CONTROLLED DOCUMENT

University Hospitals Birmingham NHS
NHS Foundation Trust

Venous Thromboembolism (VTE) Thromboprophylaxis Procedure

CATEGORY:	Procedure
CLASSIFICATION:	Clinical
PURPOSE	To provide staff with information regarding the prevention and treatment of Venous Thromboembolism.
Controlled Document Number:	733
Version Number:	3.1
Controlled Document Sponsor:	Consultant Haematologist, Chair of the Thrombosis Committee
Controlled Document Lead:	Consultant Haematologist
Approved By:	Thrombosis Committee
On:	August 2017
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Distribution: • **Essential Reading for:** • **Information for:**	 All Doctors Involved with patient admissions All Clinical Staff

Contents

1. Purpose

1.1 The purpose of this procedure is to set out the process to be followed for identifying and treating patients admitted to hospital who are at risk of Venous Thromboembolism (VTE).

1.2 Terms used in this procedure have the meaning given to them in the Policy.

2. Scope

This procedure applies to all clinical areas and activities of the Trust and to all clinical staff employed by the Trust including contractors, volunteers, students, locum and agency staff and staff employed on honorary contracts.

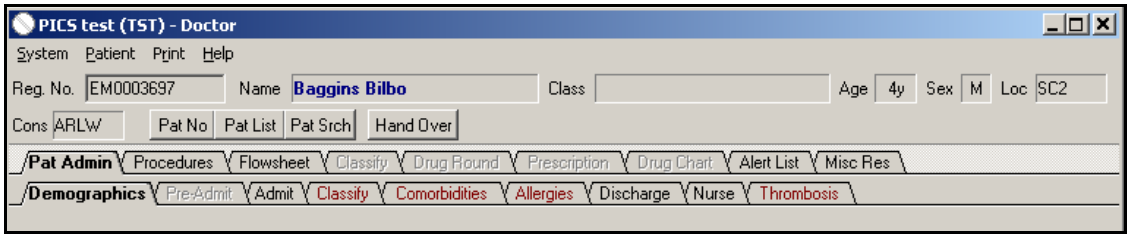
3. Risk Assessment Process

All patients, on admission, receive an assessment for risk of VTE and bleeding using the PICS risk assessment as set out below or, where PICS is unavailable, using a paper version of the Department of Health 'Risk Assessment for Venous Thromboembolism' (March 2010) (See Appendix A)

Patients are to be reassessed within 24 hours of admission for risk of VTE and bleeding. This is to ensure that the patient continues to be offered appropriate thromboprophylaxis should any risk factors or contraindications resolve or develop. – see below

3.1 <u>VTE risk assessment version 1.5v2 – specification</u>

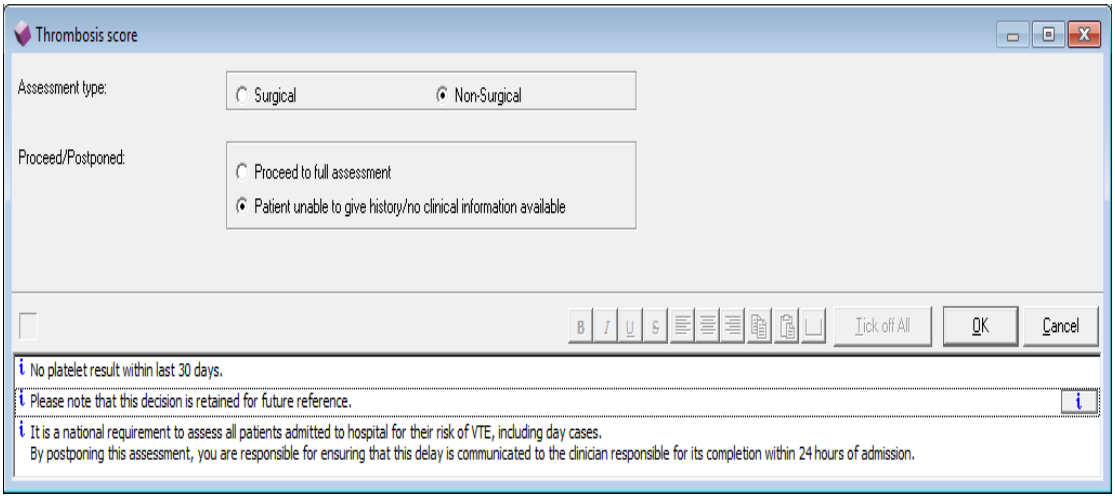
3.1.1 VTE assessment was introduced in PICS in June 2008 as an additional tab to be completed as part of the admission process for inpatients. Since that time a number of changes have been made to the VTE assessment module and this document details the functionality of version 1.5v2.



3.1.2 The Thrombosis tab is included in the Pat Admin group (see above) and functions in a similar manner to others such as Comorbidities and Allergies, in that it <u>must</u> be completed before the patient record is fully clerked and drug prescribing is enabled

for the patient. Until the tab has been completed (or confirmed as checked, in the case of transfers) the legend will appear in red and other tabs such as Prescription will be greyed-out (see above).

3.1.3 When the tab is first opened (using the Edit/Confirm Details button) the screen shown below is displayed.



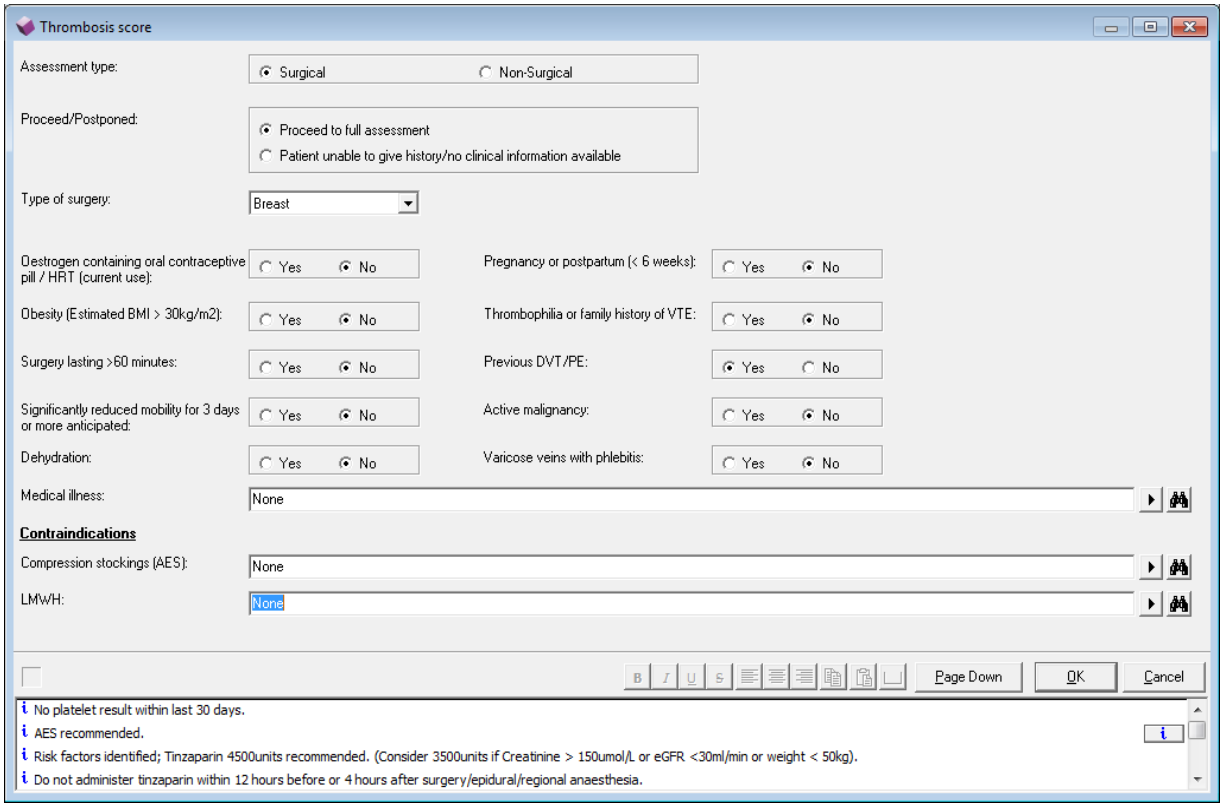
3.1.4 The user must select either ‘Surgical or ‘Non-Surgical’, followed by one of the options shown under ‘Proceed/Postponed’. When ‘Proceed to full assessment’ is selected, an extended lower part of the screen will appear, the content of which will depend on the selection and is explained in more detail in the following sections.

3.1.5 Selecting any other option under ‘Proceed/Postponed’ constitutes a postponement and produces the messages shown above in the lower window, where the second ‘i’ message that is partially obscured reads: “*It is a national requirement to assess all patients admitted to hospital for their risk of VTE, including day cases. By postponing this assessment, you are responsible for ensuring that this delay is communicated to the clinician responsible for its completion within 24 hours of admission*”.

3.2 Surgical Assessment

The surgical assessment is shown below.

Note: the fields 'OCP/HRT (current use)' and ‘Pregnancy or postpartum (<6 weeks)’ appear for female patients only.



3.2.1 The ‘Type of surgery’ drop down list has options:

- Breast
- Burns
- Cardiac
- ENT
- GI
- Liver
- Neurosurgery
- Renal
- Trauma and Orthopaedic
- Urology
- Vascular
- Other

3.2.2 If 'Trauma & Orthopaedic' is selected, a drop down list 'T&O surgery' will be enabled with a choice of:

- Hip fracture
- Isolated upper limb surgery
- Other

3.2.3 If 'Vascular' is selected, a radio button field 'Varicose vein surgery/ EVLT under local anaesthetic' will be enabled.

3.2.4 The ‘Medical illness’ field has options:

- Active cardiac respiratory disease
- Inflammatory bowel disease
- Metabolic/ Endocrine
- Nephrotic syndrome
- Previous stroke
- Sepsis
- None

3.2.5 If a patient is admitted to ambulatory care, an ‘i’ link to the following information is available on the completed VTE risk assessment screen on PICS:

- Low risk procedures are ‘block’ risk assessed as low risk and therefore completion of the PICS VTE risk assessment is not required
- For all other cases, a VTE risk assessment should be completed. Tinzaparinshould be prescribed in the following cases:
    - At the discretion of the surgeon or anaesthetist
    - Ongoing significant immobility – especially after lower limb or abdominal surgery and additional risk factors for VTE
    - Previous VTE
    - On the Oestrogen containing contraceptive pill or oral HRT if not stopped
- Supply 5 days of LMWH (longer if expected to have ongoing significant immobility)

3.3 <u>Contraindications</u>

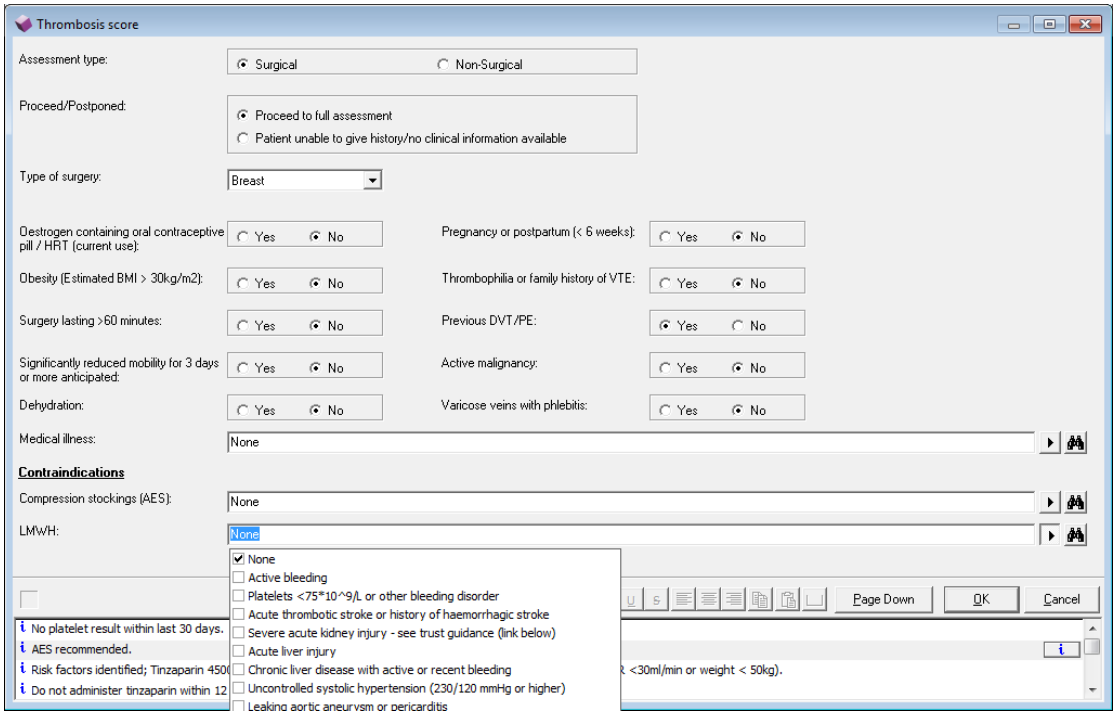
3.3.1 ‘Contraindications to compression socks (AES)’ has the options:

- None
- Patient completely mobile, AES not required
- Suspected or proven peripheral arterial disease
- Peripheral arterial bypass grafting
- Peripheral neuropathy/ significant sensory impairment
- Skin fragility (‘tissue paper’ skin, cellulitus, dermatitis, gangrene or recent skin graft)
- Venous ulceration
- Known allergy to material of manufacture
- Congestive heart failure/ pulmonary oedema

- Severe leg oedema
- Unusual leg size or shape
- Limb deformity preventing correct fit
- Bilateral leg amputation
- Patient declined
- Other

3.3.2 ‘Contraindications totinzaparin’ has the options:

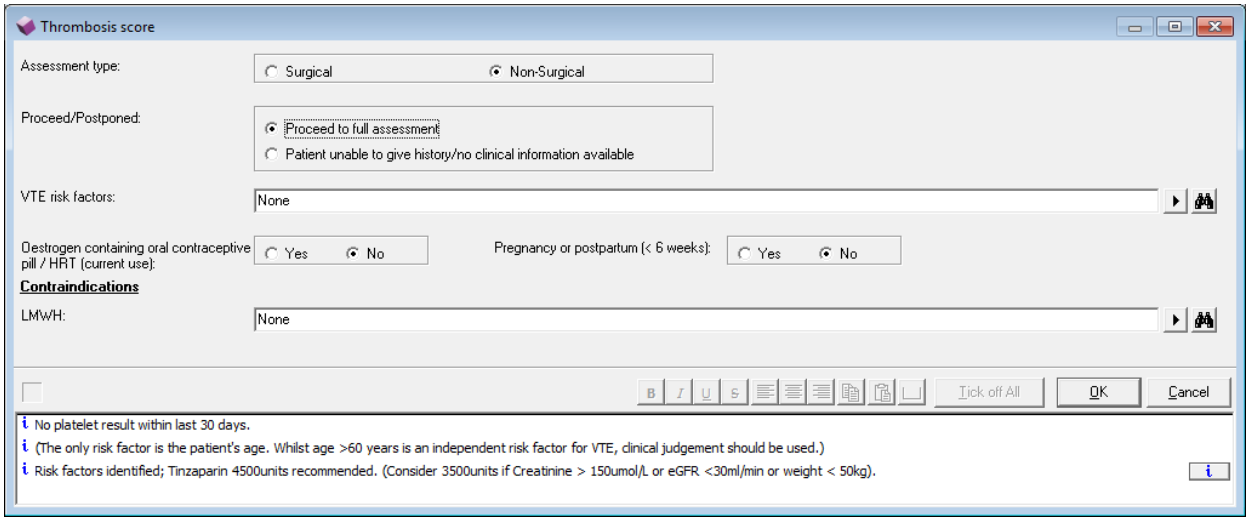
- None
- Active bleeding
- Platelets <75×10^9/L or other bleeding disorder
- Acute thrombotic stroke or history of haemorrhagic stroke
- Severe acute kidney injury – see Trust guidance
- Acute liver injury
- Chronic liver disease with active or recent bleeding
- Uncontrolled systolic hypertension (230/120 mmHg or higher)
- Leaking aortic aneurysm or pericarditis
- Eye surgery, thyroidectomy or tonsillectomy
- Non operatively managed hepatic and solid organ injuries
- Acute bacterial endocarditis
- Meningitis or sepsis with DIC
- Heparin allergy, including heparin induced thrombocytopenia (HIT)
- On therapeutic dose anti-coagulation
- Head or spinal injuries with risk of bleeding
- No reduced mobility (compared to normal) throughout admission
- Other



3.4 Non-surgical assessment

3.4.1 The initial display within the non-surgical assessment, where 'Proceed to full assessment' has been selected, is shown below.

3.4.2 Note: Selecting anything other than 'Proceed to full assessment' in the Proceed/Postponed field again constitutes a postponement and displays the same messages as for the surgical assessment.



3.4.3 Note: As with the Surgical assessment, the fields 'Pregnancy or postpartum (<6 weeks) ' and 'OCP/HRT (current use)' are shown only for female patients.

3.4.4 The list of 'VTE risk factors' consists of:

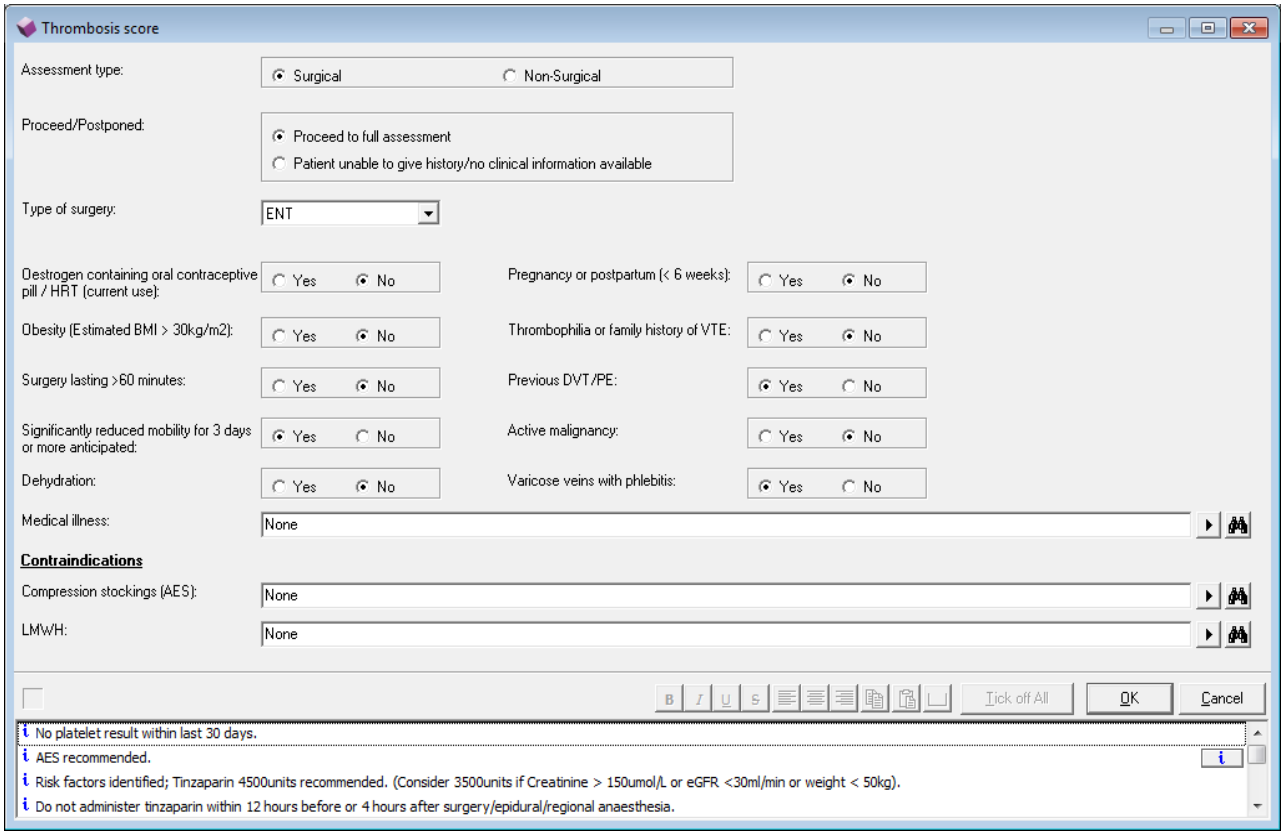
- None
- Mobility significantly reduced for 3 or more days
- Active cancer
- Previous VTE disease
- Dehydration
- Known thrombophilias
- Obesity (BMI>30kg/m^2)
- Active cardiac/ respiratory disease
- Metabolic/ endocrine pathologies
- Active infectious diseases
- Inflammatory conditions
- Other

3.5 Contraindications

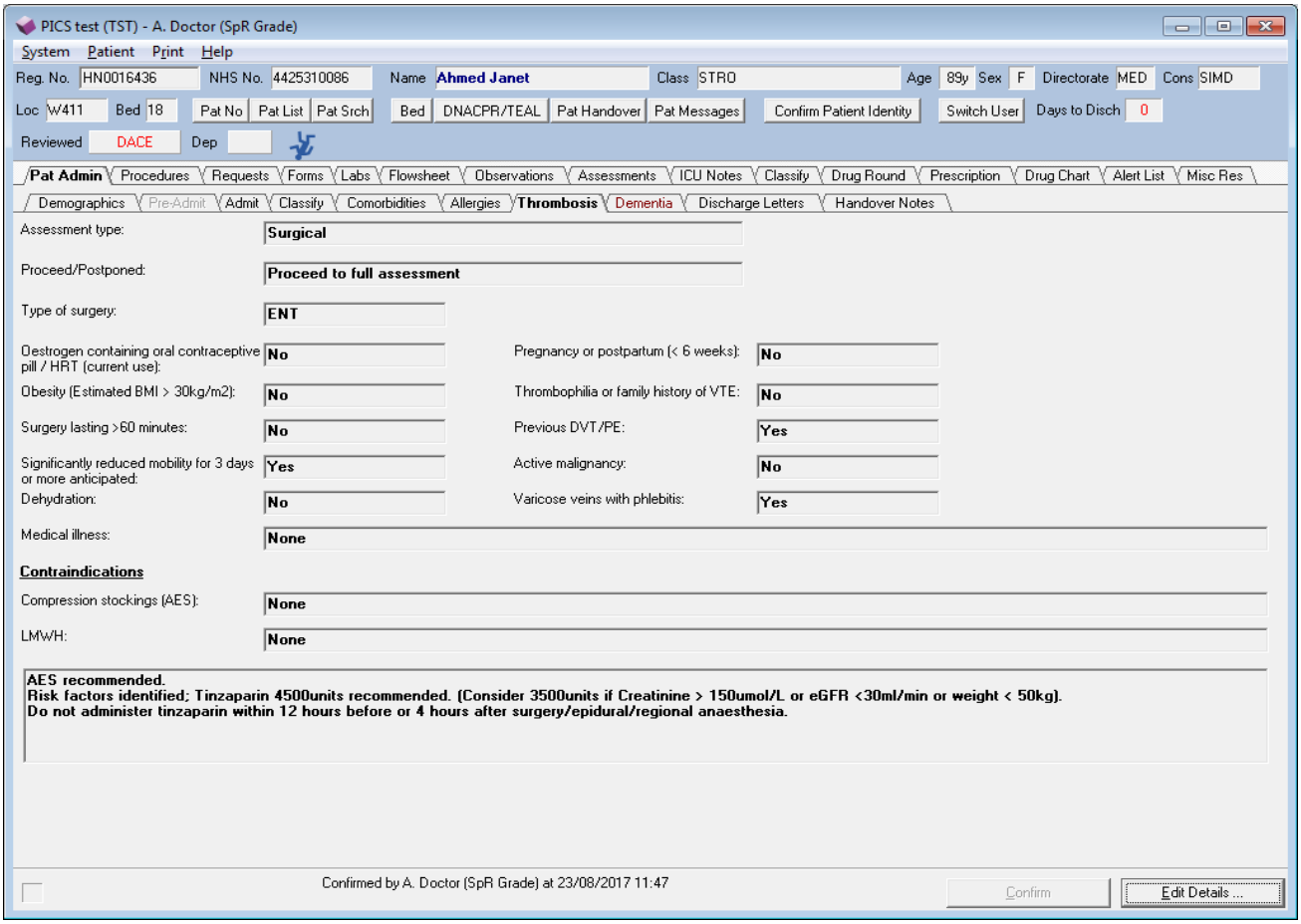
Contraindications to compression socks are not included in the non-surgical assessment as they are never recommended. For tinzaparinthe options have been adjusted to include '*no reduced mobility (compared to normal) throughout admission*'.

3.6 Recommendation**s**

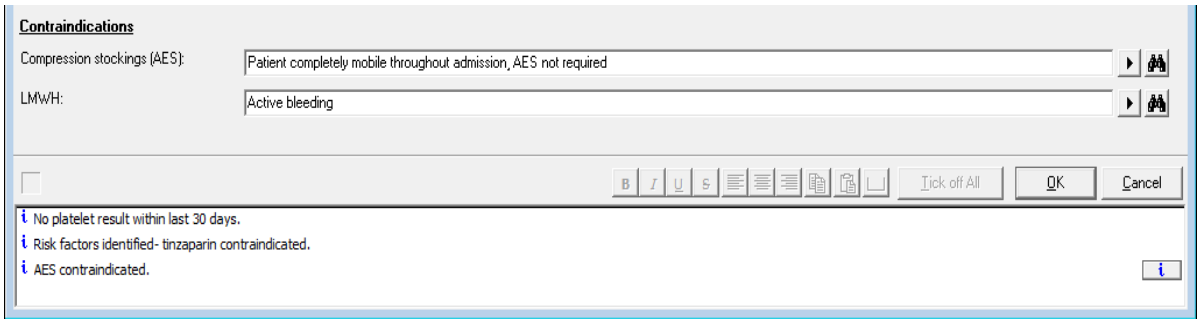
3.6.1 When all the fields have been completed the system will evaluate the data and display any recommendations in the window at the bottom of the screen (see below).



3.6.2 When the OK button is pressed and the screen closes, the recommendations are still visible on the Thrombosis tab so that others can refer to them (see below).



3.6.3 Note: Where anything is entered in terms of contraindications to tinzaparin or AES, the recommendations will change accordingly (see below).



3.6.4 Note: In the screen above (and several screens earlier in this section) a small 'i' button appears to the right of some recommendations. If this is clicked it will open the PICS web page containing further information about the Trust thrombosis prophylaxis guidelines including guidance on renal impairment, weight based dosing and ambulatory care.

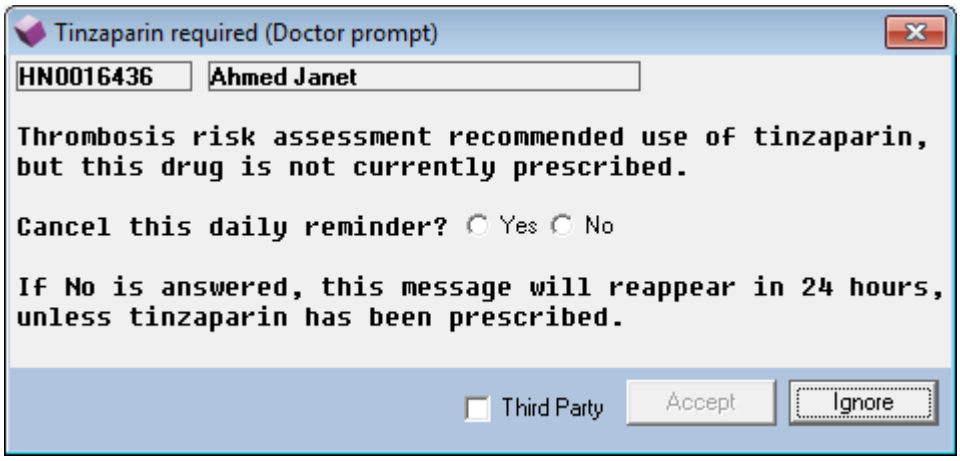
3.6.5 The same information can be reached from the Help menu within PICS via the 'PICS Help' option.

3.6.6 **NOTE**: full details of the logical decision tree used to derive the clinical advice are documented in a separate Excel spreadsheet – 'VTE logic summary version 1.5v2.xls'

3.7 Rules associated with the VTE assessment

Tinzaparin alert

3.7.1 Where the advice at the bottom of the VTE risk assessment screen indicates that tinzaparin should be used, then on the morning following completion of the risk assessment the system will review the current prescriptions and display an alert in cases where tinzaparin is not currently prescribed (see below).



3.7.2 This alert will appear from 7.30 a.m. on the day after the admission. If the 'No' option is selected it will reappear every day at the same time until either tinzaparin is prescribed or 'Yes' is answered to suppress the alert.

3.7.3 If 'Ignore' is pressed, or the alert is closed with the 'X' button, it will reappear on the same day, to the next user that opens the patient record.

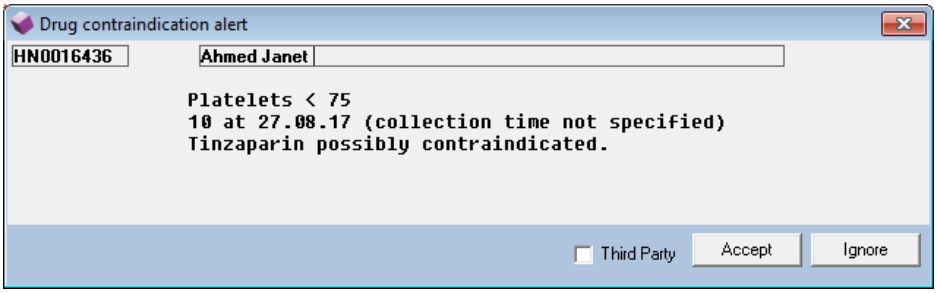
3.7.4 Extensions to the rule ensure that the warning reappears, even when cancelled via the 'Yes' option, in cases where the thrombosis assessment is changed in any way or the patient is transferred to a different specialty.

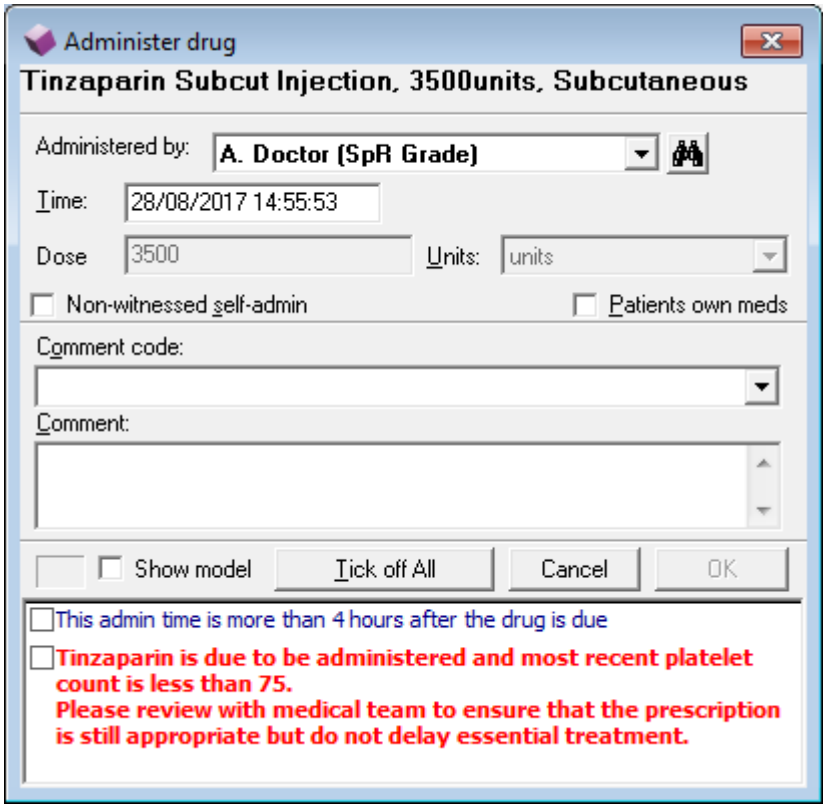
3.7.5 If tinzaparin is prescribed for the patient (so cancelling the rule) but the script is later ended, the alert will not reappear unless the details of the thrombosis assessment are changed.

3.7.6 As is the case for all PICS alerts and alarms, the identity of all users who interact with this alert in any of the ways noted above is recorded in the PICS database.

3.7.7 In addition, a rule shows an alert when a patient's prescription for tinzaparin has an effective daily dose of 4500units but their weight is < 50kg. The rule triggers on prescription of tinzaparin or receipt of the patient's weight.

3.7.8 An alert is also shown if the most recent platelet count is <75 and there is an active prescription for tinzaparin. An alert is also transmitted to the nurse drug administrator when tinzaparin is due to be administered requesting that the prescription should be checked with clinical team





3.8 Rule to automate prescribing of Anti-embolism socks (AES) sockswhere indicated by VTE assessment

Whenever the VTE assessment is completed, changed, or reviewed during transfers between specialties, the rule will trigger and depending on the current state of the patient prescriptions and on the advice from the assessment relating to AES, it will take the actions as defined in the following table.

AES advice displayed	**AES already prescribed?**	**Action**
Contraindicated (surgical)	No	None
Contraindicated (surgical)	Yes	Display *alert 1* (see below) to doctors
Recommended (surgical)	No	Prescribe AES and display *alert 2* to doctors
Recommended (surgical)	Yes	None
Not mentioned (non-surgical)	No	None

Not mentioned (non-surgical)	Yes	None

Alert 1

'Latest VTE assessment indicates AES contraindications – consider ending current prescription for AES'

Alert 2
'AES have been prescribed, as indicated by latest VTE assessment

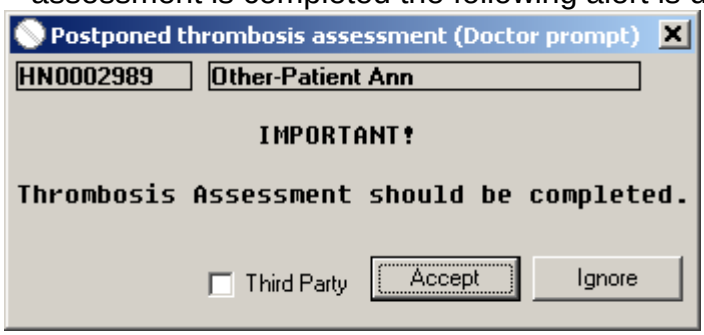
If clinically contraindicated, enter details in Thrombosis tab and then end prescription

(Failure to enter a contraindication can result in AES being re-prescribed)'

Note: Where AES are prescribed by the system this will be a regular script, frequency OD, to fall on the 8am round.

3.9 Postponed assessments rule

3.9.1 If an assessment is postponed for any of the reasons available, at 0730h the next morning and every morning until the assessment is completed the following alert is displayed:



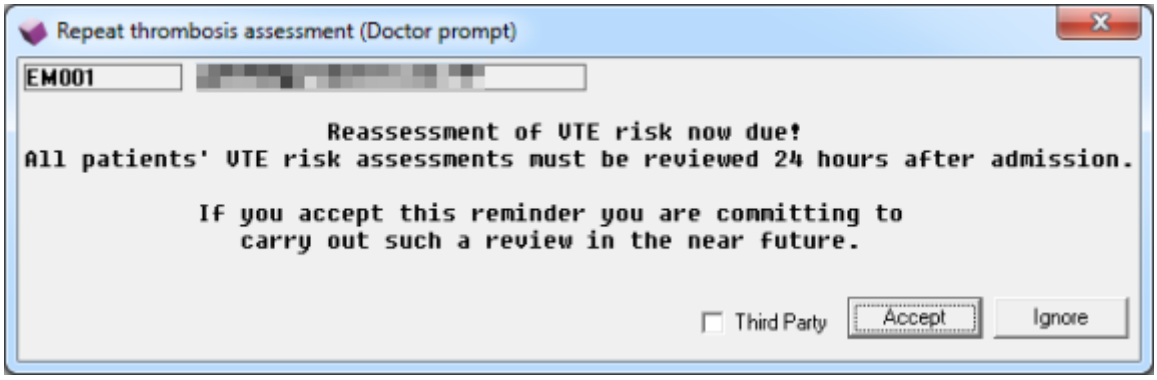
3.9.2 If an assessment is postponed but the patient already has a prescription for tinzaparin, AES or both, then the wording on the above alert will change to:

'Although the patient already has tinzaparin or AES prescribed, there is a Trust requirement that the Thrombosis risk assessment is completed for all inpatients'.

3.9.3 The prompt will be triggered every 24hrs until the assessment is completed.

3.10 Review of completed assessments

18hrs after admission the following alert will appear:



This alert appears regardless of whether a thrombosis screen has been completed or postponed, and is not repeated at later times (e.g. every 24 hours).

4 Prescribing Tinzaparin

After completing the VTE risk assessment on PICs, the doctor should prescribe appropriate pharmacological prophylaxis according to the recommendations of the risk assessment (see section 3 above). Please note the PICS electronic risk assessment tool is not a substitute for clinical judgement. An autoproposal function has been added in version 1.5v2.

Rules for auto-proposal of prophylactic LMWH

This is triggered when a new set of messages are saved from the thrombosis screen. If the messages contain any of:

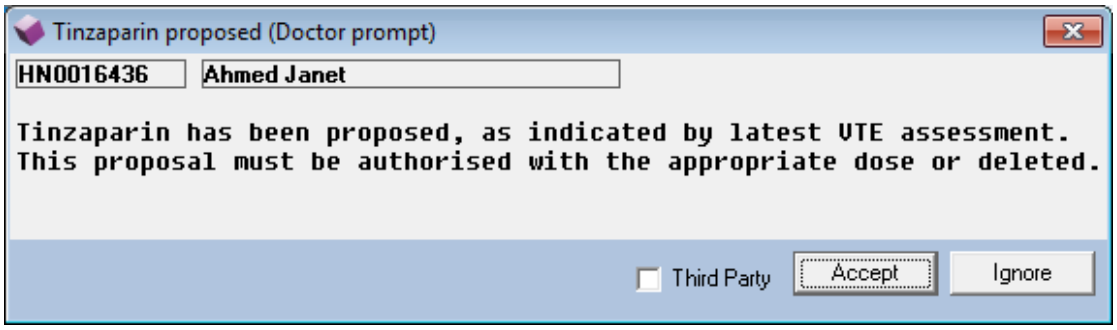
- VTE assessment complete; non-surgical patient, mobility normal.
- Risk factors identified; Consider unfractionated heparin or renal adjusted tinzaparin.
- Risk factors identified; Consider tinzaparin 3500units OD.
- Risk factors identified; usually tinzaparin 4500units OD starting the day after surgery. (Consider 3500units OD eGFR <30ml/min or weight < 50kg).
- Risk factors identified; usually tinzaparin 4500units OD to continue 28-35 days post-op. (Consider 3500units if eGFR <30ml/min or weight < 50kg).

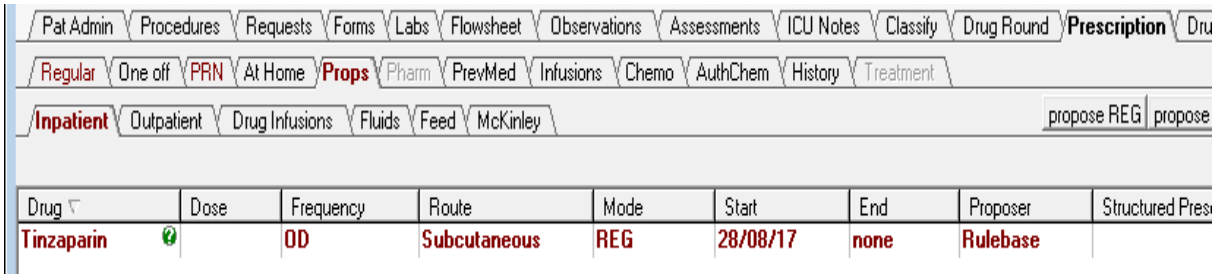
- NICE guidelines suggest that extended prophylaxis with LMWH is given for 28 days after major cancer surgery in the abdomen or pelvis. Click i-button to access the NICE website.

- Risk factors identified; tinzaparin 4500unts recommended. (Consider 3500units if eGFR <30ml/min or weight < 50kg).

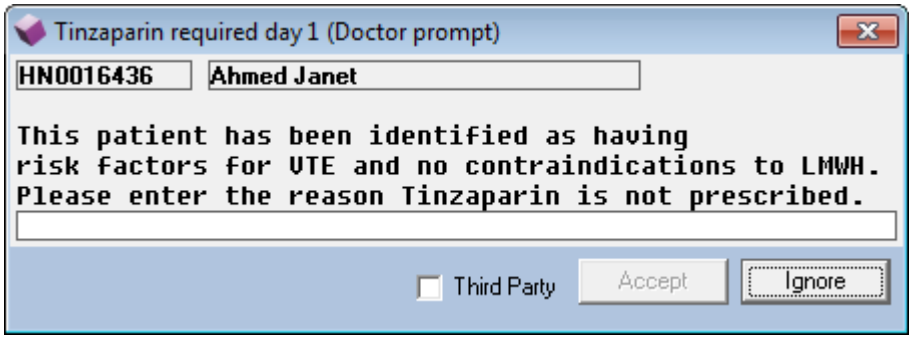
- Risk factors identified; tinzaparin 4500units recommended. (Consider 3500units if eGFR <30ml/min or weight < 50kg). Standard prophylactic dose for major burns is4500units BD. See guidelines on i link for further information.

and the patient doesn't already have a prescription for tinzaparin. The rule proposes a subcutaneous injection OD at teatime, unlimited duration, no dose stated. This is a mandatory proposal and must be authorised with a dose or deleted before anything else can be prescribed. When the proposal is made an alert is show, screenshots below.





Any reasons for not following the recommendations should be documented in the patient's medical record.



4.1 Notes on Mechanical Prophylaxis

4.1.1 Please see Guidelines for the nursing care of patients requiring and wearing anti-embolism socks.

4.1.2 Please note anti-embolism socks are auto prescribed in PICS in surgical patients with VTE risk factors and no contraindications so it is important to ensure that potential contraindications are carefully reviewed to avoid patient harm.

4.1.3 Anti-embolism socks auto prescribed on PICS should not be administered by nursing staff when there is a clinical concern about the suitability/patient contraindications and this should be noted on the PICS prescribing tool.

4.2 Notes on Patient Information/Care

4.2.1 Elective pre-admission care patients should be offered verbal information on VTE risk and prevention in addition to the Trust leaflet (see appendix B) by nursing or medical staff.

4.2.2 Patient Information is available on the patient bedside TVs under the section ‘caring for you’ and online http://www.uhb.nhs.uk/dvt

4.2.3 As part of the nurse discharge process verbal and written information should be provided to patients and/or careers (see appendix B).

4.2.4 Patient information video is available on out patient waiting area TV screens, in hospital and local GP surgeries and is available on the UHB website http://www.uhb.nhs.uk/hospital-acquired-dvt.htm

4.3 Notes on pharmacological prophylaxis

4.3.1 Accredited prescribers looking after the patient are responsible for prescribing pharmacological prophylaxis.

4.3.2 **NOTES (accessed by 'i' link on the completed VTE risk assessment page on PICS):**

- The usual timing for the first post-operative tinzaparin dose is 6-12 hrs after surgery (no less than 4 hours) and delay if there is excessive bleeding

- If tinzaparin is given less than 12 hours pre-operatively, the dose is no more than 3500units

- The usual timing for daily tinzaparin is early evening. For patients having surgery or invasive procedures in the afternoon, the first post-operative dose should be delayed till later in the evening (at least 4 hours post-op) but not omitted

- Do not give prophylactic tinzaparin within 12 hours before and 4 hours after regional anaesthesia or removal of an epidural catheter (delay for 6 hours if traumatic removal)

- Elective day case surgery patients with significant risk factors for VTE should also be assessed and considered for thromboprophylaxis with tinzaparin

- Extended thromboprophylaxis (28-35 days) is recommended in the following patients

  a) After hip fracture
  b) Elective hip replacement
  c) Major abdominal or pelvic cancer surgery
  d) Major surgery in a patient with a history of VTE

Once daily fondaparinux 2.5mg starting 6 hours post-op is an alternative to tinzaparin and may also be considered in medical patients if tinzaparin is not appropriate. It is a synthetic drug (not of porcine origin like tinzaparin). It is almost entirely excreted through the kidneys so can accumulate in patients with renal impairment.

Anti-platelet drugs should not be used as an alternative to LMWH for prophylaxis against venous thromboembolism. Combined use of anti-platelet drugs with pharmacological prophylaxis increases the risk of bleeding however.

MONITORING:

Tinzaparin can accumulate if the GFR is less than 30mL/min and should be used with extreme caution in renal failure- maximum recommended dose if tinzaparin is 3500units OD or consider subcutaneous unfractionated heparin 5000 units TDS as an alternative in high risk patients where the benefits of thromboprophylaxis outweigh the risks.

Monitoring of platelet counts for Heparin Induced Thrombocytopenia is only required for patients receiving or after recent exposure (90 days) to unfractionated heparin. Patients should have the platelet count checked at baseline and after 5 days (or after 2 days if recent heparin exposure) and then every 2-4 days until 14 days of heparin exposure.

If the platelet count falls by 50% or more and/or the patient develops new thrombosis or skin allergy between days 4 and 14 of heparin administration, HIT (heparin induced thrombocytopenia) should be considered and a clinical assessment made. Please call the on call Haematologist for further advice.

Anti-Xa monitoring is recommended for patients with severe burns (see specialty guidelines).

WEIGHT BASED DOSING

Patients with a low BMI are at increased risk of bleeding on anticoagulation. If weight <50kg then tinzaparin 3500units recommended.

There is limited t evidence to provide clear guidance on the use of tinzaparin in the obese. For high risk patients >110kg, an increased dose could be considered. For patients >140kg then a dose of 4500units BD is suggested.

SPECIALITY SPECIFIC GUIDELINES

THROMBOEMBOLIC PROPHYLAXIS IN NEUROSURGICAL PATIENTS

All patients have AES socks prior to Anaesthesia and until fully mobilised.
In theatre all patients also have short sequential compression stockings.

Spinal Surgery

Simple decompressions without wound drains

Tinzaparin commenced 6 to 8 hours following surgery

Decompressions with wound drains

Tinzaparin commenced 1 hour after drain removed (desirable within 12 hours)

Intracranial Surgery

Tinzaparin commenced 12 hours after end of surgery.

In pre-op screening, Pts with BMI of 35 or more have d-dimer levels measured. If raised, their dose of tinzaparin is 4500units SC OD. In all other patients (inc BMI <35), Tinzaparin dose is 3500units once daily.
Aspirin / Clopidrogel combination therapy (unless within 6 months of a metal coronary stent); Clopidrogel is stopped and Aspirin continued.

Aspirin alone; therapy is stopped 10 days prior to surgery.

Clopidrogel alone; currently therapy is stopped 10 days prior to surgery (should be decided on an individual patient basis).

Concurrent NSAID therapy is not addressed in this protocol.

Burns

For major burns, standard prophylactic dose is 4500units BD. Measure anti-Xa levels after at least 3 doses given (3-4 hours post dose) using a citrate (blue) tube. Aim for anti-Xa 0.1-0.5. Adjustments may be required for renal function and weight. The dose should be adjusted in 500 to 1000units increments per dose.

Ambulatory care

- Low risk procedures are 'block' risk assessed as low risk and therefore completion of the PICS VTE risk assessment is not required
- For all other cases, a VTE risk assessment should be completed. Tinzaparin should be prescribed in the following cases:

    - At the discretion of the surgeon or anaesthetist
    - Ongoing significant immobility – especially after lower limb or abdominal surgery and additional risk factors for VTE
    - Previous VTE
    - On the oestrogen containing contraceptive pill (OCP) or oral HRT (hormone replacement therapy) if not stopped

- Supply 5 days of LMWH (longer if expected to have ongoing significant immobility)

5. References

NICE clinical guideline 92 (CG92): Venous thromboembolism: reducing the risk of venous thromboembolism (deep vein thrombosis and pulmonary embolism) in patients admitted to hospital. (January 2010). http://www.nice.org.uk/guidance/CG92

https://www.england.nhs.uk/patientsafety/venous-thromb/ (accessed 2/6/16)

National institute for health and clinical excellence – quality standards for venous thromboembolism prevention. https://www.nice.org.uk/guidance/qs3

6. Associated Documents

Prevention and Treatment of Venous Thromboembolism (VTE) Policy

Guidelines for the nursing care of patients requiring and wearing anti-embolism stockings (AES)

Clinical guideline for patients on oral anticoagulants and anti-platelet drugs admitted to hospital

Clinical guideline for initiation of oral anticoagulants

Clinical Guideline for IV unfractionated heparin

UHB Guideline for the initiation and monitoring of direct oral anticoagulant drugs (DOACS)

Appendix A - DH 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

Department of Health

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Department of Health

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< $75x10^9$/l)			
Uncontrolled systolic hypertension (230/120 mmHg or higher)			
Untreated inherited bleeding disorders (such as haemophilia and von Willebrand's disease)			

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Appendix B

PATIENT INFORMATION LEAFLETS PRE-ADMISSION AND DISCHARGE

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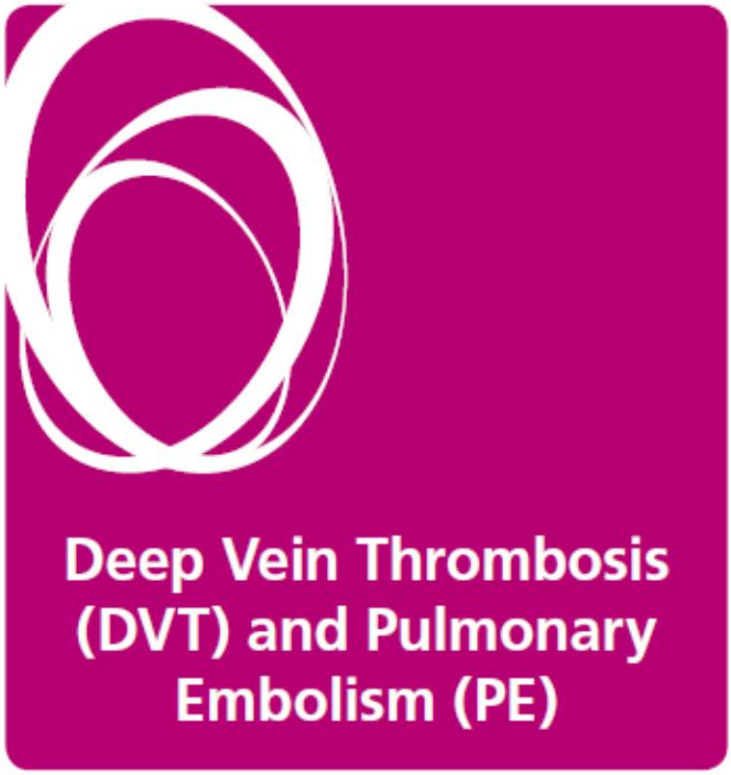

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Some people who come into hospital for treatment are at increased risk of blood clots in the veins.

What is deep vein thrombosis (DVT)?

- If we cut ourselves, the blood can naturally form a clot to stop the bleeding. Sometimes an unwanted clot can form in a vein deep within the leg and this is called a deep vein thrombosis (or DVT for short).
- Symptoms of a DVT include pain, stiffness and aching in the calf or thigh, leg swelling and changes in skin colour

What is Pulmonary Embolism (PE)?

- A pulmonary embolism (or PE) is when part of a clot (from a DVT) breaks off and travels to the lungs where it blocks the blood vessels. It can be very serious, sometimes fatal if not treated
- Symptoms of a PE include sudden onset of breathing difficulty (even when resting) and chest pain (may be worse on breathing in)

What are the risk factors for DVT and PE?

Just being unwell and in hospital can increase your risks but these are some specific risk factors

- Age over 60
- Immobility
- Surgery lasting more than 60 minutes
- A previous history of DVT or PE in yourself or close family members
- Being overweight
- Having cancer

- Being medically unwell with heart failure, respiratory failure or an inflammatory bowel or joint problem
- Being on the oestrogen containing oral contraceptive pill or HRT

When you go home from hospital

The risk of developing blood clots can continue for up to 12 weeks after you have gone home.

- Make sure that you remember to walk around as much as you are able.
- Drink plenty of water.
- When you are resting, as much as possible – raise your leg. This reduces the pressure in the calf veins, and helps to prevent blood and fluid from 'pooling' in the calves. 'Raised' means that your foot is higher than your hip so gravity helps with blood flow returning from the calf. The easiest way to raise your leg is to recline on a sofa with your leg up on a cushion.
- If you have been asked to wear support stockings at home, please wear them for the recommended time (usually 6 weeks after your operation).

Some patients may be considered at very high risk and their consultant may decide that they need to go home on blood thinner injections into their stomach. Some patients are able to give this injection to themselves; others have theirs from the district nursing service.

If you have any questions or concerns after you have gone home from hospital please contact:

Ward ..... on 0121 .....

or your own G.P. surgery.

The Trust provides free monthly health talks on a variety of medical conditions and treatments. For more information visit www.uhb.nhs.uk or call 0121 627 7803

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Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE)

What's the problem?
The risk of DVT and PE is increased during, and a few months after being in hospital.

What is a DVT?
A blood clot that can sometimes develop in a deep vein, most commonly in your leg. Not everyone gets symptoms, but sometimes a DVT can cause leg pain, swelling and skin discolouration.

What is a PE?
If the clot breaks off and travels through your veins it could reach your lungs. This is called a Pulmonary Embolism. This can be serious and even life threatening. Symptoms include sudden unexplained shortness of breath, rapid heartbeat and chest pains made worse by even shallow breathing.

Who is at risk?
Any adult who is unwell and admitted to hospital. There is a greater risk of DVT and PE if you have reduced mobility, infection, cancer, surgery, oestrogen containing pills, pregnancy, being overweight. It is more common as you get older.

What can I do to reduce the risk?
Before you come into hospital:

- Discuss any contraceptives or hormone-replacement therapy you might be taking with your doctor. They may consider stopping these in the weeks before any operation or procedure.
- Keep a healthy weight and do regular exercise

During your hospital stay:

- Keep mobile and get out of bed as soon as possible. When sitting or in bed, exercise your ankles. The more you do this the better. Speak to your nurse or physiotherapist for advice.
- Drink plenty of fluid and keep hydrated (unless advised otherwise by your doctor).
- Ask your doctor or nurse about your risk of DVT or PE.

What can the hospital do to reduce my risk?
Your Doctor may recommend you to be measured and fitted for support stockings. They reduce the risk of DVT or PE by helping with the circulation of blood through the veins of the leg. The stockings are tight fitting in order to produce enough pressure to encourage blood flow. Please inform the staff if they don't fit properly, if you have any pain, numbness or sore skin while wearing them. You may be advised to wear them at home until you return to your usual level of activity. If so, your nurse will measure you again to ensure you have the correct size, show you how to apply them, and explain what to check your skin for. You will be provided with two pairs on discharge, one to wear whilst the second pair is being washed. The washing instructions are written on the packaging, but they can be washed for up to 16 times before you need a new pair.
Some patients who are at increased risk of DVT or PE are given blood thinning injections using a type of heparin called tinzaparin (Innohep®). During your stay in hospital, the nursing staff will give you the injection. However, you may be asked to continue taking the injections at home. If so, a nurse will teach you or a close family member on how to give them to yourself. Alternatively you could go to your GP Practice Nurse or in some cases a District Nurse may be arranged to give them to you at your home. If you develop a rash at the injection site, or if any bleeding occurs, you should stop the injections and ask to be reviewed by your GP.

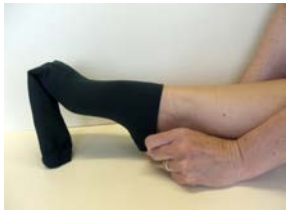
Where can I get more information?
Please speak to your hospital medical team or your GP. We have a video about DVT and PE prevention on our hospital website (www.uhb.nhs.uk/hospital-acquired-dvt.htm).

The charity Lifeblood has a very good website (www.thrombosis-charity.org.uk).

What if I think I've got a DVT or PE?
You should seek urgent medical attention from you GP or A&E. If you are very unwell you should call for emergency services on 999.

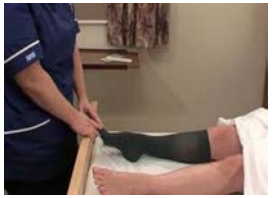
Guide for how to apply support stockings:

Insert your hand into the top of the stocking as far as the heel section. Grab hold of the heel and turn the stocking inside out until the heel section emerges. Leave the toe section tucked inside.



With the heel section at the bottom, pull the stocking over your foot until the heel section of the stocking reaches your heel. The centre of your heel should be lined up with the heel section of the stocking and the inspection hole on the underside of your foot.

Gently pull the rest of the stocking up using a side to side twisting motion around the ankle and the calf until the top of the stocking is just below your knee.
Try not to stretch the stocking too much when pulling it up. If you do you will have excess material at the knee causing them to roll down which can cause skin damage.



Smooth out any wrinkles or excess material.
Check that the inspection hole is underneath your toes, the heel section is on your heel and the top of the stocking is just below your knee.

Important points to remember:

- The stockings will feel slightly tight. Because they are designed to create pressure around the blood vessels in your legs in order to help blood circulate.
- Make sure you have been measured with a tape measure just above your ankle and have been provided with the correct size stockings before you leave hospital.
- Remove your stockings for 30 minutes each day, to check your skin and to have a wash.
- Whilst in hospital you will be given a new pair of stockings every 3 days. When at home you will need to wash your stockings at least every 3 days. Sooner if they are soiled or dirty. Wear your spare pair of stockings while the other pair is being washed.
- Tell your doctor/GP or nurse if you experience leg pain, numbness or sore skin whilst wearing the stockings.
- If your legs become swollen, stop wearing the stockings and tell your doctor/GP or nurse as soon as possible. They will advise you on what to do next.