If a patient is suspected to have a DVT, then they should immediately be referred to your local ‘Acute’ hospital services for assessment, management and treatment.

This Practice Guidance Note (PGN) should be read in conjunction with the following Trust policy documents:

- NTW(C)38 – Pharmacological Therapy Policy practice guidance note:
  - PPT-PGN-03 - Anticoagulation Therapy

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**Appendix – listed separate to practice guidance note**

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**Introduction**

1.1 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. 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.

1.2 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.

1.3 VTE encompasses a range of clinical presentations. Venous Thrombosis is often asymptomatic; less frequently it causes pain and swelling in the leg. Part or all of the thrombus can come free and travel to the lung as a potentially fatal pulmonary embolism. Symptomatic venous thrombosis carries a considerable burden of morbidity, including long term morbidity because of chronic venous insufficiency. This in turn can cause venous ulceration and development of a post-thrombotic limb (characterised by chronic pain, swelling and skin changes).

1.4 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 a considerable cost to the Health Service. The risk of developing VTE depends on the condition and/or procedure for which that patient is admitted and on any predisposing risk factors (such as age, obesity, and concomitant conditions). The NICE Guideline makes recommendations on assessing and reducing the risk of VTE in patients in hospital. It offers guidance on the most clinically cost effective measures for VTE prophylaxis in these patients. The recommendations take into account the potential risks of the various options for prophylaxis and patient preference.

1.5 The Guideline assumes that prescribers will use a drugs summary of product characteristics to inform decisions made with individual patients.

1.6 The Guideline does not include recommendations for patients admitted with mental health problems, Learning Disabilities or those admitted to psychiatric or Learning Disability inpatient units. However patients with mental health problems and/or learning disabilities are recognised as being at increased risk of physical health problems, and of having a higher mortality. In view of this, the Trust has decided to include patients admitted to all their psychiatric inpatient units in the ‘general medical patient group’, and to use the NICE guidance for these groups (See section 1.4.1 of NICE Guideline ).
1.7 Patient-centred care

1.7.1 This guideline offers best practice advice on reducing the risk of VTE in patients admitted to hospital.

1.7.2 Treatment and care must take into account patients’ needs and preferences. People admitted to hospital must have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If patients do not have the capacity to make decisions, healthcare professionals should follow the Department of Health’s (DoH) advice on consent [https://www.gov.uk/government/publications/form-cto12-patient-capacity-to-consent-to-treatment](https://www.gov.uk/government/publications/form-cto12-patient-capacity-to-consent-to-treatment) and the code of practice that accompanies the Mental Capacity Act (summary available from [www.publicguardian.gov.uk](http://www.publicguardian.gov.uk)). Staff requiring additional information should refer to the Trust’s [NTW(C)05 - Consent to Examination or Treatment Policy](#).

1.7.3 Good communication between healthcare professionals and patients is essential. It should be supported by evidence-based written information tailored to the patient’s needs. Treatment and care, and the information patients are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English.

1.7.4 If the patient agrees, families and carers should have the opportunity to be involved in decisions about treatment and care.

1.7.5 Families and carers should also be given the information and support they need.

2 Assessing the risks of VTE and bleeding

2.1 All patients must be assessed for VTE risk on admission ([Appendix 2](#)) to hospital (Refer to Section 5.1 of the Trust's [NTW(C)29 - Trust Standard for Assessment and Management of Physical Health policy](#) whenever the clinical situation changes. Those patients with a significantly reduced mobility compared to their usual state, should be considered for further risk assessment as per risk assessment chart.

- Any tick for thrombosis risk must trigger assessment of bleeding risk
- Any tick for bleeding risk should prompt doctors to consider if the risk of bleeding is sufficient to avoid pharmacological VTE prophylaxis
- Both patient and procedural factors should be considered when assessing risk, and considering starting VTE prophylaxis
2.2 Procedure

- Assess all patients on admission to identify those who are at increased risk of VTE- see risk assessment chart.

- Regard medical patients as being at increased risk of VTE if they:
  - If the patient is on antipsychotic medication.
  - Have had or are expected to have significantly reduced mobility for 3 days or more or
  - Are expected to have ongoing reduced mobility to their normal state and have one or more of the risk factors shown in Box 1 below.

- Regard surgical patients and patients with trauma as being at increased risk of VTE if they meet one of the following criteria:
  - Surgical procedure with a total anaesthetic and surgical time of more than 90 minutes, or 60 minutes if the surgery involves the pelvis or lower limb
  - Acute surgical admission with inflammatory or intra-abdominal condition
  - Expected significant reduction in mobility
  - One or more of the risk factors shown in Box 1 above.

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Box 1 - Risk factors for VTE

- Active cancer or cancer treatment
- Age over 60 years
- Critical care admission
- Dehydration
- Known thrombophilias
- Obesity (body mass index [BMI] over 30 kg/m²)
- One or more significant medical comorbidities (for example: heart disease; metabolic, endocrine or respiratory pathologies; acute infectious diseases; inflammatory conditions)
- Personal history or first-degree relative with a history of VTE
- Use of hormone replacement therapy
- Use of oestrogen-containing contraceptive therapy
- Varicose veins with phlebitis

For women who are pregnant or have given birth within the previous 6 weeks see recommendations 1.6.4–1.6.6 in NICE Clinical Guidance 92

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• Assess all patients for risk of bleeding before offering pharmacological VTE prophylaxis. Prescribers should consult the summary of product characteristics for the pharmacological VTE prophylaxis being used or planned for further details (www.medicines.org.uk). Do not offer pharmacological VTE prophylaxis to patients with any of the risk factors for bleeding shown in box 2, unless the risk of VTE outweighs the risk of bleeding.

**Box 2 - Risk factors for bleeding**

- Active bleeding
- Acquired bleeding disorders (such as acute liver failure)
- Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with international normalised ratio [INR] higher than 2)
- Lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours
- Lumbar puncture/epidural/spinal anaesthesia within the previous 4 hours
- Acute stroke
- Thrombocytopenia (platelets less than $75 \times 10^9/l$)
- Uncontrolled systolic hypertension (230/120 mmHg or higher)
- Untreated inherited bleeding disorders (such as haemophilia and von Willebrand’s disease)

• Reassess patients’ risks of bleeding and VTE within 24 hours of admission and whenever the clinical situation changes, (Refer to the Trust’s NTW(C)38 – Pharmacological Therapy Policy, practice guidance note PPT-PGN-03 - ‘Anticoagulation Therapy’ to:
  
  o Ensure that the methods of VTE prophylaxis being used are suitable
  o Ensure that VTE prophylaxis is being used correctly
  o Identify adverse events resulting from VTE prophylaxis

**2.3 Reducing the risk of VTE**

- Encourage patients to mobilise as soon as possible
- Do not allow patients to become dehydrated unless clinically indicated
- Do not regard aspirin or other anti-platelet agents as adequate prophylaxis for VTE
3 Patient information and planning for discharge

- Before starting VTE prophylaxis, offer patients and/or their families or carers verbal and written information:
  - the risks and possible consequences of VTE
  - the importance of VTE prophylaxis and its possible side effects
  - the correct use of VTE prophylaxis (for example, anti-embolism stockings)
  - how patients can reduce their risk of VTE (such as keeping well hydrated and, if possible, exercising and becoming more mobile)

- As part of the discharge plan, offer patients and/or their families or carers verbal and written information on:
  - the signs and symptoms of deep vein thrombosis and pulmonary embolism
  - the correct and recommended duration of use of VTE prophylaxis at home (if discharged with prophylaxis)
  - the importance of using VTE prophylaxis correctly and continuing treatment for the recommended duration (if discharged with prophylaxis)
  - the signs and symptoms of adverse events related to VTE prophylaxis (if discharged with prophylaxis)
  - the importance of seeking help and who to contact if they have any problems using the prophylaxis (if discharged with prophylaxis)
  - the importance of seeking medical help and who to contact if deep vein thrombosis, pulmonary embolism or another adverse event is suspected

4. Using VTE prophylaxis

4.1 Mechanical VTE prophylaxis

- Base the choice of mechanical VTE prophylaxis on individual patient factors including clinical condition, surgical procedure and patient preference. Staff should consider in the first instance the use of anti-embolism stocking thigh or knee length or seek advice from Tissue Viability Modern Matron.
4.2 Anti-embolism stockings

- Do not offer anti-embolism stockings to patients 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 stockings may cause damage, for example fragile ‘tissue paper’ skin, dermatitis, gangrene or recent skin graft
  - known allergy to material of manufacture
  - cardiac failure
  - 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 judgement when applying anti-embolism stockings over venous ulcers or wounds

- Ensure that patients who need anti-embolism stockings have their legs measured and that the correct size of stocking is provided. Anti-embolism stockings should be fitted and patients shown how to use them by staff trained in their use – Clinical support can be provided by the Trust Tissue Viability Modern Matron

- Ensure that patients who develop oedema or post operative swelling have their legs re-measured and anti-embolism stockings refitted

- If arterial disease is suspected seek expert opinion before fitting anti-embolism stockings

- Use anti-embolism stockings that provide graduated compression and produce a calf pressure of 14 –15 mmHg

- Encourage patients to wear their anti-embolism stockings day and night until they no longer have significantly reduced mobility

- Remove anti-embolism stockings daily for hygiene purposes and to inspect skin condition. In patients with a significant reduction in mobility, poor skin integrity or any sensory loss, inspect the skin two to three times per day, particularly over the heels and bony prominences

- Discontinue the use of anti-embolism stockings if there is marking, blistering or discoloration of the skin, particularly over the heels and bony prominences, or if the patient experiences pain or discomfort. In these circumstances seek specialist advice. E.g. The Trust’s Tissue Viability Modern Matron, or external specialist service

- Show patients how to use anti-embolism stockings correctly and ensure that they understand that this will reduce their risk of developing VTE
• Monitor the use of anti-embolism stockings and offer assistance if they are not being worn correctly

• All wards should carry a basic stock of Anti-embolism Stockings – Refer to Appendix 4 for order information

4.3 Pharmacological VTE prophylaxis

• Base the choice of pharmacological VTE agents on local policies and individual patient factors, including clinical condition (such as renal failure) and patient preference.

• Offer pharmacological VTE prophylaxis to general medical patients assessed to be at increased risk of VTE; Choose any one of:
  
  o Tinzaparin (for first line use North of Tyne)
  o Enoxaparin (for first line use South of Tyne)
  o unfractionated heparin UFH) (for patients with renal failure)

• Start pharmacological VTE prophylaxis as soon as possible after risk assessment has been completed. Continue until the patient is no longer at increased risk of VTE using the approved risk assessment tool

• Tinzaparin - (See www.medicines.org.uk for full prescribing information)
  
  o Prophylaxis of VTE: 3500 units once daily by subcutaneous injection. 4500 units once daily by subcutaneous injection may be required after taking advice from a specialist
  
  o Treatment of VTE: 175 units/kg body weight once daily by subcutaneous injection for at least 6 days and until oral anticoagulation is established.

• Enoxaparin - (See www.medicines.org.uk for full prescribing information)
  
  o Prophylaxis of VTE: 40mg (4,000units) once daily by subcutaneous injection
  
  o Treatment of VTE: 1.5mg/Kg (150units/kg) once daily by subcutaneous injection for at least 5 days and until oral anticoagulation is established

• Thrombocytopenia is a risk with both therapies thus it is recommended that platelet counts are carried out before treatment and regularly throughout.

• For advice on use of these medicines in other special groups, please refer to www.medicines.org.uk for advice and discuss with a specialist.
5 Links

- Link to NICE Risk Assessment tool for Venous Thromboembolism  
  PPT-PGN-03 - Appendix 2 - VTE Risk Assessment Tool

- Link to NICE Guideline 92 – Venous Thromboembolism: Reducing the risk

6 Associated Documentation

- NTW(C)05 - Consent to Examination and Treatment Policy

- NTW(C)38 – Pharmacological Therapy Policy, practice guidance note:
  - PPT-PGN-03 - Anticoagulation Therapy PGN

- NTW(C)29 - Trust Standard for Assessment and Management of Physical Health Policy

7 References

  http://www.nice.org.uk/guidance/cg92/informationforpublic


- NICE (2010a) VTE Prevention Quality Standard –  
  http://www.nice.org.uk/aboutnice/qualitystandards/vteprevention/

- Royal College of Obstetricians and Gynaecologists (2009) Thrombosis and Embolism during Pregnancy and the Puerperium, Reducing the Risk (Green-top 37)  