk assessment process, patients should be counselled about the risk of VTE and given an information leaflet about preventing venous thromboembolism (See appendix 8). This should be documented in the patient's notes when completed.
- Be aware that Heparins are of animal origin and this may be of concern to some people. Discuss the alternatives with people who have concerns about using animal products, after discussing their suitability, advantages and disadvantages with the patient. See 7.5.2

#### 5.3 **Exclusions:**

- People attending hospital as out-patients.
- People attending MIU – unless lower limb cast or brace fitted.

- Patients under 16 years of age are not covered by NICE guidance NG89.
- Patients in their last days of life.

#### 5.4 **Medical Patients:**

Assess all medical patients to identify the risk of VTE and bleeding:

- A VTE risk assessment must be undertaken as soon as possible after admission to hospital, with the exception of those patients transferred from acute wards or other community hospitals as this must be completed by the time of the first medical review.
- Patients transferred from acute wards or other community hospitals may initially use the existing risk assessment but this must be updated the next working day.

##### **At the point of transfer:**

- If the VTE risk assessment has been completed and the patient is to continue with chemical prophylaxis this should be included on the list of transfer medication to bridge the period until the risk assessment is reviewed.
- If a VTE assessment has not previously been performed then this must be undertaken within 24 hours of admission
- If using pharmacological VTE prophylaxis for medical patients, start it as soon as possible and within 14 hours of admission (NICE 2018, NG89), unless contraindicated.

#### 5.5 **Day Surgery Patients:**

Assess all surgical patients to identify the risk of VTE and bleeding:

- A VTE risk assessment must be undertaken as soon as possible or by the time of first review
- Balance the person's individual risk of VTE against their risk of bleeding when deciding whether to offer pharmacological thromboprophylaxis to surgical patients.

#### 5.6 **Lower Limb Immobilisation**

Assess all patients seen in MIU where a lower limb cast is applied, for risk of VTE and bleeding.

- A VTE risk assessment must be undertaken prior to discharge
- Balance the person's individual risk of VTE against their risk of bleeding when deciding whether to offer pharmacological thromboprophylaxis to patients with lower limb cast.

## 6. Reducing the Risk of VTE

6.1 General measures to reduce VTE risk include avoiding dehydration, unless clinically indicated, and encouraging early mobilisation.

### 6.2 **Assess all patients for risk of bleeding before offering pharmacological VTE prophylaxis.**

Do not offer pharmacological VTE prophylaxis to patients with any of the risk factors for bleeding listed in the assessment tool, unless the risk of VTE outweighs the risk of bleeding.

## 7. VTE Prophylaxis

Specific thromboprophylactic measures can be broken down in to two categories:

- Mechanical prophylaxis
- Pharmacological prophylaxis

Thromboprophylaxis can be given singly or in combination and must be based on an accurate assessment of the individual patient's risk factors for bleeding and risk factors for VTE. Appendices 2 – 7 detail the thought processes and clinical reasoning which should be followed depending on the patient's medical status to help in the decision making process outlined in the risk assessment (Appendix 1).

### 7.1 **Mechanical VTE Prophylaxis**

Base the use of mechanical VTE prophylaxis on clinical condition, surgical procedure and patient preference. The only option currently available at Community Hospitals is anti-embolism stockings (thigh or knee length). For patients identified as being at risk of VTE, an assessment of the cautions and contraindications for use must be completed and discussed with the patient, before commencing mechanical prophylaxis:

Do not offer anti-embolism stockings to patients with:

- Suspected or proven peripheral arterial disease - seek medical opinion
- Acute stroke
- Peripheral arterial bypass grafting
- Peripheral neuropathy or other causes of sensory impairment
- Local condition in which stockings may cause damage, such as fragile 'tissue paper' skin, dermatitis, gangrene or recent skin graft
- Known allergy to material of manufacture
- Severe leg oedema or pulmonary oedema from congestive heart failure

- Unusual leg size or shape
- Major limb deformity preventing correct fit
- Use caution and clinical judgment when applying anti-embolism stockings over venous ulcers or wounds.

### 7.3 Best practice for all patients regarding anti-embolism stockings:

- Show patients how to use anti-embolism stockings correctly and ensure they understand that this will reduce their risk of developing VTE (see appendix 8 patient guide).
- Anti-embolism stockings should be fitted and patients shown how to use them by staff trained in their use.
- Measure legs and use correct stocking size according to manufacturer's instruction.
- Use stockings that provide graduated compression and produce a calf pressure of 14-15 mmHg.
- If oedema or postoperative swelling develops, ensure legs are re-measured and stockings refitted.
- Encourage patients to wear the stockings day and night from admission until they no longer have significantly reduced mobility.
- Remove stockings daily for hygiene purposes and to inspect skin condition. If patient has significant reduction in mobility, poor skin integrity or sensory loss, inspect skin two or three times per day, particularly over heels and bony prominences.
- Discontinue use of stockings if there is marking, blistering or discolouration of skin, particularly over heels and bony prominences, or if patient has pain or discomfort.
- Monitor use of anti-embolism stockings and offer assistance if they are not being worn correctly.

## 7.5 Pharmacological VTE Prophylaxis

7.5.1 Tinzaparin does not have a license for VTE prophylaxis in "medical patients" but has been adopted by the local health economy as the LMWH of choice for this indication. HealthCare professionals should follow normal procedures and adhere to their professional guidance when prescribing, dispensing or administering a licensed preparation in an indication/method it is not licensed for, as they would in any other similar situation.

7.5.2 All the currently used LMWHs in the United Kingdom are of **porcine** origin, if this causes objection from members of certain religious or dietary group's then Fondaparinux can be used as an alternative in most clinical scenarios. Patient consent should be sought. Contact a member of the Pharmacy team if this is required.

7.5.3 Patients may develop bruises and sometimes small hard lumps under the surface of the injection site. However if patients develop extensive bruising that spreads around the body, injections should be withheld and a doctor should be informed immediately.

#### 7.6 **Contraindications for Heparin/LMWH Therapy:**

- History of Heparin Induced Thrombocytopenia
- Significant hepatic impairment
- Active gastric or duodenal ulceration or oesophagus varices
- Hemophilia and other inherited bleeding disorders/major bleeding disorders
- Thrombocytopenia with platelets<50 from baseline
- Recent cerebral hemorrhage
- Severe hypertension
- Recent neurosurgery or eye surgery
- Acute bacterial endocarditis
- Sensitivity to any low molecular weight Heparin
- Currently receiving treatment with therapeutic oral anticoagulation therapy: Warfarin, Dabigatran, Rivaroxaban, Apixaban and Edoxaban

### 8. **Heparin Induced Thrombocytopenia (HIT)**

8.1 There is also a possibility that the patient may develop Heparin Induced Thrombocytopenia (HIT). Medical patients receiving Heparin/LMWH do not need routine platelet monitoring. If the platelet count falls by 30% or more and/or the patient develops new thrombosis or skin allergy or any of the other rarer manifestations of Heparin-induced thrombocytopenia (HIT) between days 4 and 14 of Heparin administration (BCSH, 2012), HIT should be considered and an **emergency referral to haematology for assessment** must be made.

8.2 Patients should also be monitored for hyperkalemia, especially at risk patients with diabetes, chronic renal failure, previously raised potassium levels or taking medications that are potassium sparing or potassium supplements.

## 9. **Concurrent anticoagulant or antiplatelet use**

Consider VTE prophylaxis for people who are having antiplatelet agents for other conditions and whose risk of VTE outweighs their risk of bleeding.

9.1 Take into account the risk of bleeding and of comorbidities such as arterial thrombosis.

- If the risk of VTE outweighs the risk of bleeding, consider pharmacological VTE prophylaxis based on their condition or procedure.
- If the risk of bleeding outweighs the risk of VTE, consider mechanical VTE prophylaxis.

9.2 Do not offer additional pharmacological or mechanical VTE prophylaxis to patients who are already taking oral anticoagulation therapy such as warfarin, Dabigatran, Apixaban, Rivaroxaban or Edoxaban providing anticoagulation is continued. Consider VTE prophylaxis for people at increased risk of VTE who are interrupting anticoagulant therapy.

9.3 Do not offer additional pharmacological or mechanical VTE prophylaxis to patients who are already having full anticoagulant therapy such as LMWH at treatment dose.

## 10. **VTE prophylaxis - Medical Patients**

### Mechanical prophylaxis

Evidence for mechanical methods of thromboprophylaxis is limited in non-surgical patients. However these should be considered if the patient is at increased risk of VTE but a concurrent bleeding risk prevents pharmacological prophylaxis.

### Chemical prophylaxis

*All medical patients at risk of VTE* should be offered Tinzaparin subcutaneously once daily (4500 units daily) if the risk of major bleeding is felt to be low, unless;

- Evidence of renal impairment (creatinine clearance <30ml/min); Consider Heparin 5000 units twice daily.

- Obese patients (e.g. >120kg) should be considered for higher dose thromboprophylaxis with Tinzaparin (e.g. 4500 units twice daily), especially if other thrombotic risk factors are present.
- Frail patients (e.g. <50kg) should be considered for lower dose thromboprophylaxis with Tinzaparin (e.g. 3500 units once daily).
- If an at-risk patient is identified, then the first dose of LMWH should be given at the next available drug round and subsequent administration to continue at the same time.

10.1 **Stroke patients:** VTE prophylaxis after stroke is not recommended. However patients at a particularly high risk of VTE following an ischaemic stroke (e.g. those with a history of previous DVT, known thrombophilia or active cancer) can be given prophylactic LMWH in certain clinical circumstances, and following discussions with the consultant.

Anti-embolism stockings are not effective after stroke.

## 11. VTE prophylaxis – Day Surgical Patients

### Mechanical prophylaxis

All day surgical patients at risk of VTE should be offered mechanical methods of thromboprophylaxis on admission to hospital (anti-embolism stockings), unless contraindicated.

### Chemical prophylaxis

If risk factors for thrombosis are present and the risk of major bleeding is felt to be low then LMWH should also be added until mobility is no longer significantly reduced (normally 5-7 days).

## 12. VTE prophylaxis - Lower limb immobilisation

Where patients are seen in MIU and a clinical decision is taken to manage the affected limb in a way that would prevent normal weight bearing or use of that limb, or both, a VTE risk assessment must be completed and appropriate referral for prophylaxis made prior to discharge. With the exception of:

- Patients referred to the fracture clinic who will be seen the following day, where a VTE risk assessment will be completed.

Any patient at high risk of VTE, who is unable to be seen the following day, must be referred to shopdoc/patients GP, for prophylaxis.

## 13. Patient Information and Discharge Planning

On admission ensure that people understand that a risk assessment for VTE and thromboprophylaxis benefits and bleeding risks will be undertaken. The rationale and outcome to be discussed with the patient/family.

- 13.1 Before starting VTE prophylaxis offer patients and/or families or carers verbal and written information (patient leaflet appendix 8) on;
1. The risks and possible consequences of VTE.
  2. The importance of VTE prophylaxis and its possible side effects.
  3. The correct use of VTE prophylaxis (for example anti-embolism stockings).
  4. How patients can reduce their risk of VTE (such as keeping well hydrated and if possible exercising and becoming more mobile).
- 13.2 As part of the discharge plan offer patients and/or families or carers verbal and written information (patient leaflet appendix 8) on:
1. The signs and symptoms of deep vein thrombosis and pulmonary embolism.
  2. The correct and recommended duration of VTE prophylaxis at home if discharged with prophylaxis.
  3. The importance of using VTE prophylaxis correctly and continuing treatment for the recommended duration if discharged with prophylaxis.
  4. The signs and symptoms of adverse events related to VTE prophylaxis if discharged with prophylaxis.
  5. The importance of seeking help and who to contact if they have any problems using the prophylaxis if discharged with prophylaxis.
  6. The importance of seeking medical help and who to contact if there is a problem (such as suspected deep vein thrombosis, pulmonary embolism or another adverse event).
- 13.3 Ensure that people who are discharged with anti-embolism stockings:
- Understand the benefits of wearing them
  - Understand the importance of wearing them correctly
  - Understand the need to remove them daily for hygiene purposes
  - Are able to remove and replace them, or have someone available who will be able to do this for them
  - Know what to look for if there is a problem – for example, skin marking, blistering or discolouration, particularly over the heels and bony prominences
  - Know who to contact if there is a problem

- Know when to stop wearing them.

13.4 Patients who are discharged on Tinzaparin should be given Tinzaparin pack which includes a sharps box and information leaflet detailing why they are on this medication and how to use it. Patients will be offered training to self-inject or for their carers to administer, if this is not possible support can be given by community services either to support self-administering or administration.

13.5 Patient-centered treatment and care should take into account patients' individual needs and preferences. Good communication is essential, supported by evidence-based information, to allow patients to reach informed decisions about their care.

#### **14. Procedure if VTE is suspected**

##### **14.1 On First Suspicion of VTE:**

- Nurse referral to medical staff for urgent medical review within 4 hours.
- On suspicion of VTE and if a patient's vital signs have deteriorated, or Early Warning Score is raised (see SCHAT for Early Warning Score for Community Hospitals and Prisons policy) this requires urgent action as it may be necessary to transfer patient immediately to Acute Hospital.
- The first dose of LMWH should start before a definitive diagnosis, with patient's consent, if there is a clinical suspicion of VTE and no increased risk of bleeding. Renal function must be considered when prescribing treatment doses of LMWH. Testing should not delay initiation of the first dose, but subsequent dosing must reflect the results (NPSA 2010).
- See current BNF for specifics of contra-indications, monitoring and suggested dosing schedules.
- LMWH should be continued until definitive radiological results are available.

##### **14.2 In-patient DVT diagnosis**

In addition to the standard clinical history and examination, patients with suspected DVT require a clinical probability score i.e. 2-level Wells score criteria (see appendix 7). It is not always necessary to check d-dimer levels for patients who are likely to already have elevated d-dimer levels (D-dimer results are elevated in numerous other conditions including infection, inflammatory conditions, trauma, malignancy, pregnancy,

post surgery and false positive results are also common in hospital inpatients. A positive d-dimer assay also has less predictive value in the elderly).

- **If the Wells score is unlikely probability using the 2-level Wells Score and the d-dimer is negative**, then a DVT can be excluded and no imaging is required. Further investigations are required to determine the underlying cause of the patient's symptoms.
- **If the Wells score is likely probability using the 2-level Wells Score** (regardless of d-dimer result) or **unlikely probability with a positive d-dimer**, a compression US scan is required.
- An interim 24-hour dose of an anticoagulant should be administered (if a proximal leg vein ultrasound scan cannot be carried out within 4 hours) and a proximal leg vein ultrasound scan should be carried out within 24 hours of being requested. The bleeding risk of anticoagulation therapy must be weighed against the need to treat the suspected VTE. This is especially the case in high-risk patients, such as patients with recent surgery (within 1 week), in which case advice should be sought from the relevant surgical team.
- Unless contraindicated, treatment dose LMWH should be continued until imaging results available if for any reason scan cannot be performed within 24 hours.
- Patients' current weight should be recorded in kilograms, documented at the start of LMWH therapy.
- A FBC, coagulation screen, renal function and liver function must be checked before continuing LMWH or commencing oral anticoagulants (NICE 2012 CG144).

### 14.3 In-patient PE diagnosis

- As above, in addition to the standard clinical history and examination, patients require a risk assessment using the 2-level Wells criteria (see appendix 11) and possibly a d-dimer measurement as above. Initial investigations also include ECG and chest x-ray (if available).
- **If the clinical probability score is low risk and the d-dimer is negative** then consider an alternative diagnosis.
- **If the clinical probability score is high, or low risk with a positive d-dimer**, then proceed to admission for CTPA
- Patients suspected of having a pulmonary embolism should have an interim therapeutic dose of anticoagulation therapy if diagnostic investigations cannot be carried out immediately, followed by a CTPA.
- Consider a proximal leg vein ultrasound scan if the CTPA is negative and DVT is suspected (NICE 2012 CG144).

14.4 Referral form to be made for appropriate diagnostics at Acute Hospital:

- Suspected Pulmonary Embolus = Computerised Tomography Pulmonary Angiography (CTPA)
- Suspected Deep Vein Thrombosis = Vascular USS (Ultra Sound Scan)
- If both Pulmonary Embolus (PE) and Deep Vein Thrombosis (DVT) suspected arrange both diagnostic tests.
- Confirm date and time of tests, arrange transport and Nurse Escort.

## 15. VTE Treatment

### Management of the patient once a positive diagnosis has been made

- 15.1 If VTE confirmed, **full therapeutic** anticoagulation commenced as long as no contraindications. Continue to monitor patient's vital signs to detect any deterioration in condition as directed in the National Early Warning Score (NEWS) Guidance (See policy on The Deteriorating Patient).
- 15.2 Current treatment options for DVT or PE include initial LMWH (Tinzaparin) followed by warfarin. Refer to current BNF for dosing guidelines. Where warfarin is not tolerated or ineffective, prescribe a Direct Oral Anticoagulant (DOAC) where clinically indicated.
- 15.3 Treatment dose Tinzaparin is different from prophylactic dosage. Treatment doses are given at 175 units/kg by subcutaneous injection once daily. Whilst a patient is being stabilised on warfarin and whilst the international normalised ratio (INR) is not in range, a patient can be maintained on Tinzaparin until a therapeutic INR is reached. This should be discontinued after therapeutic INR has been reached on two consecutive occasions. However 'bridging' with Tinzaparin where the INR is below the target range is outside the license.
- 15.4 It is very important that the dose is calculated accurately based on a recent patient weight and not estimated. Refer to NICE pathways for management and treatment guidance <https://pathways.nice.org.uk/pathways/venous-thromboembolism>
- 15.5 Provide patient and family with support education and reassurance. Further information to offer the patient with a confirmed VTE can be found on the NHS Choices website:  
<http://www.nhs.uk/conditions/deep-vein-thrombosis/pages/introduction.aspx>

## **16. Consultation**

This policy has been reviewed and agreed by the following groups/members:

Community Hospital Medical Advisors (CHMA) meeting

Quality and Safety Group

- Dr Emily Peer Associate Medical Director
- Dr Dorian Yarham Medical Advisor Ludlow
- Dr Adrian Penney Medical Advisor Bishops Castle
- Dr Stuart Wright Medical Advisor Bridgnorth
- Elizabeth Jones IPC nurse
- Susan Watkins, Chief Pharmacist
- David Young, Lead Pharmacist for Community Hospitals
- Angela Cook, Head of Nursing (Adults)
- Andrew Thomas Compliance & Safeguarding Lead
- Andy Matthews Service Delivery Group Manager Adults
- Phil Atkins LCM South East
- Katie Turton LCM Ludlow and Bishops Castle

## **17. Dissemination and Implementation**

### **17.1 Advice**

Individual service's medical staff and pharmacists act as a resource, within their clinical area and should be contacted in the first instance if appropriate.

Further advice is available from the anticoagulation service at the local acute provider at the Royal Shrewsbury Hospital who can be contacted via switchboard on 01743 261000.

### **17.2 Implementation/ Training**

Managers and service leads must ensure that all staff are familiar with this policy through governance meetings, Policy alerts, Heads of Department meetings and ward level meetings.

All community Hospital registered nurses will be trained in reducing the risk of VTE.

This will be delivered in two sessions:

1. VTE awareness

## 2. E- learning

This e learning is mandatory. Details of the training are provided in the SCHAT Statutory/Mandatory Training Matrix issued by the Workforce Department.

e-VTE course: 000 VTE Prevention in Secondary Care, accessible via ESR.

In addition to the e learning module, registered nurses must complete a minimum of five Case-Based Discussions (CBD), to be undertaken by the ward Doctor, prior to being able to assess patients VTE risk.

Any training requirements must be raised and addressed via appraisal or supervision and a record of competencies kept for audit purposes. It is the responsibility of managers and service leads to ensure all staff fulfills their mandatory training requirements in accordance with the Trust Training Needs Analysis. Refer to the Trust Mandatory (Risk Management) Training Policy and Procedure.

Further training needs may be identified through other management routes, including root cause analysis (RCA) review, following an adverse VTE related incident or audit findings.

**18. Monitoring Compliance**

Element to be Monitored	Lead	Tool	Frequency	Reporting Arrangements	Acting on recommendations and Leads	Change in Practice and Lessons to be Shared
a. Process/risk assessment for identifying patients at risk of venous thrombo-embolism	Medical Director	Patient records audit	Annual	The audit report will be submitted to the Quality and Safety Group. The group is expected to read and interrogate the report to identify deficiencies in the system and act up on them	Any changes to the process will be identified as part of the audit and allocated to a relevant person(s) within a specified timeframe	Relevant clinical staff will be responsible for changes in the risk assessment. Lessons will be shared with all the relevant stake holders
b. Prophylactic treatment regime for high risk patients	Chief Pharmacist	Audit	Annual	An audit of the medical records of patients who have received prophylactic treatment will be carried out in all in-patient units and the audit report will be submitted to the Medicines Management Group. The group is expected to read and interrogate the report to identify deficiencies in the system and act upon them.	Any recommendations as part of the audit will be actioned by the appropriate clinical staff; this will be monitored by the Chief Pharmacist	The Chief Pharmacist will be monitoring any changes in practice following due consultation. Lessons will be shared with all the relevant stakeholders

<b>Element to be Monitored</b>	<b>Lead</b>	<b>Tool</b>	<b>Frequency</b>	<b>Reporting Arrangements</b>	<b>Acting on Recommendations and Lead(s)</b>	<b>Change in Practice and Lessons to be Shared</b>
c. Procedure to be followed if venous thrombo-embolism is suspected	Medical Director	Patient records audit	Annual	An audit of medical records of patients who have been referred to Acute Secondary Care with suspected VTE will be carried out. The audit report will be submitted to the Quality and Safety Group. The group is expected to read and interrogate the report to identify deficiencies in the system and act upon them.		The Medical Director will be monitoring any changes in practice following due consultation. Lessons will be shared with all the relevant stakeholders.
d. Management of the patient once a positive diagnosis has been made	Medical Director	Patient records audit	Annual	An audit of medical records of patients who have been referred to Acute Care will be carried out. The audit report will be submitted to the Quality and Safety Group. The group is expected to read and interrogate the report to identify deficiencies in the system and act upon them	Any recommendations as part of the audit will be actioned by the appropriate clinical staff; this will be monitored by the Medical Director.	The Medical Director will be monitoring any changes in practice following due consultation. Lessons will be shared with all the relevant stakeholders

<b>Element to be Monitored</b>	<b>Lead</b>	<b>Tool</b>	<b>Frequency</b>	<b>Reporting Arrangements</b>	<b>Acting on Recommendations and Lead(s)</b>	<b>Change in Practice and Lessons to be Shared</b>
e. Organisation's expectation in relation to staff training – as identified in the training needs analysis	Head of Workforce Development	Review	Six Monthly	Education, training and Strategy Group and Health and Safety Committee. The committees are expected to read and interrogate the report to identify deficiencies in the system and act upon them	Required actions will be identified and completed within a specified timeframe	Required changes to training arrangements will be identified and actioned within a specific timeframe. The Head of Workforce Development/Risk Management and Governance Lead will take each change forward where appropriate and lessons will be shared with all relevant stakeholders

## 19. References

British Committee for Standards in Haematology (BCSH, 2012): Guidelines on the diagnosis and management of heparin-induced thrombocytopenia: second edition.

NICE Guidance (2010): Venous Thromboembolism, Reducing the Risk <http://guidance.nice.org.uk/CG92/Publicinfo/pdf/English>

NICE Guidance (2018): Venous Thromboembolism in over 16's: Reducing the Risk of hospital-acquired deep vein thrombosis or pulmonary embolism (NG89).  
<https://www.nice.org.uk/guidance/ng89>

NICE Quality Standard 29 Quality Standard for diagnosis and management of venous thromboembolic diseases. (March 2013).

NPSA Alert: Reducing treatment dose errors with low molecular weight Heparins <http://www..nrls.npsa.nhs.uk/resources/?entryid45=75208&p=2>

Policy for the Administration and Management of Patients on Anticoagulants, BHRuT 2009.

Keeling D. Davison and Watson H, British Society for Haematology 2006, 133:259-269 Heparin induced Thrombocytopenia

NHS Choices [www.nhs.uk/conditions](http://www.nhs.uk/conditions)

British National Formulary Number 66 September 2013 BMJ Group Tavistock Square London and Pharmaceutical Press Pharmaceutical Press is the publishing division of the Royal Pharmaceutical Society 1 Lambeth High Street London.

## 20. Associated Documents

Shropshire Community Health NHS Trust Medicines Policy

Shropshire Community Health NHS Trust Early Warning Score for Community Hospitals and Prisons Policy

Shropshire Community Health NHS Trust Mandatory (Risk Management) Training Policy and Procedures

Shropshire Community Health NHS Trust Incident Reporting Policy

Shropshire Community Health NHS Trust Consent to Examination and Treatment Policy

## **21. Appendices**

- 1 Appendix 1 – VTE Risk Assessment Document
- 2 Appendix 2 – Care Pathway – Patients in End of Life Care (last 12 months)
- 3 Appendix 3 - Care Pathway – Day Surgery
- 4 Appendix 4 – Care Pathway – Lower Limb Plaster Casts
- 5 Appendix 5 – Care Pathway – Patient Guide
- 6 Appendix 6 – Care Pathway – Wells score DVT
- 7 Appendix 7 – Wells score PE
- 8 Appendix 8 – Case Based Discussion

Patient  
Addressogram

# Venous Thromboembolism (VTE) and Bleeding Risk Assessment

**1 = Admission assessment to be conducted by Trained Clinical Staff within 4 hours for direct admissions**  
**2 = Post 24 hours assessment by Trained Clinical Staff AND NOTIFY Doctor of any changes**  
**3 = Thereafter if condition changes reassessment to be completed by trained clinical staff**

Admission Date:

Time:

## STEP 1 : Classify each patient into one of the 3 groups below – Tick appropriate box

Surgical patient with significant reduction in mobility	Complete sequentially: STEP 2, 3 and 4
Medical patient have had or expected to have a reduction of mobility of 3 days or more OR is acutely ill	
Medical patient with normal mobility and without acute illness	

## STEP 2 : Thrombosis risk – Review the patient and tick every box that applies

	1 O/A	2 24hrs	3 Change
Active cancer or cancer treatment			
Age > 60			
Dehydration			
Known Thrombophilias			
Surgery with significant reduction in mobility			
Immobilisation with plaster cast			
Personal history or first degree relative with a history of VTE			
One or more significant medical co-morbidities (e.g. Heart disease, metabolic, endocrine, respiratory pathologies, acute infection, inflammatory conditions)			
Obesity (BMI > 30kg/m <sup>2</sup> )			
Use of Hormone Replacement Therapy (HRT)			
Use of Oestrogen containing contraceptive therapy			
Varicose veins with phlebitis			
Significantly reduced mobility for 3 days or more			
Hip or Knee replacement			
Hip fracture			

## STEP 3 : Bleeding Risk – Review the patient and tick every box that applies

	1 O/A	2 24hrs	3 Change		1 O/A	2 24hrs	3 Change
Active bleeding or suspicion of bleeding				Acquired bleeding disorders			
Acute stroke				Neurosurgery, spinal surgery or eye surgery			
Thrombocytopenia (platelets < 75 x 10 <sup>9</sup> /l)				Other procedure with high bleeding risk			
Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with INR > 2)				Untreated inherited bleeding disorders (such as haemophilia and Von Willebrand's disease)			
Uncontrolled systolic hypertension (230/120mmHg or higher)							

## STEP 4 : Decision Box - Assess Risks vs Benefits of prescribing Thromboprophylaxis

Note: Prescribe all Medication on Drug Chart

<b>Is Patient at increased risk of VTE?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> <b>Pharmacological Prophylaxis</b> Indicated <input type="checkbox"/> Contraindicated <input type="checkbox"/> Prescribed <input type="checkbox"/> <b>Mechanical Prophylaxis</b> Indicated <input type="checkbox"/> Contraindicated <input type="checkbox"/>	<b>No - Thromboprophylaxis NOT Required or contraindicated because</b> <b>Already on Anticoagulant</b> <input type="checkbox"/> Warfarin <input type="checkbox"/> NOAC <input type="checkbox"/> LMWH/UFH <input type="checkbox"/> Bleeding Risk <input type="checkbox"/> Other (please detail):
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	Signature	Name	GMC / NMC No.	Date & Time
1. On admission Assessment completed by				
2. 24 hour Assessment completed				
3. Assessment on Condition Change				

# Risk Assessment for Venous Thromboembolism (VTE)

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

**STEP ONE Assess** all patients admitted to hospital for level of mobility (tick one box). All surgical patients, and all medical patients with significantly reduced mobility, should be considered for further risk assessment; this includes patients with limb immobilisation seen in the Minor Injuries Unit.

**STEP TWO** Review the patient-related factors shown on the assessment sheet against **thrombosis** risk, ticking each box that applies (more than one box can be ticked). Any tick for thrombosis risk should prompt thromboprophylaxis according to NICE guidance. The risk factors identified are not exhaustive. Clinicians may consider additional risks in individual patients and offer thromboprophylaxis as appropriate.

**STEP THREE** Review the patient-related factors shown against **bleeding risk** and tick each box that applies (more than one box can be ticked). Any tick should prompt clinical staff to consider if bleeding risk is sufficient to preclude pharmacological intervention.

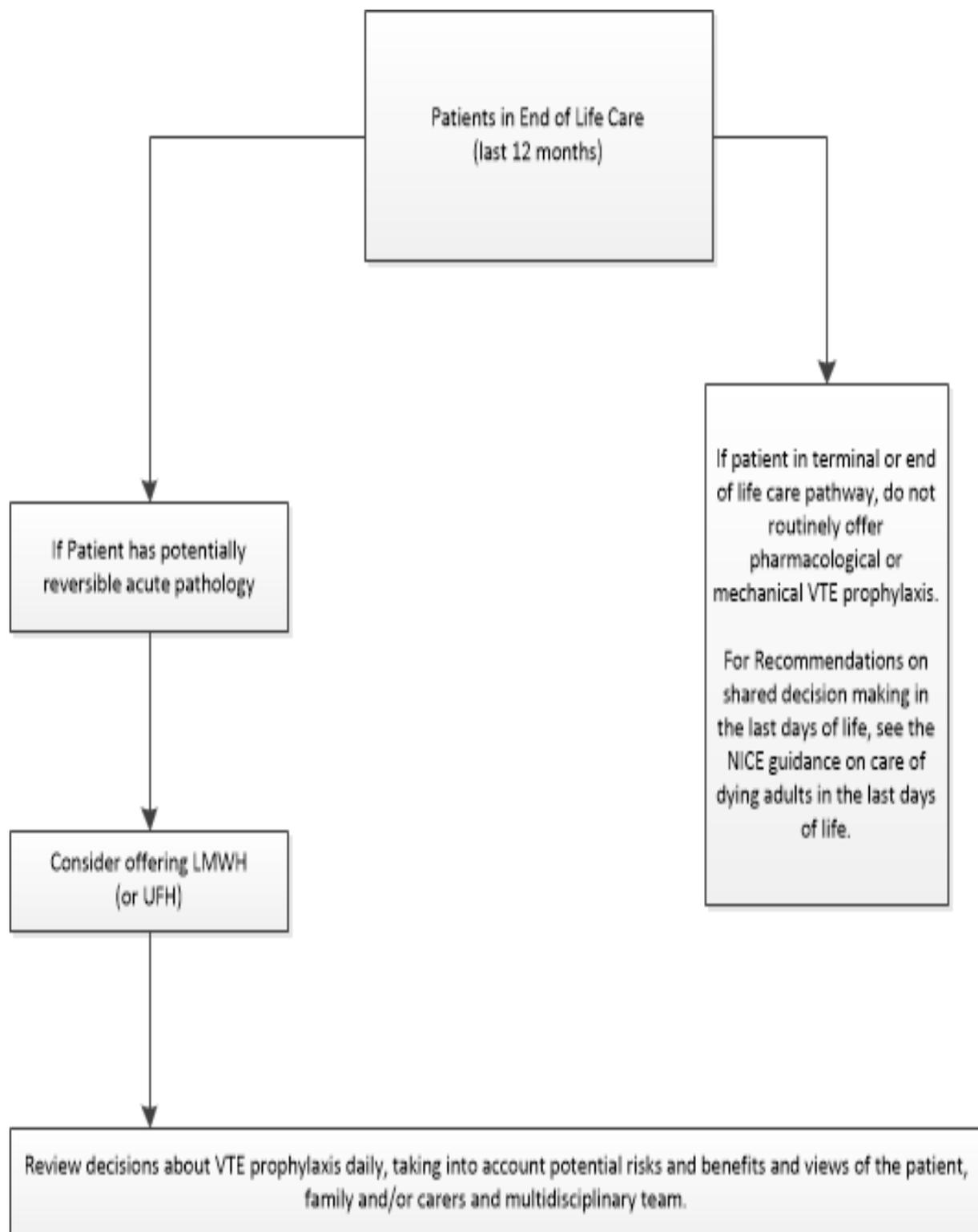
**STEP FOUR** The risk assessment template should form the basis for consideration of thromboprophylaxis, it does not outweigh clinical judgement for specific patients, however decisions not to follow Trust policy should be documented in the medical notes. Following identification of VTE and bleeding risk factors, identify if patient is at risk of VTE and what treatment if any is indicated or contraindicated. Tick the appropriate box or boxes whether thromboprophylaxis has been offered or not. Document decision making in the clinical record. The patient's drug chart must be completed to reflect this- request assistance from a trained prescriber if needed.

Guidance on thromboprophylaxis is available at:

*National Institute for Health and Clinical Excellence (2018) Venous thromboembolism in over 16's: Reducing the risk of hospital acquired deep vein thrombosis or pulmonary embolism. NICE clinical guideline 89. London: National Institute for Health and Clinical Excellence. <http://www.nice.org.uk/guidance/NG89>*

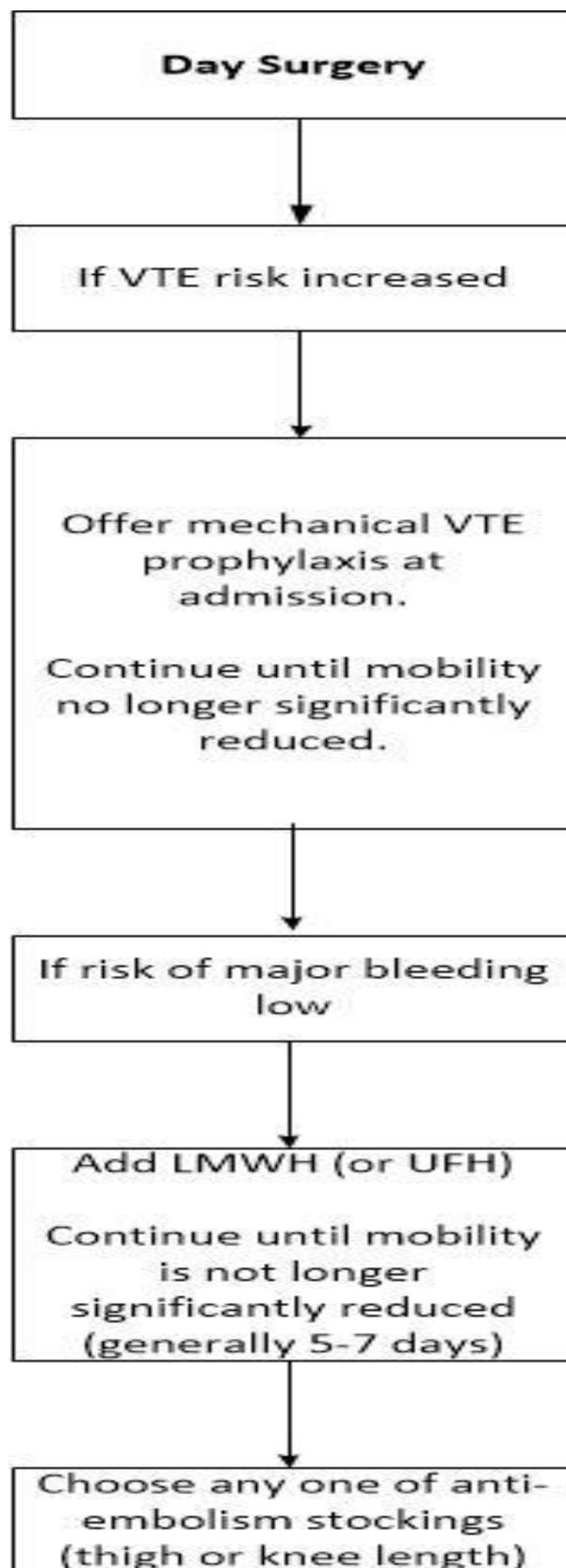
## Appendix 2

### Care Pathway – End of Life Patients



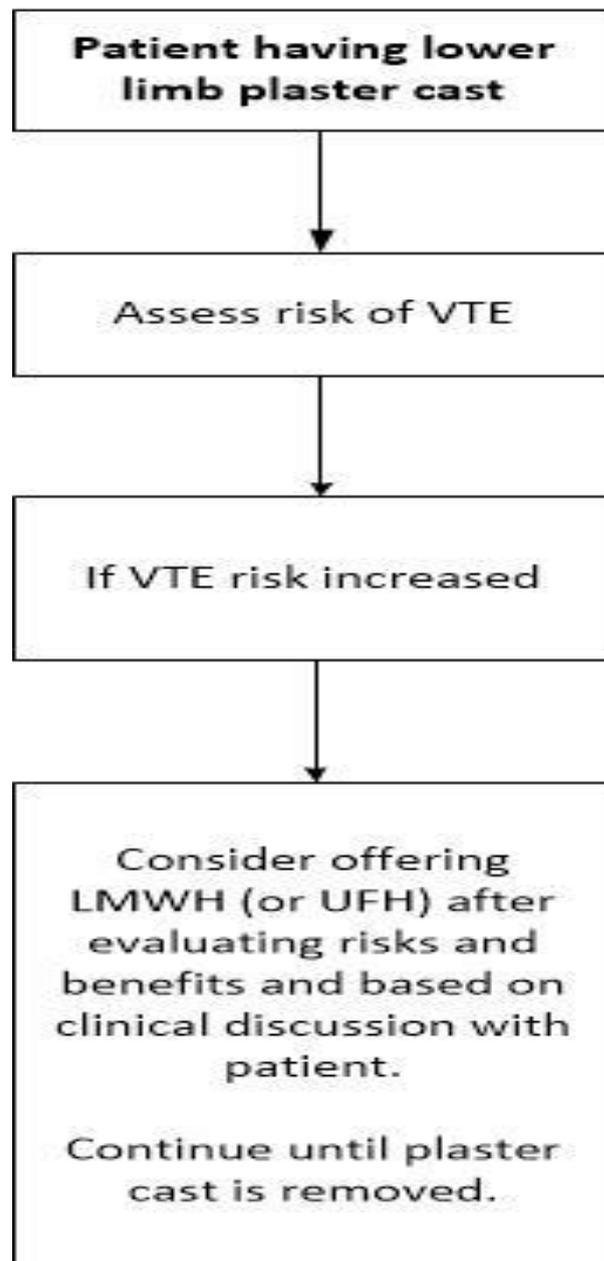
## Appendix 3

### Care Pathway – Day Surgery



## Appendix 4

### Care Pathway – Lower Limb Plaster Casts



## VTE Patient Leaflet

This leaflet explains more about blood clots, which can form after illness and surgery.

### What are hospital-acquired blood clots?

A hospital-acquired blood clot may occur in a patient when they are in hospital, and up to ninety days after a hospital admission. There are two kinds:

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

### Are blood clots common?

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

### Who is at risk?

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

- A previous clot
- A recent diagnosis of cancer
- Certain 'sticky blood' conditions such as antiphospholipid syndrome or Factor V Leiden.
- Being overweight
- Being immobile
- Oestrogen-containing contraceptives and hormone replacement
- Having an operation
- Significant injury or trauma

## What can be done to reduce my risk?

### Preventing blood clots (anticoagulants)

Most patients at risk will be prescribed a small dose of an anticoagulant by injection. Anticoagulants block the activity of clotting factors and prevent blood clots developing or getting worse.

If you need to take this medication when you leave hospital, you will be given more information and another information booklet. The most common side-effect is bruising and /or bleeding. If you are concerned please contact your doctor (in hours) or ShropDoc (out of hours)

### Stockings

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

## What can I do to help?

When in hospital:

- Keep moving or walking and get out of bed as soon as you can
- Drink plenty of fluids to keep hydrated
- Ask you nurse or physiotherapist for more information

## What happens when I go home?

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

If you develop any signs or symptoms of a clot at home, then seek medical advice immediately, either from your General Practitioner (GP) or your nearest hospital's emergency department.

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

## Appendix 6

### Wells prediction score for deep vein thrombosis (DVT)

The revised Wells score or criteria for assessment of suspected DVT (with a possible score of -2 to 9):

Factor	Points
active cancer (treatment within last six months or palliative)	1
calf swelling $\geq 3$ cm compared to asymptomatic calf (measured 10 cm below tibial tuberosity)	1
collateral superficial veins (non-varicose)	1
pitting oedema (confined to symptomatic leg)	1
swelling of entire leg	1
localised tenderness along distribution of deep venous system	1
paralysis, paresis, or recent cast immobilisation of lower extremities	1
recently bedridden $\geq 3$ days, or major surgery requiring regional or general anaesthetic in the previous 12 weeks	1
previously documented deep-vein thrombosis	1
alternative diagnosis at least as likely as DVT	-2
<b>Clinical probability score:</b>	
<i>DVT likely</i>	2 points or more
<i>DVT unlikely</i>	less than 2 points

**If the Wells score is unlikely using the 2-level Wells Score and the d-dimer is negative**, then a DVT can be excluded and no imaging is required. Further investigations are required to determine the underlying cause of the patient's symptoms.

**If the Wells score is likely probability using the 2-level Wells Score** (regardless of d-dimer result) or **unlikely probability with a positive d-dimer**, a compression US scan is required.

NICE GL 144 (2012). Two-level Wells score: templates for deep vein thrombosis and pulmonary embolism

## Appendix 7

### PE Wells score

Clinical feature	Points
Clinical signs and symptoms of DVT (minimum of leg swelling and pain with palpation of the deep veins)	3
An alternative diagnosis is less likely than PE	3
Heart rate > 100 beats per minute	1.5
Immobilisation for more than 3 days or surgery in the previous 4 weeks	1.5
Previous DVT/PE	1.5
Haemoptysis	1
Malignancy (on treatment, treated in the last 6 months, or palliative)	1
<b>Clinical probability score:</b>	
PE <i>likely</i>	More than 4 points
PE <i>unlikely</i>	4 points or less

NICE GL 144 (2012). Two-level Wells score: templates for deep vein thrombosis and pulmonary embolism

