

Guidelines on Prophylaxis of Venous Thromboembolism on Transfer from Secondary Care

1. BACKGROUND

Following publication of [NICE NG89](#) all patients 16 years old and above admitted to hospital must be assessed for risk of venous thromboembolism. This includes in-patients, day cases and some out-patients.

Patients are regarded as being at risk of VTE if they meet the following criteria (*from NICE NG89*)

1. Medical patients who
 - have had or are expected to have significantly reduced mobility for 3 days or more **or**
 - are expected to have ongoing reduced mobility relative to their normal state and have one or more of the VTE risk factors (see below)
2. Surgical patients and patients with trauma who
 - has had a surgical procedure with a total anaesthetic and surgical time of more than 90 minutes
 - are an acute surgical admission with inflammatory or intra-abdominal condition
 - are expected to have significant reduction in mobility
 - have one or more of the risk factors shown below

VTE risk factors

Active cancer or cancer treatment

Age > 60 years

Critical care admission

Dehydration

Known thrombophilias

Obesity (BMI > 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 HRT

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 NICE guidance or [RCOG Guideline 37a](#) for specific risk factors).

All forms of thromboprophylaxis are off-label for under 18 year old.

For patients regarded as being at risk of VTE, bleeding risk will also be assessed and a clinical decision made on the type of prophylaxis, if any, that should be offered to the patient.

For many patients, prophylaxis will be required only during hospital stay but for some, where risk of VTE remains significant (i.e. patients whose mobility remains reduced relative to normal state) prophylaxis may be required following discharge.

2. CHOICE OF VTE PROPHYLAXIS

Within Hull and East Riding the following methods of are used for VTE prophylaxis.

Mechanical prophylaxis

Includes anti-embolism stockings, foot impulse devices, and intermittent pneumatic compression devices. Anti-embolism stockings are supplied by secondary care when needed for discharge.

Pharmacological prophylaxis (see Appendix for more information)

- **Dalteparin**
(low molecular weight heparin, LMWH of choice. Other LMWH could be used at times of supply disruption)
Standard dose – 5000 units once daily by subcutaneous injection
- **Fondaparinux**
(rarely - alternative to dalteparin when porcine product declined)
Standard dose – 2.5mg once daily by subcutaneous injection
- **Dabigatran**
For prophylaxis of VTE following total hip or knee replacement, or lower limb cast, fracture of hip/pelvis/proximal femur, non-arthroplasty knee surgery and other orthopaedic/spinal surgery if indicated [off label uses].
Standard dose - 220mg once daily
Dose reduced to 150mg once daily (or rarely 75mg once daily) in patients 75 years and over, CrCl 30-50ml/min, patients taking amiodarone, verapamil.
Course length: dependant on indication
When dabigatran is contraindicated dalteparin will be used as alternative.

Dabigatran is classified as RED drug for this indication – full supply by secondary care

NOTE

Due to LMWH supply fluctuations, the other LMWH Enoxaparin and Tinzaparin are now in our formulary to be used accordingly if Dalteparin becomes unavailable. Guidance will be produced when needed.

3. PROCEDURE WITHIN HULL AND EAST YORKSHIRE HOSPITALS NHS TRUST

On admission all patients will be assessed for risk of VTE and prescribed prophylaxis as per NICE NG89. Patients will be reassessed and a decision made regarding need for continued prophylaxis on discharge.

Patients likely to require VTE prophylaxis on discharge include those with following risks

- Elective knee and hip replacement
- Hip fracture
- Other orthopaedic surgery (including day surgery)
- Major trauma
- Lower limb casts
- Reduced mobility following any surgical procedure or medical admission
- Pregnancy and/or 6 weeks following delivery as per RCOG Guideline 37a.

If VTE prophylaxis is required following discharge, HUTH will

- Provide GP with information on
 - Risk assessment for VTE
 - Details of mechanical and/or pharmacological treatment provided
 - Baseline blood tests required for pharmacological treatments
 - Details of follow up required by GP or secondary care
- Supply up to 30 days of VTE prophylaxis and sharps bin if subcutaneous injection (up to 42 days post-partum and fracture clinic patients) OR Supply complete course of treatment for patients on Dabigatran
- Make referral to district nursing team for administration of subcutaneous injection, if necessary
- Educate patient on VTE prophylaxis, as per NICE NG89.

4. STANDARD FOLLOW UP REQUIRED**For all patients on VTE prophylaxis**

- Consider contraindications, cautions, drug interactions and adverse effects of drugs prescribed for VTE prophylaxis, during routine clinical care of patient and prescribing of any new drug treatment.
(see www.bnf.org or www.medicines.org.uk for further information).

Dalteparin or Fondaparinux

- Prescribe additional sharps bin on FP10, if required
- For some patients, it will not be possible to determine the duration of reduced mobility at point of discharge (e.g. patients with reduced mobility following medical admission, who are discharged to Intermediate Care). For these patients prophylaxis should be prescribed while patient remains at risk of VTE, usually until patient returns to normal state of mobility. For patients who do not require follow up with specialist, GP should assess mobility and on-going need for prophylaxis.

APPROVAL PROCESS

Written by:	Marie Miller, Interface Pharmacist
Consultation process:	MMIG
Approved by:	HEY Thrombosis Committee Dec 14
Ratified by:	HERPC Jan 15, Updated Feb 19, March 2020
Review date:	March 2023

APPENDIX: FURTHER INFORMATION ON PHARMACOLOGICAL PROPHYLAXIS**DALTEPARIN****Indications (for VTE prophylaxis)**

- Peri- and post-operative surgical thromboprophylaxis, including lower limb casts
- The prophylaxis of proximal deep venous thrombosis in patients bedridden due to a medical condition
- Thromboprophylaxis during pregnancy and following delivery

Dose – by subcutaneous injection

For prophylaxis 5000 units once daily reduced to 2500 units once daily in dialysis patients.

Duration

Prophylaxis is normally continued until patients' mobility returns to normal state. Examples of typical duration are given below, but they will vary according to type of surgery or medical problem and patient's recovery.

For day surgery – 5 days

For fracture clinic – usually 4-6 weeks

For orthopaedic surgery – usually 4 weeks

In pregnancy – during pregnancy or up to 6 weeks following delivery (dependent on level of risk)

For medical prophylaxis – usually discontinued on discharge but may continue for several weeks (licensed for up to 14 days).

Contraindications/cautions

Dalteparin is contraindicated in known hypersensitivity to dalteparin, other LMWH or heparins including history of confirmed or suspected immunologically mediated heparin induced thrombocytopenia (type II); acute gastroduodenal ulcer; cerebral haemorrhage; known haemorrhagic diathesis; serious coagulation disorders; septic endocarditis; injuries to and operations on the central nervous system, eyes and ears; patients who have suffered a recent (within 3 months) stroke unless due to systemic emboli.

Patients with other bleeding risks – a clinical decision must be made on whether to initiate or continue pharmacological thromboprophylaxis based on risks of VTE and risks of bleeding.

Drug interactions

Anticoagulant/ antiplatelet agents – concomitant use will lead to enhancement of the anticoagulant effect by anticoagulant/antiplatelet agents

As a general guide

- Dalteparin should not be prescribed concomitantly with desirudin, fibrinolytic agents, GP IIb/IIIa receptor antagonists, heparin, fondaparinux, heparinoids, apixaban, dabigatran, rivaroxaban, edoxaban, other Low Molecular Weight Heparins (LMWH) or with warfarin, once INR is in therapeutic range
- Dalteparin may be prescribed concomitantly with aspirin, clopidogrel, dipyridamole, NSAIDs dependent on clinical assessment of risk of VTE / risk of bleeding.
- Dalteparin should NOT be prescribed with more than one other anticoagulant/antiplatelet

Monitoring

Monitor FBC, BCP and coagulation (PT and APTT) at baseline to check for contraindications to anticoagulation and that renal function is adequate.

Monitoring of Anti-Xa Levels is not usually required but may be considered for specific patients who are at increased risk for bleeding or rethrombosis.

FONDAPARINUX**Indications (for prophylaxis)**

- Prevention VTE in adults undergoing major orthopaedic surgery of the lower limbs and abdominal surgery, immobilised due to other surgery (unlicensed)
- Prevention of Venous Thromboembolic Events (VTE) in adult medical patients who are judged to be at high risk for VTE and who are immobilised due to acute illness
- In HUTH, used rarely, as an alternative to dalteparin e.g. patients who object to LMWH

Dose – by subcutaneous injection

2.5mg once daily reduced to 1.5mg once daily in patients with creatinine clearance of 20-50ml/min

Duration

Prophylaxis is normally continued until patients' mobility returns to normal state. Examples of typical duration are given below, but they will vary according to type of surgery or medical problem and patient's recovery.

For day surgery – 5 days

For fracture clinic – usually 4-6 weeks

For orthopaedic surgery – usually 4 weeks (licensed 5-9 days plus additional 24 days)

For medical prophylaxis – usually discontinued on discharge but may continue for several weeks (licensed for 14 days).

Contraindications/cautions

Fondaparinux is contraindicated in hypersensitivity to the active substance or to any of the excipients, active clinically significant bleeding, acute bacterial endocarditis, - severe renal impairment defined by creatinine clearance < 20 ml/min.

Use with caution patients with Heparin Induced Thrombocytopenia (HIT) type II; pregnancy; breast-feeding women.

Patients with other bleeding risks – a clinical decision must be made on whether to initiate or continue pharmacological thromboprophylaxis based on risks of VTE and risks of bleeding.

Drug interactions

Anticoagulant/ antiplatelet agents – concomitant use will lead to enhancement of the anticoagulant effect by anticoagulant/antiplatelet agents

As a general guide

- Fondaparinux should not be prescribed concomitantly with desirudin, fibrinolytic agents, GP IIb/IIIa receptor antagonists, heparin, heparinoids, apixaban, dabigatran, rivaroxaban, edoxaban, or other Low Molecular Weight Heparins (LMWH) or with warfarin, once INR is in therapeutic range
- Fondaparinux may be prescribed concomitantly with aspirin, clopidogrel, dipyridamole, NSAIDs dependent on clinical assessment of risk of VTE / risk of bleeding.
- Fondaparinux should NOT be prescribed with more than one other anticoagulant/antiplatelet

Monitoring

Monitor FBC, BCP and coagulation (PT and APTT) at baseline to check for contraindications to anticoagulation and that renal function is adequate.

Monitoring of Anti-Xa Levels is not usually required but may be considered for specific patients who are at increased risk for bleeding or re-thrombosis.

DABIGATRAN**Indications (for VTE prophylaxis)**

- Prevention of VTE in adult patients who have undergone elective total hip replacement surgery or total knee replacement surgery
- Prevention of VTE in adult patients with lower limb casts, hip/pelvis/proximal femur fracture, non-arthroscopic knee surgery and other orthopaedic/spinal surgery if indicated (unlicensed indications)

Dose (for VTE prophylaxis)

Standard dose: 220mg once daily

Dose reduced to 150 mg once daily in patients 75 years or over; patients with creatinine clearance of 30-50 ml/min, patients concomitantly prescribed verapamil, amiodarone

Consider reduced dose of 75mg once daily in patients with moderate renal impairment AND concomitantly treated with dabigatran and verapamil

Duration

Post total knee replacement – 8 days

Post total hip replacement – 26 days

Lower limb casts (fracture clinic) – 4-6 weeks

Hip/pelvis/proximal femur fractures – 27 days

Non-arthroplasty orthopaedic knee surgery – 6 days

Other orthopaedic/spinal surgery – 6 days – 27 days

Contraindications/cautions

Dabigatran is contraindicated in patients with hypersensitivity to the active substance or to any of the excipients; severe renal impairment (CrCl < 30 ml/min); active clinically significant bleeding; organic lesion at risk of bleeding; spontaneous or pharmacological impairment of haemostasis; hepatic impairment (elevated liver enzymes > 2 ULN) or liver disease expected to have any impact on survival; concomitant treatment with systemic ketoconazole, itraconazole, glecaprevir / pibrentasvir, tacrolimus and ciclosporin; pregnancy; breast-feeding

Patients with other bleeding risks – a clinical decision must be made on whether to initiate or continue pharmacological thromboprophylaxis based on risks of VTE and risks of bleeding.

Drug interactions

Anticoagulant/ antiplatelet agents – concomitant use will lead to enhancement of the anticoagulant effect by anticoagulant/antiplatelet agents

As a general guide

- Dabigatran should not be prescribed concomitantly with warfarin, desirudin, fibrinolytic agents, GP IIb/IIIa receptor antagonists, heparin, Low Molecular Weight Heparins (LMWH), fondaparinux, heparinoids, apixaban, rivaroxaban, edoxaban, NSAIDS with half-life > 12 hours.
- Dabigatran may be prescribed concomitantly with aspirin, clopidogrel, prasugrel, dipyridamole, NSAIDs dependent on clinical assessment of risk of VTE / risk of bleeding.
- Dabigatran should NOT be prescribed with more than one other anticoagulant/antiplatelet

Pharmacokinetic interactions

- P-glycoprotein inhibitors – ketoconazole, itraconazole, glecaprevir / pibrentasvir, tacrolimus and ciclosporin – **contraindicated**
- Amiodarone, Verapamil, quinidine – reduce dose
- Ticagrelor – increased anticoagulation effect
- P-glycoprotein inducers- rifampicin, carbamazepine, St John's Wort, protease inhibitors – may reduce effect

Monitoring

Monitor FBC and U&E at baseline.

Prescribing Information for VTE prophylaxis on discharge

Date Approved by HERPC: Jan 15

Updated: Mar 20

Review: Mar 23

Page 6 of 6