# Guideline for Venous Thromboembolism (VTE) in over 16's:

# Reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism

**This procedural document supersedes: PAT/T 44 v.4 – Venous Thromboembolism (VTE) – Prevention and Treatment of VTE in Patients Admitted to Hospital**

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|---|---|
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## Amendment Form

Please record brief details of the changes made alongside the next version number. If the APD has been reviewed **without change**, this information will still need to be recorded although the version number will remain the same.

| Version | Date issued | Brief Summary of Changes | Author |
|---|---|---|---|
| Version 6 | | **New guideline - please read in full.** | Nicola Hemmingway |
| Version 5 | 19 August 2021 | **Amendment**<br>• Within subsection 4.1 Prevention – link to the Guidance for VTE Prophylaxis, has been replaced.<br>• Appendix 6 – Guidance for VTE Prophylaxis, has been replaced with the guidelines as updated in March 2021. | Cindy Storer |
| Version 4 | 15 January 2020 | **Significantly revised – please read in full.** | Ben Kumar<br>Stuti Kaul<br>Lee Wilson |
| Version 3 | 2 July 2014 | • This is a new policy – please read in full.<br>• VTE Investigation and Treatment IPOC amended in response to 2012 NICE guidance on VTE.<br>• New Patient Information Leaflets produced – see Appendix 7 and 8<br>**NOTE: supersedes: PAT/T 44 v.2** - Prevention of Venous Thromboembolism (VTE) - Deep Vein Thrombosis and Pulmonary Embolism in Patients Admitted to Hospital **and combines PAT/T 46 v.2** - Guideline for the Management of Venous Thromboembolism. | Stuti Kaul<br>Ben Kumar<br>Tracy Evans-Phillips<br>Lee Wilson |

# Contents

# 1. INTRODUCTION

The House of Commons Health Committee reported in 2005 that an estimated 25,000 people in the UK die from preventable hospital-acquired venous thromboembolism (VTE) every year. This includes patients admitted to hospital for medical care and surgery. The inconsistent use of prophylactic measures for VTE in hospital patients has been widely reported.

VTE is a condition in which a blood clot (thrombus) forms in a vein. It most commonly occurs in the deep veins of the legs; this is called deep vein thrombosis. The thrombus may dislodge from its site of origin to travel in the blood – a phenomenon called embolism.

VTE is an important cause of death in hospital patients, and treatment of non-fatal symptomatic VTE and related long-term morbidities is associated with considerable cost to the health service.

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).

This guideline makes recommendations on:

> Assessing and reducing the risk of VTE in patients in hospital. The recommendations take into account the potential risks of the various options for prophylaxis and patient preferences.

There is a separate guideline on the "Investigation and Management of Venous Thromboembolism (VTE)". This guideline is available on the Trust Intranet under Clinical Guidelines.

# 2. PURPOSE

## 2.1 Prevention

- Patients (and relatives and carers as appropriate) should have the opportunity to be involved in decisions.
- All inpatients and day-case patients >16 with must undergo a mandatory risk assessment for the prevention of VTE.
    - The risk assessment must be completed by a doctor or nurse and filed in the medical notes.
    - The risk assessment should be undertaken on admission to hospital or at pre-operative assessment (if undergoing elective surgery), and again if the patient's clinical condition changes.

- The clinical decision on how to manage the risk of venous thromboembolism will be based on an assessment of the risks of VTE against the risks of preventative treatment for each individual patient and the decision will be informed by available published evidence. Following this the relevant pharmacological and/or mechanical prophylaxis should be prescribed.
- The Patient Information Leaflet (PIL) 'Preventing Blood Clots while you are in Hospital' (Appendix 2) should be given to all inpatients and day case patients >16 years of age
- This guideline provides guidance for the prevention of VTE based on recommendations from NICE guideline [NG89] Published: 21 March 2018 Last updated: 13 August 2019
- This guideline was developed in consultation with all clinical directorates and specialities to allow for speciality specific recommendations. These can be found in the Appendices at the end of this policy.

### 2.2 Treatment

- Patients (and relatives and carers as appropriate) should have the opportunity to be involved in decisions.
- The clinical decision making regarding management of VTE should be made with consideration of the latest NICE guidance on DVT and PE.
- If VTE is suspected, prescribers should follow the guidance in "Venous Thromboembolic Diseases: Diagnosis and Management guide, in accordance with NICE guidelines NG158, published 26th March 2020". This is available on the Trust intranet under "Clinical Guidelines".

## 3. DUTIES AND RESPONSIBILITIES

- All relevant healthcare professionals should give patients verbal and written information on the following, as part of their discharge plan.
  - The signs and symptoms of DVT and PE
  - The correct use of prophylaxis at home
  - The implications of not using the prophylaxis correctly.
- Should clinical specialities subsequently wish to amend the specific guidance for the prevention of VTE in their speciality, application should be submitted to the VTE Group for consideration and if agreed, should be included as appendices to this guideline.

## 4. RISK ASSESSMENT

**All patients**

Assess all patients to identify the risk of venous thromboembolism (VTE) and bleeding (NG89: 1.1.1. 2018)

### 4.1 Medical patients

All medical patients need to be assessed to identify the risk of VTE and bleeding: All patients should be assessed:

- as soon as possible after admission to hospital **or** by the time of the first consultant review
- using a tool published by a national UK body, professional network or peer-reviewed journal. ( NG89: 1.1.2. 2018)

DBTH's Generic VTE Risk Assessment can be used for most patients. Please see below. This Generic VTE Risk Assessment is reproduced from the Department of Health "Risk Assessment for Venous- Thromboembolism (VTE) © Crown copyright 2010 301292 1p March 10.

There are separate VTE risk assessments to be used in Maternity Services and in patients with lower limb casts. These will be discussed later in the document.

Balance the person's individual risk of VTE against their risk of bleeding when deciding whether to offer pharmacological thromboprophylaxis to medical patients. (NG89: 1.1.3. 2018).

If the medical patients, then start it as soon as possible and within 14 hours of decision is made to start pharmacological VTE prophylaxis for admission. (NG89: 1.1.4. 2018). Please be aware that there are patient-specific populations where this guidance will differ. These will be covered in later sections of the document.

NHS

**Doncaster and Bassetlaw Teaching Hospitals**
NHS Foundation Trust

***VTE RISK ASSESSMENT AND DEMENTIA SCREENING***

AFFIX LABEL HERE IF AVAILABLE

NHS Number: ___ ___ ___ - ___ ___ ___ - ___ ___ ___ ___

District Number: ___ ___ ___ ___ ___ ___ ___ ___

Surname: _____

Forename(s): _____

Address: _____

_____

D.o.B.: D D M M Y Y Y Y

Date: D D M M Y Y Y Y Time: H H M M Ward: _____

Age: ___ If the patient is aged 75 or over, complete Dementia Risk Assessment overleaf

| **Mobility – all patients** | | |
|---|---|---|
| ☐ Surgical Patient<br>☐ Medical Patient | Acute illness<br>☐ Yes ☐ No<br>Patient expected to have ongoing reduced mobility relative to normal state<br>☐ Yes ☐ No | **No + No = Low Risk**<br>Tick "low risk" below and sign the form.<br>Give VTE information leaflet.<br>One or more "**Yes**" complete full risk assessment, indicate risk level and sign the form.<br>Give VTE information leaflet. |

**THROMBOSIS RISK**

| **Patient Related** | **Tick** | **Admission related** | **Tick** |
|---|---|---|---|
| Active cancer or cancer treatment | | Significantly reduced mobility for 3 days or more | |
| Age >60 years | | Hip or Knee replacement | |
| Dehydration | | Hip fracture | |
| Known thrombophilias | | Total anaesthetic + surgical time > 90 minutes | |
| Obesity (BMI >30) | | Critical Care admission | |
| One or more significant medical comorbidities (eg heart disease; metabolic, endocrine or respiratory pathologies; acute infectious diseases; inflammatory conditions) | | Acute admission with inflammatory or intra-abdominal condition | |
| Personal history or first-degree relative with a history of VTE | | Surgery involving pelvis or lower limb with a total anaesthetic + surgical time > 60 minutes | |
| Use of hormone replacement therapy | | Surgery with significant reduction in mobility | |
| Use of oestrogen-containing contraceptive therapy | | | |
| Varicose Veins with phlebitis | | | |
| Pregnancy or <6 weeks post partum | | | |

**BLEEDING RISK**

| **Patient Related** | **Tick** | **Admission related** | **Tick** |
|---|---|---|---|
| Active bleeding | | Neurosurgery, spinal surgery or eye surgery | |
| Acquired bleeding disorder (such as acute liver failure) | | Other procedure with high bleeding risk | |
| Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with INR>2) | | Lumbar puncture / epidural / spinal anaesthesia expected within next 12 hours | |
| Acute stroke | | Lumbar puncture / epidural / spinal anaesthesia within the previous 4 hours | |
| Thrombocytopenia (platelets <75x10⁹/l) | | Smoker? ☐ Yes ☐ No<br>Please note that this question does not form part of the risk assessment | |
| Uncontrolled systolic hypertension (230 / 120 mmHg or higher) | | | |
| Untreated inherited bleeding disorders (such as haemophilia and von Willebrand's disease) | | VTE Risk reviewed ☐ Yes ☐ No<br>Signature _____ Date _____ | |



**Clinical Decision**

☐ Low risk, no thromboprophylaxis required ☐ High risk, Thromboprophylaxis indicated
☐ Thromboprophylaxis contraindicated ☐ **VTE patient information leaflet given**

Reason for contraindication: _____

Signature: _____ Print Name: _____ Designation: _____

**PTO for Dementia Risk Assessment**

WPR31896
Sept 2014
FLUOR GREEN

### 4.2 Surgical and Trauma patients

All surgical and trauma patients need to be assessed to identify the risk of VTE and bleeding. The assessment should:

- be as soon as possible after admission to hospital or by the time of the first consultant review
- use a tool published by a national UK body, professional network or peer-reviewed journal.(NG89: 1.1.5. 2018) DBTH's Generic VTE Risk Assessment should be used as this is in accordance with the Department of Health VTE risk assessment tool.

  It is important to balance the person's individual risk of VTE against their risk of bleeding when deciding whether to offer pharmacological thromboprophylaxis to surgical and trauma patients. (NG 1.1.6. 2018).

If using pharmacological VTE prophylaxis for **surgical and trauma patients**, start it as soon as possible and **within 14 hours of admission** (NG 89: 1.1.7. 2018). Please be aware that there are patient-specific populations where this guidance will differ. These will be covered in later sections of the document.

Reassess all medical, surgical and trauma patients for risk of VTE and bleeding at the point of consultant review or if their clinical condition changes. (NG 89: 1.1.8.2018).

If patient's bleeding risk outweighs risk of VTE then consider mechanical thromboprophylaxis in the form of either anti-embolism stockings (TEDS) or Intermittent Pneumatic Compression (Flowtron Active Compression System is used in DBTH). These will be discussed in the later section entitled "Mechanical Thromoprophylaxis".

### 4.3 Pregnant women and women who gave birth or had a miscarriage or termination of pregnancy in the past 6 weeks

Assess all women on admission to hospital or a midwife-led unit if they are pregnant or gave birth, had a miscarriage or had a termination of pregnancy in the past 6 weeks, to identify their risk of VTE and bleeding.

Use a tool published by a national UK body, professional network or peer-reviewed journal. The most commonly used tool is the Royal College of Obstetricians and Gynaecologists risk assessment tool. (NG89: 1.1.9. 2018). At DBTH this risk assessment is available on the K2 online system used in maternity services.

Reassess risk of VTE and bleeding, and assess the need for thromboprophylaxis for all women:

- within 6 hours of giving birth, having a miscarriage or having a termination of pregnancy **or**
- if their clinical condition changes **and** they:
    - are pregnant **or**
    - gave birth, had a miscarriage or had a termination of pregnancy within the past 6 weeks. (NG 89: 1.1.10. 2018)

# 5. THROMBOPROPHYLAXIS

## 5.1 Pharmacological Thromboprophylaxis

If, after completion of the VTE Risk Assessment the patient, is felt to be at a high risk of developing VTE **and** that this risk outweighs the bleeding risk, then offer pharmacological thromboprophylaxis.

- First-line treatment should be LMWH*. Dalteparin is used in DBTH and the standard dose is 5000 units once a day, except in the following circumstances:

  Patients who weigh less than 45kg – the dose will be 2500 units once a day in the evening

  Patients who weigh 100-149kg- the dose will be 7500 units once a day in the evening.

  Patients who weigh over 150kg - the dose will be 5000 units **twice** a day

- For **all** patients with an estimated GFR of ≤ 20ml/min/1.73m2 then the dose is 2500 units once a day (**regardless of weight**)

- If LMWH* is contraindicated, use fondaparinux sodium 2.5mg OD

If, for example a patient has a severe needle phobia and declines LMWH* or Fondaparinux then a low dose DOAC (eg. Rivaroxaban 10mg OD) could be considered. At present though, there is no recommendation from NICE that a low dose DOAC be used in place of LMWH* for VTE prophylaxis in medical inpatients. The decision to use a low dose DOAC should be a

shared decision between the patient and/ or their NOK/ LPA (Lasting Power of Attorney) for health and/or Care Giver and that of the prescribing clinician.

Please note that this does not relate to elective and trauma Orthopaedic patients, who have a separate recommendation.

Where a patient's bleeding risk outweighs their risk of VTE or pharmacological prophylaxis is contraindicated or the patient declines pharmacological prophylaxis then offer mechanical thromboprophylaxis.

### 5.2 Mechanical Thromboprophylaxis

Do **not** offer anti-embolism stockings to people who have:

- suspected or proven peripheral arterial disease
- peripheral arterial bypass grafting
- peripheral neuropathy or other causes of sensory impairment
- any local conditions in which anti-embolism 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
- major limb deformity or unusual leg size or shape preventing correct fit.

Use caution and clinical judgement when applying anti-embolism stockings over venous ulcers or wounds. (NG 89: 1.1.3.2018)

Ensure that people who need anti-embolism stockings have their legs measured and that they are provided with the correct size of stocking. Anti-embolism stockings should be fitted and patients shown how to use them by staff trained in their use. (NG 89: 1.3.2. 2018)

Ensure that people who develop oedema or postoperative swelling have their legs re-measured and anti-embolism stockings refitted. (NG 89: 1.3.3. 2018)

If arterial disease is suspected, seek expert opinion before fitting anti-embolism stockings.(NG 89: 1.3.4. 2018)

Use anti-embolism stockings that provide graduated compression and produce a calf pressure of 14 mmHg to 15 mmHg. (This relates to a pressure of 14 mmHg to18 mmHg at the ankle (NG 89: 1.3.5. 2018)

Encourage people to wear their anti-embolism stockings day and night until they no longer have significantly reduced mobility. (NG 89: 1.3.6. 2018)

Remove anti-embolism stockings daily for hygiene purposes and to inspect skin condition. In people with a significant reduction in mobility, poor skin integrity or any sensory loss,

inspect the skin 2 or 3 times a day, particularly over the heels and bony prominences (NG 89: 1.3.7. 2018)

Monitor the use of anti-embolism stockings and offer assistance if they are not being worn correctly. (NG 89: 1.3.8. 2018)

Stop the use of anti-embolism stockings if there is marking, blistering or discolouration of the skin, particularly over the heels and bony prominences, or if the person experiences pain or discomfort. If suitable, offer intermittent pneumatic compression as an alternative. (NG 89: 1.3.9. 2018)

Advise the person to wear their device for as much time as possible. (NG 89: 1.3.11. 2018)

### 5.3 Intermittent pneumatic compression

A method of prophylaxis that includes an air pump and inflatable garments in a system designed to improve venous circulation in the lower limbs of people at risk of DVT or pulmonary embolism. The inflation–deflation cycle of intermittent pneumatic compression therapy simulates the thigh, calf and foot's normal ambulatory pump action increasing both the volume and rate of blood flow, eliminating venous stasis and replicating the effects of the natural muscle pump. Intermittent pneumatic compression devices can be thigh- or knee-length sleeves that are wrapped around the leg, or a garment that can be wrapped around or worn on the foot that is designed to mimic the actions of walking (NG 89. 2018)

## 6. GENERAL CIRCUMSTANCES

### 6.1 All Surgery

Advise people to consider stopping oestrogen-containing oral contraceptives or hormone replacement therapy 4 weeks before elective surgery. If stopped, provide advice on alternative contraceptive methods. (NG 89: 1.3.13. 2018)

### 6.2 Nursing Care

Encourage people to mobilise as soon as possible and do not allow people to become dehydrated unless clinically indicated. (NG 89: 1.3.14-15. 2018)

### 6.3 People using anticoagulation therapy

Consider VTE prophylaxis for people at increased risk of VTE who are interrupting anticoagulant therapy. (NG 89: 1.3.17)

### 6.4 People using antiplatelet agents

Consider VTE prophylaxis for people who are having antiplatelet agents for other conditions and whose risk of VTE outweighs their risk of bleeding. 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. (NG 89: 1.3.16)

## 7. CONDITION SPECIFIC INTERVENTIONS

### 7.1 Acute coronary syndromes

Be aware that people receiving anticoagulant drugs as part of their treatment for an acute coronary syndrome do not usually need VTE prophylaxis. (NG 89: 1.4.1. 2018)

### 7.2 Acute stroke patients

Do not offer anti-embolism stockings for VTE prophylaxis to people who are admitted for acute stroke. (NG 89: 1.4.2. 2018)

Consider intermittent pneumatic compression for VTE prophylaxis for people who are immobile and admitted with acute stroke. If using, start it within 3 days of acute stroke. (NG 89: 1.4.3. 2018)

Explain to the person admitted with acute stroke and their family members or carers (as appropriate) that intermittent pneumatic compression:

- reduces the risk of DVT and may increase their chances of survival
- will not help them recover from stroke, and there may be an associated increased risk of surviving with severe disability. ( NG 89: 1.4.4. 2018)

When using intermittent pneumatic compression for people who are admitted with acute stroke, provide it for 30 days or until the person is mobile or discharged, whichever is sooner. (NG 89: 1.4.5. 2018)

At DBTH, the VTE risk assessment for all Stroke patients on ward 16 is completed digitally on Nervecentre. VTE prophylaxis is then prescribed digitally on Wellsky (electronic prescribing system)

### 7.3 Patients with Renal Impairment

If using pharmacological VTE prophylaxis for people with renal impairment, choose either LMWH* or unfractionated heparin (UFH). (NG 89: 1.5.1. 2018)

If needed, reduce the dose of LMWH* and UFH for people with renal impairment. Base the decision on multidisciplinary or senior opinion, or locally agreed protocols. (NG 89: 1.5.2. 2018)

### 7.4 Patients with Cancer

Do not offer VTE prophylaxis to people with cancer who are receiving cancer-modifying treatments such as radiotherapy, chemotherapy or immunotherapy and who are mobile, except as outlined in recommendations below, unless they are also at increased risk of VTE because of something other than the cancer. (NG 89: 1.6.1. 2018)

Consider pharmacological VTE prophylaxis for people with myeloma who are receiving chemotherapy with thalidomide, pomalidomide or lenalidomide with steroids. Choose either:

- Aspirin (75 mg or 150 mg) or
- LMWH* (NG 89: 1.6.2. 2018)

Consider pharmacological VTE prophylaxis with LMWH* for people with pancreatic cancer who are receiving chemotherapy. (NG 89: 1.6.3. 2018)

If giving VTE prophylaxis to people with cancer (see recommendations above), continue for as long as they are receiving chemotherapy. (NG 89: 1.6.4. 2018)

### 7.5 Patients having Palliative Care

Consider pharmacological VTE prophylaxis for people who are having palliative care. Take into account temporary increases in thrombotic risk factors, risk of bleeding, likely life expectancy and the views of the person and their family members or carers (as appropriate):

- Use LMWH* as first-line treatment.
- If LMWH* is contraindicated, use fondaparinux sodium. (NG 89: 1.7.1. 2018)

Do not offer VTE prophylaxis to people in the last days of life. (NG 89: 1.7.2. 2018)

For recommendations on shared decision-making in the last days of life, see the NICE guideline on care of dying adults in the last days of life. (NG89: 1.7.3. 2018)

Review VTE prophylaxis daily for people who are having palliative care, taking into account the views of the person, their family members or carers (as appropriate) and the multidisciplinary team. (NG 89: 1.7.4. 2018)

### 7.6 Patients admitted to Critical Care

For guidance on pharmacological VTE prophylaxis for people with COVID-19 pneumonia who are being treated in a hospital or community setting, see our COVID-19 rapid guideline on managing COVID-19.

Assess all people admitted to the critical care unit for risk of VTE and bleeding. (NG 89: 1.8.1. 2018)

Provide LMWH* to people admitted to the critical care unit if pharmacological VTE prophylaxis is not contraindicated. For people with renal impairment (estimated glomerular filtration rate (eGFR) of less than 30 ml/min/1.73 m2) see section above. (NG 89: 1.8.2. 2018)

Consider mechanical VTE prophylaxis for people admitted to the critical care unit if pharmacological prophylaxis is contraindicated based on their condition or procedure. (NG 89: 1.8.3. 2018)

If using mechanical VTE prophylaxis for people admitted to the critical care unit, start it on admission and continue until the person no longer has reduced mobility relative to their normal or anticipated mobility. (NG 89: 1.8.4. 2018)

Reassess VTE and bleeding risk daily for people in critical care units. (NG 89: 1.8.5. 2018)

Assess VTE and bleeding risk more than once a day in people admitted to the critical care unit if the person's condition is changing rapidly. (NG 89: 1.8.6. 2018)

### 7.7 Patients Undergoing Anaesthesia

Consider regional anaesthesia for individual patients, in addition to other methods of VTE prophylaxis, as it carries a lower risk of VTE than general anaesthesia. Take into account the person's preferences, their suitability for regional anaesthesia and any other planned method of VTE prophylaxis. (NG 89: 1.10.1. 2018)

If regional anaesthesia is used, plan the timing of pharmacological VTE prophylaxis to minimise the risk of epidural haematoma. If antiplatelet or anticoagulant agents are being used, or their use is planned, refer to the summary of product characteristics for guidance about the safety and timing of these in relation to the use of regional anaesthesia. (NG 89: 1.10.2. 2018)

Do not routinely offer pharmacological or mechanical VTE prophylaxis to people undergoing a surgical procedure with local anaesthesia by local infiltration with no limitation of mobility. (NG 89: 1.10.3. 2018)

### 7.8 Interventions for people having orthopaedic surgery

These guidelines have been formulated in line with emerging evidence and the guidelines used by the American Academy of Orthopaedic Surgeons and the American College of Chest Physicians. Authors: Lee Wilson, Consultant Pharmacist and Mr Vivek Panikkar, Consultant Orthopaedic Surgeon & VTE Lead for T&O

#### 7.8.1 ELECTIVE:

#### 7.8.1.2 High Risk** Hip & Knee Replacement

Use regional anaesthesia when possible, consider calf mechanical prophylaxis

Dalteparin 5000units* s/c in the EVENING to start 6 hours post-op and continued whilst patient in hospital

Then Rivaroxaban 10mg once DAILY for 6 weeks started at discharge. If unable to have Rivaroxaban, Warfarin (target INR 2.5 range 2 to 3) for 6 weeks started the day following surgery (continue dalteparin until INR therapeutic for two consecutive days). In active

cancer or treatment for cancer, continue with Dalteparin 5000units* s/c in the EVENING for 6 weeks following surgery.

**High risk= Previous PE/DVT, Active cancer or ongoing treatment for cancer, inherited or acquired thrombophilia

#### 7.8.1.3 Standard Risk Hip & Knee Replacement

Use regional anaesthesia when possible, consider mechanical prophylaxis

Dalteparin 5000units* s/c in the EVENING to start 6 hours post-op and continued whilst patient in hospital.

Then Aspirin 150mg once DAILY for 6 weeks to commence on discharge (where aspirin intolerant, consider substituting with dalteparin or rivaroxaban instead: Prescribe for 10 days for knee replacement and 30 days for hip replacement)

#### 7.8.1.4 Hip Arthroscopy

Dalteparin 5000units* s/c in the EVENING to start 6 hours post-op, continued for 3 weeks.

#### 7.8.1.5 Peri-acetabular Osteotomies

Dalteparin 5000units* s/c in the EVENING to start 6 hours post-op and continued for 3 weeks post-op.

#### 7.8.1.6 Spinal Surgery/Fractures

All patients to receive anti-thromboembolism (TED) stockings before going to theatre and continue with these until fully mobile/additional mechanical prophylaxis can be considered if appropriate

If high risk (previous PE/DVT, inherited or acquired thrombophilia, active cancer or treatment for cancer), consider Dalteparin 5000units* s/c in the EVENING to start 48 hours after surgery and continued whilst patient in hospital.

#### 7.8.1.7 Shoulder and Upper Limb Surgery

No specific prophylaxis required. Consider calf pumps/anti-thromboembolism (TED) stockings.

#### 7.8.1.8 Foot and Ankle Surgery

Use regional anaesthesia when possible and calf pumps on opposite leg

Tendo Achilles reconstruction/Ankle fusion: Dalteparin 5000units s/c in the EVENING to start 6 hours post-op for 6 weeks

If any issues with Dalteparin, consider substituting with Rivaroxaban 10mg once DAILY for period in plaster

FOREFOOT: Dalteparin 5000units s/c as a single dose post-op + then Aspirin 150mg once DAILY for 3 weeks

This guidance is to be followed until UK-FATE (National trial for VTE prophylaxis) results are available

### 7.8.2 ORTHOPAEDIC TRAUMA

#### 7.8.2.2 Fractured Neck of Femur

Dalteparin 5000units* s/c in the EVENING to start 6 hours post-op, continued whilst patient in hospital.

Then Aspirin 150mg once DAILY for 6 weeks to commence on discharge.

If aspirin inappropriate, Dalteparin 5000units* s/c in the EVENING for 6 weeks following surgery.

#### 7.8.2.3 Pelvic Fracture

Dalteparin 5000units* s/c in the EVENING to start 6 hours post-op, continued whilst patient is still restricted in terms of mobility.

#### 7.8.2.4 Lower Limb Fractures

Guidance remains the same whether foot included in cast or not

All patients should have the DBTH “Risk Assessment for VTE for patients with lower limb casts” completed. Please see below for example of form.

#### 7.8.2.5 High Risk ** patients with Lower Limb Plaster Casts

Dalteparin 5000units* s/c in the EVENING to start 6 hours post-op, continued whilst patient in hospital (for those patients prescribed rivaroxaban).

Then Rivaroxaban 10mg once DAILY for six weeks. If unable to have Rivaroxaban, Warfarin (target INR 2.5 (range 2 - 3) for 6 weeks started the day following surgery (continue dalteparin until INR therapeutic for two consecutive days).

**High risk= Previous PE/DVT, Active cancer or ongoing treatment for cancer, inherited or acquired thrombophilia

#### 7.8.2.6 Standard Risk patients with Lower Limb Plaster Casts

Dalteparin 5000units* s/c in the EVENING to start 6 hours post-op, continued whilst patient in hospital

Then Aspirin 150mg once DAILY while patient is in a cast. Once plaster is removed, provided patient is fully weight bearing and ankle is free to mobilise Aspirin can be discontinued. Aspirin can be considered for a longer period of time, if patient continues to struggle with mobilisation and is non-weight bearing, up to a recommended maximum of 6 weeks.

For more information on VTE prophylaxis in those patients with lower limb immobilisation, who are being treated on an outpatient basis, please see Appendix 1.

#### 7.8.2.6 Upper Limb Fractures/Surgery

No specific prophylaxis required. Consider calf pumps/anti thromboembolism (TED) stockings intra operatively.

*For detailed Dalteparin dosing see section above entitled Pharmacological Thromboprophylaxis in section 3.1

#### 7.8.2.7 Advice on Prescribing Aspirin

All patients with a history of peptic ulcer disease/reflux and or associated symptoms should be provided with GI protection for the duration of Aspirin treatment. This will usually be Lansoprazole 15 mg od.

For those patients already on Clopidogrel, Aspirin 75mg OD can be added. For patients admitted on dual antiplatelet therapy eg, Aspirin and Ticagrelor, seek advice from a consultant cardiologist.

HMR 2

Doncaster and Bassetlaw Hospitals NHS Foundation Trust

***RISK ASSESSMENT FOR VTE FOR PATIENTS WITH LOWER LIMB CASTS***

AFFIX LABEL HERE IF AVAILABLE

NHS Number: .....
District Number: .....
Surname: .....
Forename(s): .....
Address: .....
.....
D.o.B.: .....

Date of Risk Assessment: ..... Time: .....

Please state your approximate: Weight: ..... Height: .....

| **Clotting Risk** | **Yes** | **No** |
|---|---|---|
| Are you currently undergoing or, in the past received treatment for cancer? | ☐ | ☐ |
| Any personal history or family history of blood clots? | ☐ | ☐ |
| Do you have any known blood disorder? (e.g. Factor V Leiden, antithrombin deficiency, Protein C or S deficiency) | ☐ | ☐ |
| Any use of oral HRT (Hormone replacement therapy)? | ☐ | ☐ |
| Use if oestrogen-containing contraceptive therapy? | ☐ | ☐ |
| Have you had surgery on the lower limbs within the last six weeks? | ☐ | ☐ |
| Have you undertaken and recent long-distance travel? (a journey by can / train / bus / plane lasting longer than 4 hours in the last 4 weeks) | ☐ | ☐ |
| Are you pregnant or less than 6 weeks post-delivery? | ☐ | ☐ |
| Do you have varicose veins with phlebitis? | ☐ | ☐ |
| Have you had an admission to hospital within the last 6 weeks? | ☐ | ☐ |

| **Bleeding Risk** | **Yes** | **No** |
|---|---|---|
| Do you have any active bleeding? | ☐ | ☐ |
| Do you have a bleeding tendency / disorder? | ☐ | ☐ |
| Have you had a stroke within the last 14 days? | ☐ | ☐ |
| Are you on any blood thinning medication? (e.g. Warfarin, dabigitran, clopidogrel, fondaparinux , rivaroxiban, etc) | ☐ | ☐ |
| Do you have Thrombocytopenia? (platelets <75x109/l) | ☐ | ☐ |
| Do you have uncontrolled high blood pressure? (230 / 120 mmHg or higher) | ☐ | ☐ |
| Do you have untreated inherited bleeding disorders? (such as haemophilia and von Willebrand's disease) | ☐ | ☐ |

| **FOR MEDICAL USE ONLY** | | |
|---|---|---|
| Is thromboprophylaxis indicated? ☐ **Yes** ☐ No | | |
| If 'No', specify reason why: ..... | | |
| Has thromboprophylaxis been prescribed? ☐ **Yes** ☐ No | | |
| Drug: | Dose: | Duration: |
| Signature of prescriber: | | Date: |



WPR - May 2013 COLOUR TBC

## 7.9 Interventions for people with major trauma

Offer mechanical VTE prophylaxis with intermittent pneumatic compression on admission to people with serious or major trauma. Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. (NG 89: 1.13.1. 2018)

Reassess risk of VTE and bleeding in people with serious or major trauma whenever their clinical condition changes and at least daily. (NG 89: 1.13.2. 2018)

**Consider pharmacological VTE prophylaxis for people with serious or major trauma as soon as possible after the risk assessment when the risk of VTE outweighs the risk of bleeding. Continue for a minimum of 7 days. (NG 89: 1.13.3. 2018)**

## 7.10 Patients having Abdominal surgery

Offer VTE prophylaxis to people undergoing abdominal (gastrointestinal, gynaecological, urological) surgery who are at increased risk of VTE. For people undergoing bariatric surgery, follow the recommendations in the section on bariatric surgery. (NG 89: 1.14.1. 2018)

Start **mechanical VTE prophylaxis** on admission for people undergoing abdominal surgery.

Choose either:

- anti-embolism stockings **or**
- Intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. (NG 89: 1.14.2. 2018)

Add **pharmacological VTE prophylaxis** for a minimum of 7 days for people undergoing abdominal surgery whose risk of VTE outweighs their risk of bleeding, taking into account individual patient factors and according to clinical judgement. Choose either:

- LMWH* **or**
- fondaparinux sodium. ( NG 89: 1.14.3. 2018)

**Consider extending pharmacological VTE prophylaxis to 28 days postoperatively for people who have had major cancer surgery in the abdomen. (NG 28: 1.14.4. 2018)**

### 7.11 Patients having Bariatric surgery

Offer VTE prophylaxis to people undergoing bariatric surgery. (NG 89: 1.14.5. 2018)

Start **mechanical VTE prophylaxis** on admission for people undergoing bariatric surgery. Choose either:

- anti-embolism stockings **or**
- Intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. ( NG 89: 1.14.6. 2018)

Add **pharmacological VTE prophylaxis** for people undergoing bariatric surgery for a minimum of 7 days for people whose risk of VTE outweighs their risk of bleeding. Choose either:

- LMWH* **or**
- fondaparinux sodium. (NG 89: 1.14.7. 2018)

### 7.12 Patients having Thoracic surgery

Consider VTE prophylaxis for people undergoing thoracic surgery who are at increased risk of VTE. (NG 89: 1.14.8. 2018)

Start **mechanical VTE prophylaxis** on admission for people undergoing thoracic surgery. Choose either:

- anti-embolism stockings **or**
- intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. (NG 89: 1.14.9. 2018)

**Consider** adding pharmacological VTE prophylaxis for people undergoing thoracic surgery for a minimum of 7 days to people whose risk of VTE outweighs their risk of bleeding:

- Use LMWH* as first-line treatment.
- If LMWH* is contraindicated, use fondaparinux sodium. (NG 89: 1.14.10. 2018)

### 7.13 Patients having Oral and maxillofacial surgery

Consider pharmacological VTE prophylaxis with LMWH* for a minimum of 7 days for people undergoing oral or maxillofacial surgery whose risk of VTE outweighs their risk of bleeding. (NG 89: 1.14.11. 2018)

**Consider** mechanical VTE prophylaxis on admission for people undergoing oral or maxillofacial surgery who are at increased risk of VTE and high risk of bleeding. Choose either:

- anti-embolism stockings **or**
- Intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. (NG 89: 1.14.12. 2018)

### 7.14 Patients having ENT surgery

Consider pharmacological VTE prophylaxis with LMWH* for a minimum of 7 days for people undergoing ears, nose or throat (ENT) surgery whose risk of VTE outweighs their risk of bleeding. (NG 89: 1.14.13. 2018)

**Consider** mechanical VTE prophylaxis on admission for people undergoing ENT surgery who are at increased risk of VTE and high risk of bleeding. Choose either:

- anti-embolism stockings **or**
- Intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. (NG 89: 1.14.14. 2018)

### 7.15 Patients having vascular surgery

#### 7.15.1 Open vascular surgery or endovascular aneurysm repair

Consider pharmacological VTE prophylaxis with LMWH* for a minimum of 7 days for people who are undergoing open vascular surgery or major endovascular procedures, including endovascular aneurysm repair whose risk of VTE outweighs their risk of bleeding. (NG 89: 1.15.3. 2018)

Consider mechanical VTE prophylaxis on admission for people who are undergoing open vascular surgery or major endovascular procedures, including endovascular aneurysm repair, if pharmacological prophylaxis is contraindicated. Choose either:

- anti-embolism stockings **or**
- Intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. (NG 89: 1.15.4. 2018)

### 7.15.2 Lower limb amputation

Consider pharmacological VTE prophylaxis with LMWH* for a minimum of 7 days for people who are undergoing lower limb amputation whose risk of VTE outweighs their risk of bleeding. (NG 89A; 1.15.5. 2018)

Consider mechanical VTE prophylaxis with intermittent pneumatic compression on the contralateral leg, on admission, for people who are undergoing lower limb amputation and if pharmacological prophylaxis is contraindicated. (NG 89: 1.15.6. 2018)

For people undergoing lower limb amputation, continue mechanical VTE prophylaxis until the person no longer has significantly reduced mobility relative to their anticipated mobility. (NG 89: 1.15.7. 2018)

### 7.15.3 Varicose vein surgery

Be aware that VTE prophylaxis is generally not needed for people undergoing varicose vein surgery where:

- total anaesthesia time is less than 90 minutes **and**
- the person is at low risk of VTE. ( NG 89: 1.15.8. 2018)

**Consider pharmacological VTE prophylaxis** with LMWH*, starting 6 to 12 hours after surgery and continuing for 7 days for people undergoing varicose vein surgery if:

- total anaesthesia time is more than 90 minutes **or**
- the person's risk of VTE outweighs their risk of bleeding. (NG 89: 1.15.9. 2018)

**Consider mechanical VTE prophylaxis** with anti-embolism stockings, on admission, for people undergoing varicose vein surgery:

- who are at increased risk of VTE **and**
- if pharmacological prophylaxis is contraindicated. ( NG 89: 1.15.10. 2018)

If using anti-embolism stockings for people undergoing varicose vein surgery, continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. (NG 89: 1.15.11. 2018)

### 7.16 Interventions for pregnant women and women who gave birth or had a miscarriage or termination of pregnancy in the past 6 weeks

Consider LMWH* for all women who are admitted to hospital or a midwife-led unit if they are pregnant or gave birth, had a miscarriage or had a termination of pregnancy in the past 6 weeks, and whose risk of VTE outweighs their risk of bleeding. (NG 89: 1.16.1. 2018)

Do **not** offer VTE prophylaxis to women admitted to hospital or a midwife-led unit who are in active labour. (NG 89: 1.16.2. 2018)

**Stop** pharmacological VTE prophylaxis when women are in labour. (NG 89: 1.16.3. 2018)

If using LMWH* in pregnant women, start it as soon as possible and within 14 hours of the risk assessment being completed and continue until the woman is no longer at increased risk of VTE or until discharge from hospital or the midwife-led unit. (NG 89: 1.16.4. 2018)

If using LMWH* in women who gave birth or had a miscarriage or termination of pregnancy, start 4 to 8 hours after the event unless contraindicated and continue for a minimum of 7 days. (NG 89: 1.16.5. 2018)

**Consider combined prophylaxis with LMWH* plus mechanical prophylaxis** for pregnant women or women who gave birth or had a miscarriage or termination of pregnancy in the past 6 weeks and **who are likely to be immobilised, or have significantly reduced mobility relative to their normal or anticipated mobility for 3 or more days after surgery, including caesarean section:**

- Use intermittent pneumatic compression as first-line treatment.
- If intermittent pneumatic compression is contraindicated, use anti-embolism stockings.

Continue until the woman no longer has significantly reduced mobility relative to her normal or anticipated mobility or until discharge from hospital. ( NG 89: 1.16.6. 2018)

## 8. DISCHARGING PATIENT HOME

As part of the discharge plan, give patients and their family members or carers (as appropriate) verbal and written information on:

- the signs and symptoms of deep vein thrombosis (DVT) and pulmonary embolism
- how people can reduce their risk of VTE (such as keeping well hydrated and, if possible, exercising and becoming more mobile)
- the importance of seeking help if DVT, pulmonary embolism or other adverse events are suspected. ( NG 89: 1.2.4. 2018)

Give people discharged with VTE prophylaxis and their family members or carers (as appropriate) verbal and written information on:

- the importance of using VTE prophylaxis correctly (including the correct administration and disposal of pharmacological prophylaxis)
- the importance of continuing treatment for the recommended duration
- the signs and symptoms of adverse events related to VTE prophylaxis
- the importance of seeking help and who to contact if people have problems using VTE prophylaxis. ( NG89: 1.2.5. 2018)

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. ( NG89: 1.2.6. 2018)

Ensure that people who are discharged with pharmacological and/or mechanical VTE prophylaxis are able to use it correctly, or have arrangements made for someone to be available who will be able to help them. (NG 89: 1.2.7. 2018)

Notify the person's GP if the person has been discharged with pharmacological and/or mechanical VTE prophylaxis to be used at home. (NG 89: 1.2.8. 2018)

**For all DVT/ PE occurring within 3 months of a hospital admission then please complete DATIX.**

**Ensure all patients diagnosed with VTE have appropriate follow up arranged by referring to the VTE Clinic.**

## 9 TRAINING/SUPPORT

A Learning needs analysis is being developed to promote the delivery of this guidance.

## 10 MONITORING COMPLIANCE

| Criteria | Monitoring | Who | Frequency | How reviewed |
|---|---|---|---|---|
| All patients admitted to the Trust as Inpatients or Day-cases will have a VTE Risk Assessment. | Annual audit using pre-defined proforma (specific to VTE Risk Assessment used), auditing 20 sets of casenotes of patients with a current stay | Each specialty, lead by the Clinical Audit Lead within the division | Annual rolling programme | Report sent to division for recommendations and action plans.<br>Action plans and recommendations reviewed by VTE Group<br>Compliance with annual programme monitored by Audit & Effectiveness Forum |
| All patients with hospital acquired VTE (within 3 months of admission) to have a Root Cause Analysis undertaken | Cases identified via Datix system, casenotes are located and reviewed to identify if the VTE was avoidable | Feedback letters sent to Primary Clinician to complete. | Reviewed on an individual case basis | Each outcome is shared with division, VTE Group and fed back to Trust via Medical Director. |
| Patients admitted with a VTE will have care according to "Venous Thromboembolic Diseases: Diagnosis and Management guide" ( in accordance with NICE guidance NG158, published 26th March 2020 | Audit of compliance with "Venous Thromboembolic Diseases: Diagnosis and Management guide" ( in accordance with NICE guidance NG158, published 26th March 2020 | Audit instigated by the VTE Group Lead | Annual | Report reviewed by VTE Group and results disseminated to Trust via Clinical Directors |

# Appendix 1

## Deep Vein Thrombosis (DVT) Prophylaxis Virtual Fracture Clinic (VFC) SOP

### Purpose

To outline the process to determine DVT prophylaxis for any patient with lower limb immobilisation or who is not fully weight bearing and seen within the VFC

### Scope

This SOP covers all members of staff working in the VFC. Once the patient is seen within the fracture clinic then they are no longer under the scope of this SOP.

### Procedure

Any patient with lower limb immobilisation will complete the "Risk Assessment for VTE for patients with lower limb casts" over the phone and this will be reviewed by the physiotherapist within the VFC. If VTE prophylaxis is required then any medication advised within the VFC should be prescribed by a medical professional unless:

- The patient has already been prescribed the relevant medication as per the flow chart below and have an ample supply - check symphony for this. Advise the patient to continue with this medication.
- The patient has been advised to take aspirin, understands the risks of not taking the Aspirin and declined to attend to pick up the prescription. In this case the patient will be advised on the dose and frequency of the medication. The following key points will then be documented in the notes; **patient declined to attend for prescription, knows the risks of not taking the medication, agreed to buy locally.**

See the flow chart below.

### Prescription

The doctor in the fracture clinic will be the initial person asked to sign the DVT risk assessment and prescribe the medication. If there is no fracture clinic running then a doctor in an orthopaedic clinic will be approached instead. If neither of these options are possible then the doctor covering the orthopaedic wards will be contacted via Bleep or found in person. Failing all of the above if the patient is unable to get the correct medication within 24hrs of the VFC then they will be asked to attend the emergency department to be assessed for VTE prophylaxis.

## Medication administration

Only people trained to dispense medication can do so. At present this is only the nursing staff or doctors in the fracture clinic. It will be the role of the nurse in fracture clinic to do this and make sure the adequate documentation is completed and filed as needed.

## Collection of the prescription/medication

If the patient is Doncaster based, either themselves or a nominated person will be asked to attend Doncaster Royal Infirmary Fracture Clinic for the prescription/medication as early as possible. If the patient is Bassetlaw based then they will be asked to attend the pharmacy at Bassetlaw Hospital and the prescription will be send there via the Doncaster pharmacy. If the patient needs to be shown how to inject then the nursing staff in fracture clinic either at Doncaster or Bassetlaw will show them how to do this.

Regarding Aspirin, if the patient declines to attend the hospital and doesn't have anyone else who can pick up the medication on their behalf but willing to buy over the counter then the risks of not taking the medication and the importance of the medication will be reinforced. The dosage, when and how to take the medication will be made clear to the patient. If this is the case, then this will be documented on the VTE risk assessment form and filed into the notes.

The patient should have already been started on appropriate VTE prophylaxis by the Emergency Department and so normally any delays in getting the medication is not an issue. On the rare circumstance (weekend) that it is an issue then the patient may need to re-attend ED for the appropriate medication to be prescribed and issued.

# Deep Vein Thrombosis (DVT) Prophylaxis Virtual Fracture Clinic Pathway

This pathway should be followed for any patient who has the lower limb immobilised.

Virtual Fracture Clinic (VFC)

Assessment completed with note of any prophylaxis started in A+E

On contacting the patient from the virtual fracture clinic, any patient who has had the lower limb immobilised should have a "Risk Assessment for VTE for patients with lower limb casts" completed over the phone (See page below for assessment)

The patient is **low risk** if they answer no to all the DVT risk assessment answers otherwise they should be deemed as **high risk** until discussed with the consultant/doctor.

If this pathway cannot be followed for any reason, then the patient's DVT prophylaxis has to be discussed with the consultant/doctor.

The patient is low risk, immobilised in a removable boot or splint, fully weight bearing and is able to remove the boot regularly to do circulatory exercises or ankle is free during weight bearing

No Prophylaxis is required

The patient is low risk and;

Immobilised in a cast,
**or** a boot which the patient can't remove,
**or** is non weight bearing.

Aspirin 150mg once a day for as long as the lower limb is immobilised unless contraindicated or an Achilles tendon rupture.

The patient will be asked if they have any of the contraindications or precautions as indicated in this document for aspirin and relayed to the doctor.

The Doctor will complete the DVT risk assessment and prescribe the relevant medication.

The patient is high risk and immobilised

The Doctor will complete the DVT risk assessment and prescribe the relevant medication

# Aspirin

**Contraindications**

Atrial Fibrillation

Patients taking warfarin or other anticoagulants (including dabigatran, rivaroxaban, apixaban, edoxaban)

Patients with haemophilia or other coagulation defects (decreases platelet aggregation and increases bleeding time).

Previous or active peptic ulceration

Children under 16 years of age

**Precautions**

Patients already taking:

- NSAIDs (check OTC use)
- Lithium
- Corticosteroids
- Ciclosporin
- Methotrexate
- Tacrolimus
- SSRIs (citalopram, sertraline, escitalopram, venlafaxine)

Uncontrolled hypertension

G6PD deficiency (an inherited condition in which the body doesn't have enough of the enzyme G6PD, which helps red blood cells function normally.

Asthma (patient may be sensitive to NSAIDS)

Excessive alcohol consumption.

**Possible side effects**

Hypersensitivity reactions including skin rashes (common),

Angioedema and bronchospasm.

Gastro-intestinal discomfort, nausea, diarrhoea and occasionally bleeding and ulceration.

Systemic as well as local effects contribute to GI damage.

Haemorrhage

**Action if aspirin is inappropriate**

Discuss with medic in fracture clinic

**APPENDIX 2**

NHS
Doncaster and Bassetlaw Teaching Hospitals
NHS Foundation Trust

# Preventing blood clots while you're in hospital

## What is deep vein thrombosis?

Whenever we cut ourselves, our blood hardens and a scab forms. This process is called blood clotting, or coagulation. Sometimes, a clot of blood can occur within a blood vessel, forming a 'plug' that can interrupt the normal flow of blood, a condition called thrombosis. When a clot forms in a vein deep within the leg, this is called deep vein thrombosis (DVT).

## Why does blood clot?

Blood clotting is a natural, protective mechanism that is triggered by the body in response to a cut or wound and prevents you from bleeding too much. The blood-clotting process is a complex sequence of chemical reactions. Your blood contains blood clotting proteins, anti-clotting proteins and cells called platelets, all of which are important in this process. Thrombosis can occur as a result of inactivity (for example, prolonged bed rest) or inflammatory illnesses. Some people are born with abnormalities of the clotting or anti-clotting proteins in the blood that increase their risk - this is known as thrombophilia. This can sometimes be associated with a family history of blood clots.

## Is a DVT serious?

If the blood clot stays in the leg, it may not cause serious problems and some clots cause no symptoms at all. After large clots, long-term swelling and discomfort in the leg can result. If a clot becomes dislodged from the vein in the leg, it can travel through the circulation to reach, and block, the blood vessels in the lungs, a condition called pulmonary embolism (PE).

This condition can be trivial or life threatening, depending on the size of the clot.

Because symptoms of a PE can be the first sign of a problem, it is very important to prevent clots from forming in the first place.

WPR30726 June 2018 Review date: June 2020

## Why might I be at risk of developing blood clots?

There are several risk factors that increase your chances of developing a DVT or PE. These are commonly seen in patients in hospital.
The main risk factors include:

- major operations
- reduced mobility
- pregnancy
- trauma (fractures)
- acute medical illness
- stroke or paralysis
- cancer and its treatments
- some oral contraceptives or Hormone Replacement Therapy (HRT) - see below*
- smoking
- previous blood DVT or PE
- a known blood abnormality causing a clotting tendency (thrombophilia) or family history of clots.

Current guidance for women on HRT or oestrogen-containing oral contraceptives undergoing any elective (non-emergency) surgery is to consider temporarily stopping these 1 month before surgery. You may wish to discuss this with your General Practitioner (GP) or surgeon. Women who do stop the oral contraceptive should be aware of the possibility of pregnancy and consider alternative methods of contraception. You are still likely to benefit from other forms of clot prevention.

## What can be done to prevent blood clots?

When you are admitted to hospital, you will have a clotting risk assessment performed and, if you are found to be at risk, measures will be put in place to address this.

These include:

### Anti-thrombotic stockings (TED stockings)

Unless there is a good reason not to, eg poor circulation or nerve damage to the feet and legs common in diabetes, all surgical patients will be given anti-thrombotic stockings to wear while in hospital, and for six weeks after the operation. They should be worn day and night and not removed for more than 30 minutes a day (for bathing). It is important that the stockings are fitted properly, so that they will have the desired effect in preventing clotting. If your stockings are falling down or too tight, speak to a trained nurse who will be able to measure your legs and issue a more appropriate stocking. The stockings are designed to be washed up to 30 times. Wash them by hand, using a mild detergent in warm water and dry naturally.

## Anticoagulants

If you are felt to be at high risk of clotting, you will also be prescribed an anticoagulant or 'blood-thinner'. These work with the body's natural anti-clotting system to prevent blood clots.

## What type of anticoagulant is used?

One commonly prescribed anti-coagulant is Dalteparin, a type of heparin. It is given by your nurse as an injection, once every day, while you are in hospital.

For most patients and most operations, you will be given Dalteparin until you are fully mobile. This will normally be less than a week. In certain cases, your doctor may decide that you need to continue with Dalteparin for a while after you go home from hospital. If this is the case, the doctor or nursing staff will discuss this with you before you are discharged. Dalteparin is easy to inject at home and can be done either by you or a relative. Do not hesitate to ask about anything that concerns you - injecting at home is easy, and it is important that you feel confident about doing so. If you are unable to manage this, a district nurse will be asked to visit to give you the injection.

If you are undergoing orthopaedic or podiatric surgery, you may be given aspirin (an oral antiplatelet tablet) or rivaroxaban (an oral anticoagulant) to take home. Aspirin is only recommended by NICE for certain types of operations (hip or knee replacements) but local guidelines (based on recommendations from the American College of Chest Physicians) suggest wider use of aspirin. You can choose to be treated in accordance with NICE guidance, if you would prefer, or you can discuss these options with your surgeon.

## Are there any side effects with Dalteparin?

It is unlikely that you will experience any problems with Dalteparin. However, you should contact your doctor immediately, day or night, if you:

- feel chest pains or develop shortness of breath
- injure yourself, particularly on your head, eyes or joints
- cut yourself and bleed heavily
- have nose bleeds or your gums bleed heavily
- have a very heavy menstrual period
- notice unexpected bruises, such as brown or black spots on the skin
- vomit blood or something that looks like coffee-grounds

- pass blood in your urine or motions (either obvious blood or sticky, black stools)
- develop a sudden change in your general health, eg vomiting, diarrhoea, fever, etc.

## What happens once I am out of hospital?

Continue to wear your compression stockings if you have been issued with them. Once your recovery is under way, the best thing to do is exercise. Blood that is moving is less likely to clot. Exercise, eg walking, helps the blood to circulate and can help to prevent DVT. Regular, gentle exercise is something you should try to incorporate into your daily routine, if your health allows you. Not only will it help you keep your weight down, but it will also make you feel fitter and more energetic. You should ask your doctor what exercise is safe for you to do and when you can start.

## What are the signs and symptoms of a DVT or PE?

If you experience any of the following signs or symptoms, you should inform a member of the healthcare team or your GP immediately:

### DVT

- calf pain in either leg (throbbing, tightness)
- swelling of one leg, which is new or increasing
- any redness/skin inflammation to your calf/thigh area.

### PE

- breathlessness
- coughing up blood-stained phlegm
- chest pain or discomfort, especially worsened on deep breathing or coughing
- cyanosis (a bluish tinge to the complexion due to lack of oxygen)
- sudden collapse.

**If you experience any of these symptoms, call a doctor immediately.**

## Patient Experience Team

The team are available to help with any concerns, complaints or questions you may have about your experience at the Trust. Their office is in the Main Foyer (Gate 4) of Doncaster Royal Infirmary. Contact can be made either in person, by telephone or email.

**The contact details are:** Telephone: 01302 642764 or 0800 028 8059
Email: dbth.pals.dbh@nhs.net

**VTE Prophylaxis Group**

NHS
Doncaster and Bassetlaw
Teaching Hospitals
NHS Foundation Trust

# Deep Vein Thrombosis (DVT)

Deep Vein Thrombosis occurs when blood clot (called a thrombus) forms in a vein. This usually occurs in the deep veins of the leg but can occur in most veins of the body.

The thrombus in the deep veins of the leg can cause obstruction to the blood flow leading to pain, swelling, and discolouration of the affected limb.

There is a chance that this clot might break off (this is called an embolus) and travel to the lungs (this is called Pulmonary Embolism) which is serious and can sometimes be fatal as it can block off the blood supply to parts of the lungs. Fortunately treatment is very effective in reducing the chance of this happening.

## Risk Factors for DVT:

- Clotting abnormality in the blood (including family history).
- Pregnancy.
- Obesity.
- Underlying Cancer.
- Previous DVT.
- Immobility including long haul flights.
- Contraceptive pills.
- Recent surgery.
- Intravenous drug use.

## Symptoms of DVT:

- Pain in the affected leg.
- Swelling/firmness of the leg.
- Warmth and redness of the leg.

WPR43192 May 2017 Review date by: May 2019

## How is it diagnosed?

In some cases the condition can be excluded by a blood test without the need for special scans. If the test is not appropriate or does not exclude a blood clot, an ultrasound Doppler scan of the veins is usually required.

## Treatment of DVT

The mainstay of treatment of DVT is 'anticoagulation' which means thinning of the blood. This reduces the risk of blood clots getting bigger, while the body's own systems dissolve the clot.

The duration of the anticoagulation treatment varies. The minimum duration of treatment should be three months.

## Medications used to treat DVT:

- Low Molecular Weight Heparin (LMWH) such as dalteparin.
- Vitamin K antagonists (VKAs), such as warfarin.
- New Oral Anticoagulants (NOACs), such as rivaroxaban.

If warfarin is used you will also start treatment with low molecular weight heparin injections for a few days. This is because it takes a few days for the optimal effect of warfarin to be established.

The risk and benefits of treatment will be discussed with you by the doctor. Warfarin has special monitoring arrangements and you will need regular blood tests, this may be done by either your GP or the hospital. The doctor or pharmacist will give more information, including an information pack before you are discharged.

When you are discharged it is important that you know when your next blood test is due and who will monitor your warfarin in the future. You will be given a form that will tell you this information and you should take it to your GP or the hospital when you have your next blood test.

In some cases of extensive DVT, a patient may need a filter to be placed in a main vein to stop the clot from travelling to the lungs. This is called an Inferior Vena Cava (IVC) filter. This decision is usually made by a senior clinician.

If you have any of these symptoms, please contact:

Doncaster Royal Infirmary, Acute Medical Unit (AMU),
Tel: 01302 642617.

Bassetlaw Hospital, Assessment and Treatment Centre (ATC),
Tel: 01909 502 186 (direct dial).

If you are very unwell, call 999 to get yourself to the hospital.

It is very important that you come back to the ward for daily Dalteparin Injections for as long as the doctor or nurse thinks you need it, unless it has been arranged for the district nurse to administer it in the community.

If for any reason you cannot attend the ward for the injections or you do not receive a dose of the injection in the community please call the ward to inform them so that they can give you further advice.

## Patient Experience Team

The team are available to offer advice or information on healthcare matters. Their office is in the Main Foyer (Gate 4) of Doncaster Royal Infirmary. Contact can be made either in person, by telephone or email. The team can visit inpatients on all Trust sites.

**The contact details are:**

Telephone: 01302 642764 or 0800 028 8059
Email: pals.dbh@dbh.nhs.uk.

## Acute Medicine

NHS
Doncaster and Bassetlaw
Teaching Hospitals
NHS Foundation Trust

# Pulmonary Embolism (PE)

Pulmonary embolism (PE) occurs when a blood clot dislodges from a vein, travels through the veins of the body, and lodges in the lung.

Most blood clots originally form in the deep veins of the legs, thighs, or pelvis and this condition is known as deep vein thrombosis (DVT).

The clot or clots block the blood flow to parts of the lung.

Pulmonary emboli are uncommon and range in severity but are important because large clots can be fatal if not identified and treated promptly.

## Risk factors of PE:

- Clotting abnormality in the blood (including family history).
- Pregnancy.
- Obesity.
- Underlying cancer.
- Previous DVT.
- Immobility including long haul flights.
- Contraceptive pills.
- Recent surgery.
- Intravenous drug use.

## Symptoms of PE:

- Shortness of breath.
- Sharp chest pain especially when taking a deep breath.
- Coughing up blood.
- Feeling dizzy/blacking out/crushing chest pain – may suggest presence of large clots.

WPR43202 May 2017 Review date by: May 2019

## How is it diagnosed?

In some cases the condition can be excluded by a blood test without the need for special scans. If the test is not appropriate or does not exclude a blood clot, a scan of the chest is usually required. In pregnancy a sound wave leg scan is often done instead to try to avoid the effects of X-rays on the unborn baby.

## Treatment of PE

The mainstay of treatment of PE is 'anticoagulation' which means thinning of the blood. This reduces the risk of blood clots getting bigger, while the body's own systems dissolve the clot.

The duration of the anticoagulation treatment varies. The usual minimum duration of treatment should be six months.

## Medications used to treat DVT:

- Low Molecular Weight Heparin (LMWH) such as dalteparin
- Vitamin K antagonists (VKAs), such as warfarin.
- New Oral Anticoagulants (NOACs), such as rivaroxaban.

If warfarin is used you will also start treatment with low molecular weight heparin injections for a few days this is because it takes a few days for the optimal effect of warfarin to be established. The risk and benefits of treatment will be discussed with you by the doctor. Warfarin has special monitoring arrangements and you will need regular blood tests, this may be done by either your GP or the hospital. The doctor or pharmacist will give more information, including an information pack before you are discharged. When you are discharged it is important that you know when your next blood test is due and who will monitor your warfarin in the future. You will be given a form that will tell you this information and you should take it to your GP or the hospital when you have your next blood test.

In some severe cases of PE patients need a 'clot busting treatment' called thrombolysis. This decision is usually made by a senior clinician.

Patients do not usually need to stay in the hospital for treatment.
Some patients with PE can be treated either in the community or on an ambulatory basis.

## Ambulatory (daily return to ward) treatment of patients with a diagnosis of PE

If the clinician decides to treat a patient with PE under the ambulatory pathway, the patient is commenced on treatment and may need to come back daily to the ward for dalteparin injections and a blood test, until the blood is adequately thinned.
If you are deemed suitable for ambulatory treatment for your PE, then you will need to be aware of some symptoms you need to look out for:

These are:

- Blackout.
- Dizzy spell.
- Coughing up blood.
- Worsening shortness of breath.
- Sharp chest pain especially when taking a deep breath in.
- Any bleeding that does not stop with simple measures.

If you have any of these symptoms, please contact:

Doncaster Royal infirmary, Acute Medical Unit (AMU),
Tel: 01302 642617.

Bassetlaw Hospital, Assessment and Treatment Centre (ATC),
Tel: 01909 502 186 (direct dial).

If you are very unwell, call 999 to get yourself to the hospital.

It is very important that you come back to the ward for daily Dalteparin Injections unless it has been arranged for the district nurse to administer it in the community.

If for any reason you cannot attend the ward for the injections or you do not receive a dose of the injection in the community, please call the ward to inform them so that they can give you further advice.

Acute Medicine

## APPENDIX 3 - EQUALITY IMPACT ASSESSMENT – INITIAL SCREENING

| Service/Function/Policy/Project/ Strategy | Division | Assessor (s) | New or Existing Service or Policy? | Date of Assessment |
|---|---|---|---|---|
| Venous Thromboembolism (VTE) in over 16's: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism | All | Nicola Hemmingway | New guideline | 01/09/2023 |

**1) Who is responsible for this policy?** Nicola Hemmingway, Consultant Physician and Trust VTE Lead

**2) Describe the purpose of the service /function/policy project/strategy?** Guideline for reducing the risk of hospital-acquired VTE

**3) Are there any associated objectives?** No

**4) What factors contribute or detract from achieving intended outcomes?** None

**5) Does the policy have an impact in terms of age, race, disability, gender, gender reassignment, sexual orientation, marriage/civil partnership, maternity/pregnancy and religion/belief?** No

- **If yes, please describe current or planned activities to address the impact** n/a

**6) Is there any scope for new measures which would promote equality?** No

**7) Are any of the following groups adversely affected by the policy?**

| Protected Characteristics | Affected? | Impact |
|---|---|---|
| a) Age | no | |
| b) Disability | no | |
| c) Gender | no | |
| d) Gender Reassignment | no | |
| e) Marriage/Civil Partnership | no | |
| f) Maternity/Pregnancy | no | |
| g) Race | no | |
| h) Religion/Belief | no | |
| i) Sexual Orientation | no | |

**8) Provide the Equality Rating of the service / function /policy / project / strategy – tick (✓) outcome box**

| Outcome 1 ✓ | Outcome 2 | Outcome 3 | Outcome 4 |
|---|---|---|---|

**Date for next review:** November 2026

**Checked by:** Lee Wilson, Consultant Pharmacist **Date:** 08/11/2023