Cheshire and Wirral Partnership
NHS Foundation Trust

Document level: Trustwide
Code: SOP27
Issue number: 1.11

Venous Thromboembolism (VTE) Assessment, Prevention and Management

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Type of document	Standard Operating Procedure
Target audience	Inpatient Staff
Document purpose	*The purpose of this standard operating procedure is to ensure that all patients admitted to Cheshire and Wirral Partnership NHS Foundation Trust (CWP) are formally assessed and, where appropriate, measures are taken to reduce their likelihood of developing a venous thromboembolism.*

Approving meeting	Clinical Practice Standards Sub Committee	Date 27-Aug-20
Implementation date	28-Aug-20	

CWP documents to be read in conjunction with	
	Not applicable

Document change history	
What is different?	New reference added (reference 3) Table in Section 6.1 made clearer and approved at MMG
Appendices / electronic forms	*N/A*
What is the impact of change?	*N/A*

Training requirements	Yes - Training requirements for this policy are in accordance with the CWP Training Needs Analysis (TNA) with Education CWP.

Document consultation	
Clinical Services	*Modern Matrons; Consultants; Medicines Management*
Corporate services	*Clinical Practice Standards Sub Committee*
External agencies	*Thrombosis UK*

Financial resource implications	None

External references

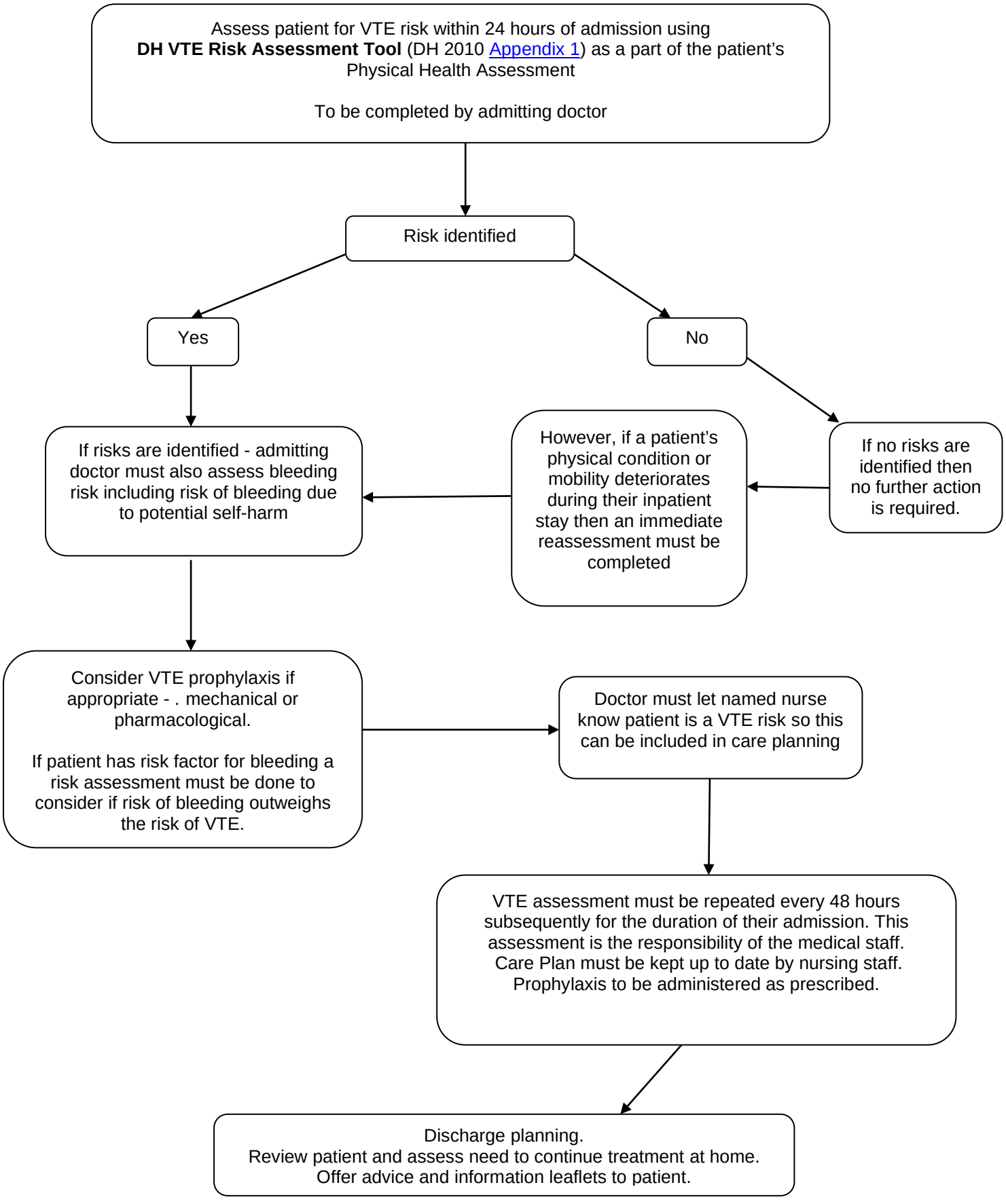
1. NICE (2018) - Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism
2. DH (2010) - VTE Risk Assessment Tool
3. Wirral University Teaching Hospital (V4a July 2020) - Enoxaparin – prescribing, administration and monitoring (Adults Only)
4. Deep Vein Thrombosis (DVT) – Advice Leaflet

5. Getting Active After A Blood Clot
6. VTE Leaflet
7. Compression Stockings Leaflet

Equality Impact Assessment (EIA) - Initial assessment	Yes/No	Comments
Does this document affect one group less or more favourably than another on the basis of:		
- Race	No	
- Ethnic origins (including gypsies and travellers)	No	
- Nationality	No	
- Gender	No	
- Culture	No	
- Religion or belief	No	
- Sexual orientation including lesbian, gay and bisexual people	No	
- Age	No	
- Disability - learning disabilities, physical disability, sensory impairment and mental health problems	No	
Is there any evidence that some groups are affected differently?	No	
If you have identified potential discrimination, are there any exceptions valid, legal and/or justifiable?		
No		
Is the impact of the document likely to be negative?	No	
- If so can the impact be avoided?	NA	
- What alternatives are there to achieving the document without the impact?	NA	
- Can we reduce the impact by taking different action?	NA	
Where an adverse or negative impact on equality group(s) has been identified during the initial screening process a full EIA assessment should be conducted. If you have identified a potential discriminatory impact of this procedural document, please refer it to the human resource department together with any suggestions as to the action required to avoid / reduce this impact. For advice in respect of answering the above questions, please contact the human resource department.		
Was a full impact assessment required?	No	
What is the level of impact?	Low	

Contents

Quick reference flowchart
For quick reference the guide below is a summary of actions required.



1. Introduction

In March 2018 the National Institute for Health and Clinical Excellence (NICE) updated and published guidelines and pathways to help reduce the risk of developing hospital acquired Venous Thromboembolism (VTE). *Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism* (NICE 2018). This guidance includes interventions for people with psychiatric illness in section 1.9.

Venous Thromboembolism (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. On occasion this embolism may move to the lungs and lodge in a blood vessel known as a pulmonary embolism (PE). This can be fatal and is known to be a cause of death in inpatient hospital settings including mental health and learning disability settings.

The risk of developing VTE depends on the condition and/or procedure for which the patient is admitted and on any predisposing risk factors (Box 1).

The recommendations take in to account the potential risks of the various options for prophylaxis and patient preferences.

2. Purpose

The purpose of this document is to set out the organisational arrangements for implementing national best practice in relation to reducing the risk of VTE in patients admitted to any inpatient facility across CWP.

To assess and reduce the risk of VTE and deep vein thrombosis (DVT) in all patients admitted to inpatient wards.

To ensure a VTE risk assessment is completed for every patient within 24 hours of their admission using the DH 2010 risk assessment form (Appendix 1). This assessment must be recorded in the electronic patient record and an associated care plan written for any patient assessed as at risk. This must then be re-assessed every 48hrs thereafter or depending upon clinical condition.

This SOP aims to help healthcare professionals identify patients most at risk and describes treatments and interventions that can be used to reduce the risk of VTE.

3. Scope

This procedure applies to all staff within any inpatient facility across CWP areas who undertake VTE risk assessments and all staff involved in the planning and delivery of care for patients at risk of VTE.

It will include:

- Recommendations for assessing, managing and reducing VTE risks for all patients.
- Assessment of VTE and bleeding risks
- Consideration of VTE prophylaxis for at risk patients and whether mechanical and/or pharmacological thrombo prophylaxis is indicated

- Frequency of re-assessment of risks
- Provision of patient information on prevention of VTE
- Discharge planning

4. Definitions

Embolus – an object which has been carried in the bloodstream to lodge in a vessel and cause an embolism.

Embolism – An embolism is the lodging of an embolus. This is a blockage – caused by a piece of an embolus inside a blood vessel. The embolus may be a blood clot (thrombus), a fat globule (fat embolism), a bubble of air or other gas (gas embolism) or foreign material.

Thrombus – A blood clot

Venous Thromboembolism - The blocking of a blood vessel by a clot, (or part of a clot), that has broken off from the place where it formed and travelled to another location.

Deep Vein Thrombosis - The formation of one or more blood clots (a blood clot is also known as a "thrombus," while multiple clots are called "thrombi") in one of the body's large veins, most commonly in the lower limbs (e.g., lower leg or calf)

Pulmonary Embolism - An obstruction of a blood vessel in the lungs, usually due to a blood clot which blocks a artery. A Pulmonary embolism is a fairly common condition that can be fatal. Pulmonary embolism is difficult to diagnose.

5. Guidance and Risk Factors

All Mental Health (MH) and Learning Disability (LD) inpatients must have a VTE risk assessment conducted, as a part of the Physical Health Assessment, within 24 hours of admission. This must be completed by the admitting doctor and recorded on the electronic patient record.

If risks are identified, this assessment must be repeated within a further 24 hours and every 48 hours subsequently for the duration of the patient's admission. This assessment is the responsibility of the medical staff or suitably qualified nurse. Any risks must be reflected in a patient specific care plan.

Reassessment is also indicated at any time within an inpatient stay, for patients not assessed as at risk on admission, but whose physical condition or mobility deteriorates during their admission.

Important to remember for all patients:

- Do not allow patients to become dehydrated
- Encourage patients to mobilise as much as possible
- Regularly re assess VTE risk during inpatient stay

A care plan must be put into place if risk factors are identified for a patient at any point after their admission, giving clear guidance to clinical staff as to how the risk is to be managed.

Who to assess?

This section covers all those patients who must be assessed fully on admission or on transfer back to our services:

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- All patients with one or more ticks on the risk factor screening tool..
- All patients who are immobile for 3 or more days.
- All post-surgical and trauma patients transferred back to CWP services. These patients are most likely to have a VTE plan to follow on transferred to CWP.
- All women on admission to hospital if they are pregnant or given birth, had a miscarriage or a termination of pregnancy in the past six weeks.
- All patients undergoing anaesthetic for ECT.

Box 1 - Risk factors for VTE within a MH or LD environment

Patient related risk factors	Admission related risk factors
Age over 60 years	Significantly reduced mobility for 3 days or more due to deterioration in mental health
Active cancer or cancer treatment	Antipsychotic medication
One or more significant medical comorbidities (eg heart disease; metabolic, endocrine or respiratory pathologies; acute infectious diseases; inflammatory conditions)	Prolonged restraint during admission period due to restricted and reduced mobility.
Known thrombophilia	Hip fracture
Dehydration / poor oral intake	Recent hip or knee replacement
Varicose veins with phlebitis	Recent surgery
Personal history or first-degree relative with a history of VTE	
Use of oestrogen-containing contraceptive therapy or hormone replacement therapy	
Obesity (body mass index (BMI) over 30 kg/m2)	
Pregnancy or < 6 weeks post-partum (see NICE guidance for specific risk factors)	

Risk and use of Anti-psychotics

There is an association with antipsychotic use and VTE risk; this is mostly associated with Clozapine.

It seems most likely to occur in the first 3 months of treatment but can occur at any time. Other antipsychotics are also strongly linked to thromboembolism although Clozapine has the most reports.

With all drugs the causes of thromboembolism are probably multifactorial. Encouraging exercise and ensuring good hydration are essential precautionary measures.

Weight increase and sedation caused by Clozapine may contribute to the risk of thromboembolism but other mechanisms including increased platelet aggregation may also be responsible.

Hyperprolactinaemia also increases the risk and threshold for prophylactic antithrombotic treatment where additional risk factors are present (surgery/immobility) should be low.

6. Prophylaxis for VTE

6.1 Pharmacological VTE Prophylaxis

Low Molecular Weight Heparin (LMWH)

Consider pharmacological VTE prophylaxis with Low Molecular Weight Heparin (LMWH) for patients admitted to an acute psychiatric ward whose risk of VTE outweighs their risk of bleeding (Box 2).

Start pharmacological VTE prophylaxis if indicated as soon as possible after risk assessment has been completed. Continue until the patient is no longer considered at increased risk of VTE or as indicated in NICE guidance.

Box 2 Risk factors for bleeding

Untreated inherited bleeding disorders (such as haemophilia and von Willebrand's disease
Acute stroke in previous month (haemorrhagic or ischaemic)
Uncontrolled hypertension
Severe liver disease (prothrombin time above normal or known varices)
Major bleeding risk due to existing anticoagulant therapy
Thrombocytopenia (platelets less than 75 x 109/l)

Assess patient's risks of bleeding and VTE within 24 hours of admission and reassess whenever the clinical situation changes, to ensure that the methods of VTE prophylaxis being used are suitable.

Low Molecular Weight Heparin (LMWH) and dosage

A prophylactic dose of Enoxaparin should be prescribed for any inpatient assessed as at risk for a VTE.

The recommended drug dose and frequency used for prophylaxis within the trust is **Enoxaparin 40mg once daily.**

The dose is dependent on the patient's renal function (creatinine clearance [CrCl]) and weight. Check renal function using Cockcroft and Gault. Renal function using eGFR is not equivalent to CrCl and cannot be used for dose adjustment in renal impairment.

For patients with impaired renal function and CrCl<30ml per minute, the recommended drug dose and frequency for Enoxaparin is 20mg once daily.

Actual body weight should be used for dose calculation of VTE prophylaxis and doses adjusted where there are extremes of actual body weight.

See table below for doses

Weight (kg)	CrCl>30ml/min	CrCl 15-30ml/min	CrCl < 15ml/min (Off – label use)
<50kg	20mg once daily	20mg once daily	20mg once daily
50-99kg	40mg once daily	20mg once daily	20mg once daily
100-150kg	80mg once daily	40mg once daily	20mg once daily
>150kg	120mg once daily	60mg once daily	20mg once daily

Refer to the British National Formulary and discuss with the locality pharmacist for full prescribing guidance.

If a patient is transferred into a CWP inpatient facility on a treatment dose of LMWH then this drug and dose can be continued as per the treating acute Trust prescription. .

Fondaparinux Sodium should be used in individuals who are allergic to Heparin.

Platelet Count

All patients should have a baseline platelet count prior to starting any LMWH treatment. This should be repeated every 2-4 days from days 4-14 of treatment. Patients who have received Heparin in the last 100 days should have a platelet count 24 hours after starting LMWH.

LMWH's can cause hyperkalaemia. The risk appears to increase with increased duration of therapy. Patients at increased risk include patients with diabetes mellitus, chronic renal failure, acidosis, raised plasma potassium, or those on potassium sparing diuretics, ACE Inhibitors. Plasma potassium concentration should be monitored in patients at increased risk prior to starting treatment and regularly thereafter, particularly if treatment is to be continued for longer than 7days.

Routine monitoring or dose adjustment of LMWH is not required beyond 14 days of prescribing.

LMWH use in Children and Adolescent Mental Health Services (CAMHS)

Low molecular weight heparins (LMWH) do not have a UK marketing authorisation for use in young people under 18 years.

However, their use in prophylaxis has been recommended in young people between the ages of 16 to 18years by NICE in acute psychiatric wards, if deemed necessary after a VTE risk assessment has been carried out, unless contraindicated. This should also be considered, if appropriate, for non-acute psychiatric admissions.

The prescriber should discuss with pharmacist before prescribing and follow relevant professional guidance from our acute partners if appropriate. Informed consent should be obtained and documented.

6.2 Anti-embolism Stockings

These need to be prescribed.

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 anti-embolism stockings may cause damage, for example fragile “tissue paper” skin, dermatitis, gangrene or recent skin graft
- Known allergy to material or manufacture
- Severe leg oedema
- Unusual leg size or shape
- Major limb deformity preventing correct fit

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

Ensure that patients who need anti-embolism stockings have their legs measured and the correct size of stocking provided. Anti-embolism stockings must be fitted and patients shown how to use them by staff trained in their use.

Ensure patients who develop oedema have their legs re-measured and anti-embolism stockings re-fitted.

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 or three times per day, particularly over the heels and bony prominences. Patients should have two pairs prescribed to facilitate a change of stocking.

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.

Monitor the use of anti-embolism stockings and offer assistance if they are not being worn correctly

7. Patient Information

Good communication between health and social care professionals and patients with is essential.

Treatment and care, and the information given about it, should be culturally appropriate. It should also be accessible to patients with additional needs such as physical, sensory or learning disabilities, and to patients who do not speak or read English.

Be aware that heparins are of animal origin and this may be of concern to some patients with certain preferences and religious beliefs, to not accept medications sourced from animal products.

For patients who have concerns about using animal products, consider offering synthetic alternatives (Fondaparinux sodium) based on clinical judgement and after discussing their suitability, advantages and disadvantages with the patient. This should be documented in the patient's record.

Patients (and relatives and carers as appropriate) should have the opportunity to be involved in decisions regarding prophylaxis for the prevention of VTE.

Before starting VTE prophylaxis, offer patients and/or their families or carers the DVT Advice Leaflet and the VTE Leaflet which provides written information on:

- 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 – hydration , increased mobility

8. Planning for Discharge

Patient discharge

The guidelines emphasise the importance of providing patients with information about VTE and prophylaxis.

As part of the discharge plan, all patients and/or their families or carers should be offered oral and written information about the signs and symptoms of deep vein thrombosis and pulmonary embolism, the importance of seeking medical help, and who to contact if deep vein thrombosis, pulmonary embolism, or other adverse events are suspected.

For patients discharged with VTE prophylaxis, healthcare professionals should ensure that the patient is able to use stockings or administer injections correctly, or have arrangements made for someone to be available who will be able to help them. They should also be provided with information about:

- the correct and recommended duration of use of VTE prophylaxis at home
- the importance of using VTE prophylaxis correctly and continuing treatment for the recommended duration
- the signs and symptoms of adverse events related to VTE prophylaxis

- the importance of seeking help and whom to contact if they have any problems using the prophylaxis.

The correct use of anti-embolism stockings can be a problem for some patients. Therefore, it is important to ensure that patients:

- understand the benefits of wearing them
- understand the need to remove them for personal hygiene
- are able to replace them, or have someone available who will be able to do this for them
- look out for adverse effects, such as skin marking, blistering or discolouration, particularly over the heels and bony prominences.

This information should be communicated to the general practice. The NICE guideline recommends that if a patient is discharged with VTE prophylaxis, the patient's GP should be notified.

9. Training Implications

Staff groups requiring training	All Staff involved in care of patients at risk of VTE.
Delivery method	E-learning
How often should this be undertaken	3 yearly
Length of training	1-2 hours
Training delivered by whom	E-learning
Where are the records of attendance held?	ESR

10. Monitoring

A weekly audit of the electronic patient record including the completion of the VTE risk assessment (appendix 1) is completed on each ward and reviewed by the ward managers and clinical leads in each area.

A Datix must be completed if a patient develops a VTE and / or a PE

Appendix 1 – VTE Risk Assessment

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.

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.

Guidance on thromboprophylaxis is available at:

National Institute for Health and Clinical Excellence (2010) Venous thromboembolism: reducing the risk of venous thromboembolism (deep vein thrombosis and pulmonary embolism) in patients admitted to hospital. NICE clinical guideline 92. London: National Institute for Health and Clinical Excellence.

http://www.nice.org.uk/guidance/CG92

This document has been authorised by the Department of Health
Gateway reference no: 10278

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RISK ASSESSMENT FOR VENOUS THROMBOEMBOLISM (VTE)

Mobility – all patients (tick one box)	**Tick**		**Tick**		**Tick**
Surgical patient		Medical patient expected to have ongoing reduced mobility relative to normal state		Medical patient NOT expected to have significantly reduced mobility relative to normal state	
Assess for thrombosis and bleeding risk below				**Risk assessment now complete**	

Thrombosis risk			
Patient related	**Tick**	**Admission related**	**Tick**
Active cancer or cancer treatment		Significantly reduced mobility for 3 days or more	
Age > 60		Hip or knee replacement	
Dehydration		Hip fracture	
Known thrombophilias		Total anaesthetic + surgical time > 90 minutes	
Obesity (BMI >30 kg/m²)		Surgery involving pelvis or lower limb with a total anaesthetic + surgical time > 60 minutes	
One or more significant medical comorbidities (eg heart disease;metabolic,endocrine or respiratory pathologies;acute infectious diseases; inflammatory conditions)		Acute surgical admission with inflammatory or intra-abdominal condition	
Personal history or first-degree relative with a history of VTE		Critical care admission	
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 (see NICE guidance for specific risk factors)			

Bleeding risk			
Patient related	**Tick**	**Admission related**	**Tick**
Active bleeding		Neurosurgery, spinal surgery or eye surgery	
Acquired bleeding disorders (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 the next 12 hours	
Acute stroke		Lumbar puncture/epidural/spinal anaesthesia within the previous 4 hours	
Thrombocytopaenia (platelets< 75x10⁹/l)			
Uncontrolled systolic hypertension (230/120 mmHg or higher)			
Untreated inherited bleeding disorders (such as haemophilia and von Willebrand's disease)			

301292 1p March 10