HOSPITAL GUIDELINES - Deep Vein Thrombosis (DVT) Ambulatory Service

Deep Vein Thrombosis (DVT) Ambulatory Service

The Cardiff and Vale UHB DVT Service is run by Venous Thrombosis Nurse Specialists with clinical support from the Haematology Department. It is based in Doppler Ultrasound of the Medical Physics Department on the Ground Floor B Block UHW.

- **Hours of Operation** - Monday to Friday (except Bank Holidays) 08:30 – 16:30
- **Out of Hours** - Refer to on-call medical team. The DVT clinic will assume management of these referrals (if appropriate see exclusions below) from MAU on the next working day.
- **To refer -** please call: 02921 848729 or Bleep 6492 DVT Nurse
- To complete all relevant investigations the patient must arrive by 15:00hrs (If a patient arrives after 15:00hrs and is found to have a DVT it may be necessary for them to be asked to return the following day for review by the service. They will be discharged home with a dose of enoxaparin and asked to return the following day.

If there is no reply leave a message on the answer machine as the nurse may be with a patient. Please leave the following details:

- In hours - referrers name and telephone number – DVT clinic will contact referrer
- Out of hours - The name of the patient, hospital number or NHS identifier and the patients telephone number – DVT clinic will contact the patient and arrange an appointment for the next working day

Please ensure the patient attends with a referral letter including a list of current medication **(or email to Dvtclinic.CAV@wales.nhs.uk).**

If transport is required this must be arranged by the referrer, please note that the DVT clinic cannot accept patients on stretchers or trolleys. Such patients will need to be discussed with Doppler ultrasound directly on **02920 743547**.

We do not accept emergency ambulance referrals – they must be referred to the medical on call team. Patients who are wheelchair bound must be able to stand and transfer independently or with assistance of one and be wearing appropriate clothing for the scan.

Patients must be:

- 18yrs or over
- Registered with a Cardiff and Vale GP

- Suitable for ambulatory care
- Medically stable with no concurrent acute illnesses which may require admission Concordant with treatment

Exclusion Criteria (refer directly to on-call medical team)

- < 18yrs of age
- Suspicion of Pulmonary embolism/ Cardiac chest pain
- Underlying medical conditions requiring admission
- Gastro-intestinal, genitourinary or inter-cranial bleed within last 4 weeks
- Known liver disease
- Renal Insufficiency (creatinine clearance < 30ml/min)
- Inherited bleeding disorder
- Thrombocytopenia (platelet count < 100 x 109/l)

Diagnostic Algorithm for Suspected lower limb DVT

Pre-test probability assessment

An initial Wells Score should be used by referrers to risk stratify the patient as likely or unlikely to have a DVT in accordance with the NICE Clinical Guideline 144 (June 2012).

Clinical feature	Points
Active cancer (treatment ongoing, within 6 months, or palliative)	1
Paralysis, paresis or recent plaster immobilization of the lower extremities	1
Recently bedridden for > 3 days or more or major surgery < 12 weeks	1
Localized tenderness along the distribution of the deep venous system	1
Entire leg swollen	1
Calf swelling > 3 cm compared to the asymptomatic side - 10 cm below tibial tuberosity	1
Pitting oedema confined to the symptomatic leg	1
Dilated (non-varicose) superficial veins in symptomatic leg	1

Previously DVT or PE 1

Alternative diagnosis* (as likely or more than that of DVT) – See below −2

DVT likely and therefore scan
2 points or more

DVT unlikely and therefore D-dimer blood test
1 point or less

20th March 2020 D-Dimer update

D-Dimer results will no longer be reported as POS or NEG but as a quantitative value.

D-dimer < 500 ug/L is NEGATIVE

D-dimer ≥ 500 ug/L is POSITIVE

The D-dimer result is not adjusted for age or clinical condition.

*Alternative diagnoses to consider

Cellulitis	Torn gastrocnemius (calf) muscle
Baker's cyst	Acute arterial ischaemia
Haematoma	Compartment syndrome
Fracture	Superficial thrombophlebitis
Arthritis	Post thrombotic syndrome

Lymphoedema	Hypoproteinaemia (e.g. cirrhosis, nephrotic syndrome)

- D-dimer < 500 ug/L is NEGATIVE
- D-dimer ≥ 500 ug/L is POSITIVE

D-Dimer

D-dimer cannot be used as part of the diagnostic algorithm in patients who have already received a dose of low molecular weight heparin or oral anticoagulant (risk of false negative results).

Ultrasound

In accordance with NICE NG158, patients whose ultrasound scan is to be delayed by > 4hrs will need to be given a treatment dose of LMWH (Out of Hours patients will need referral for further management to the appropriate service whilst awaiting ultrasound scan).

Patients referred to the DVT service in working hours will undergo a full leg Doppler ultrasound performed in the Medical Physics Dept at UHW.

DVT excluded

These patients will be discharged from the DVT service and a discharge letter will be available on the Welsh Clinical Portal within 24 hours.

DVT Confirmed

Patients with DVT or superficial vein thrombosis will be discussed with the Consultant Lead for the DVT Clinic (or the Coagulation Registrar in their absence) to consider underlying pathology and any further investigations required.

- Full blood screen including FBC, U+E (CrCl – Cockcroft Gault), LFT, Baseline coagulation screening and Bone profile
- Urine dipstick (and pregnancy test in women of child bearing age)
- BP, Pulse, oxygen saturations, temperature, respiratory rate
- If pelvic examination is necessary this will be highlighted in the discharge letter as the DVT clinic is not a suitable environment for this to occur
- CXR in unprovoked DVT and patients with a history of smoking
- PSA if required (if prostatic symptoms)
- Further bloods as symptoms or clinical findings suggest

All cases are reviewed at the weekly DVT Clinic MDT

Further investigations will be requested dependant on clinical history/ examination and a review of the above results

Do not offer further investigations for cancer to people with unprovoked DVT or PE unless the person has relevant clinical symptoms or signs (NICE NG158 2020)

Antiphospholipid Syndrome (APS)

Management is based on an addendum to British Society for Haematology Guidelines on Investigation and Management of Antiphospholipid syndrome, 2012 (Br. J. Haematology. 2012; 157: 47–58): use of direct acting oral anticoagulants. Published online 13th January 2020

Patients with triple positive APS and venous thrombosis.

‘We recommend against the initiation of DOACs for treatment or secondary prophylaxis in patients with venous thrombosis and known triple positive APS (Grade 1B). For patients with triple positive APS who are currently on a DOAC, we recommend switching from the DOAC to a VKA after discussion with patients regarding the available evidence. For those patients who do not wish to switch, we recommend continuation of the DOAC over no anticoagulation (Grade 1B). ‘

Patients with non-triple positive APS and venous thrombosis

‘There is insufficient evidence to make strong recommendations in this group of patients. We suggest against the initiation of DOACs for treatment or secondary prophylaxis in patients with venous thrombosis and known non-triple positive APS (Grade 2C).

Patients who are already on a DOAC may continue or switch to a VKA after discussion with the patient taking into account their clinical history, treatment adherence and previous experience. For those patients who do not wish to switch, we recommend continuation of the DOAC over no anticoagulation (Grade 2C).

We suggest testing for solid phase aPL (IgG and IgM anti-beta-2 glycoprotein-1 and anticardiolipin antibodies) in selected patients at the time of diagnosis and if positive, repeating at 12 weeks to confirm

persistence (Grade 2C). Features indicating an increased likelihood of APS are listed below:

- History of autoimmune disease
- Presence of livedo reticularis (mottled appearance to skin)
- Prolonged APTT prior to starting anticoagulation
- Recurrent thrombosis
- VTE at unusual sites
- History of arterial thrombosis without clear risk factors
- Thrombocytopenia
- Recurrent miscarriages/still birth/severe pre-eclampsia
- Cardiac valve abnormalities in the absence of other explanations

Patients who are positive for one or two solid phase antibodies at presentation should be considered for

LA testing at three months, after switching to LMWH (Grade 2C). If both antibody types are positive and

LA testing is not performed, we recommend long term oral anticoagulation using a VKA rather than a DOAC (Grade 2C). When patients are switched to LMWH, samples for LA testing should be taken just before the next dose of LMWH (Grade 1C).'

OUT-PATIENT TREATMENT OF DVT - Will comprise one of the following:

A Direct Oral Anticoagulant (DOAC) is the anticoagulant of choice for a new case of non-cancer associated DVT, in line with recommendations

In line with NICE CG158, Apixaban is the first line choice for treatment of DVT, in addition to its current use in the UHB for the management of PE. Rivaroxaban is an alternative to apixaban **1. Apixaban**

First week	**Subsequent 11 weeks**
Apixaban 10mg PO BD	Apixaban 5mg PO BD

2. Rivaroxaban is an alternative to Apixaban

First 3 weeks	**Subsequent 9 weeks**

Rivaroxaban 15mg PO BD	Rivaroxaban 20mg PO OD Or Rivaroxaban 15mg OD (if CrCl < 50ml/min)

3. LMWH (minimum 5 days) + Warfarin if a DOAC contraindicated (non-pregnant patient)

- Enoxaparin 1.5 mg/kg SC OD until INR > 2.0 for 2 consecutive days
- Enoxaparin 1mg/kg SC BD will be used for patients with BMI >35 or weight more than 120kg until INR > 2.0 for 2 consecutive days

Warfarin will be initiated as per the All Wales loading schedule; however elderly / underweight patients will follow the low dose loading regime (All Wales Anticoagulation Treatment Chart 2015)

4. LMWH pregnancy

Enoxaparin 1mg/kg sc bd Refer to joint obstetric-haematology clinic

5. LMWH for cancer associated thrombosis

- Patients with an underlying malignancy will commence dalteparin (Fragmin) 200 IU/kg SC OD
- A one-month supply of dalteparin will be provided and an email referral to the cancer acquired thrombosis (CAT) clinic at Velindre Hospital (Jo.Sulman@wales.nhs.uk) will be made.

Patients outside the above groups will be discussed on a case by case basis and reviewed as appropriate in the Thrombosis Clinic at 3/12.

Compression hosiery

The DVT Clinic does prescribe elastic compression hosiery in acute management of DVT but this may be considered for patients who have persistent oedema and pain. The patients GP would be requested to supply these.

Duration of anticoagulation

Indication	Duration	Follow up
1st idiopathic proximal DVT	≥ 3 months	Thrombosis Clinic
1st precipitated proximal DVT	3 months	*No follow up
1st idiopathic or precipitated distal DVT	3 months	*No follow up
Recurrent DVT not on anticoagulation / sub-therapeutic INR	≥ 3 months	Thrombosis Clinic
Recurrent DVT on warfarin and therapeutic INR	Long-term	Thrombosis Clinic
DVT in patient with active cancer	6 months	CAT clinic
Superficial thrombophlebitis	See algorithm below	

*Patients with a family history of DVT / PE will be reviewed in MDT and may be followed up in Thrombosis Clinic

If the patient is on an anti-platelet medication, a doctor should review whether this is to continue whilst the patient is on anticoagulation.

Long–term treatment will be considered for

- recurrent thromboses
- patients with an on-going risk factors such as cancer
- first unprovoked proximal DVT (or PE). The ACCP NICE |CG158 guidelines recommend considering long-term treatment for unprovoked VTE where there is a low risk of bleeding.

This decision may be made at the time of diagnosis **or** at a 3/12 appointment in thrombosis clinic

Muscular Branch Thrombus (Gastrocnemius/ Soleal)

Thrombi found in the gastrocnemius or soleal veins are not essentially deep vein thrombosis but may propagate into the deep vein.

Decision to treat with anticoagulation in this patient group is based on:

- Presenting history
- Previous history
- Risk factors for thrombosis*
- Risk factors for bleeding
- Proximity of thrombus to the deep vein junction

Plan

- No additional risk factors - return for rescan in one week
- Presence of 1 or more risk factors – discuss with doctor regarding treatment or rescan in one week

*Risk factors: BMI > 30, surgery in 12/52, trauma lower limb, medical inpatient 12/52, malignancy, previous DVT/PE, FH VTE, Childbirth 12/52, Pregnant, Varicose veins, immobile >3/7, Travel > 4hrs, inherited thrombophilia, Contraceptive Pill/HRT, IVDU

Superficial thrombophlebitis (SVT)

Superficial thrombophlebitis (SVT) of the lower limbs is a commonly seen condition, most frequently affecting the long (great) and short saphenous veins of the leg. It has until most recently been considered a benign disease, due to its superficial location and relatively easy diagnosis, and its treatment has in most cases been conservative.

However, more recent data suggest a previously less recognised relationship with thromboembolic events, which range from 22 to 37% for deep vein thrombosis and up to 33% for pulmonary embolism (Tait, et al 2012). This has demonstrated the need for a more comprehensive diagnostic and therapeutic approaches in order reduce possible complications.

Risk factors for SVT are similar to those present in deep vein thrombosis (DVT) with a higher percentage presenting with varicose veins. Patients may complain of pain, redness and a hard cord like vein. A Doppler ultrasound will establish the existence of any superficial thrombophlebitis and its proximity to the deep veins. If there is evidence of SVT which is adjacent to (within 3 cm of) the sapheno-femoral junction (SFJ) or sapheno-popliteal junction (SPJ) treatment will be in-line with management of a DVT, with therapeutic anticoagulation for three months to reduce the progression to DVT.

Treatment of SVT > 3cm from the SFJ/SPJ will depend on the number of risk factors present, significantly previous h/o VTE or SVT, and SVT without

association with varicose veins (NICE CG144); other significant risk factors include malignancy and pregnancy

Management of people with an increased risk of VTE may include Fondaparinux or Rivaroxaban.

Fondaparinux 2.5mg was found to be effective compared to placebo in treatment of SVT in the Calisto

Trial (Decousus et al 2010). DOACs are not licensed for this indication although a recent study (BeyerWestendorf, et al 2017) suggested that a prophylactic dose of Rivaroxaban (10 mg od) was non-inferior to prophylactic dose Fondaparinux (2.5 mg od).

AWMSG does not endorse routine prescribing of Fondaparinux for treatment of SVT within NHS Wales at this time and currently has no comments regarding the use of Rivaroxaban.

The DVT Clinic in Cardiff & Vale UHB will offer Rivaroxaban 10mg daily as first line treatment, if there are no contraindications, for management of SVT >3cm from the deep vein junctions (as per below flowchart –appendix 1). Alternative treatment may be with Fondaparinux or LMWH if contraindications to Rivaroxaban are present.

Patients with significant varicose veins and superficial thrombophlebitis will be referred to the vascular team for review following acute event.

As Rivaroxaban will be prescribed outside its licensed indication the patient will be provided with sufficient information in order that they are able to make an informed decision prior to a counselling document being completed for treatment with Rivaroxaban.

Management of SVT in pregnancy

In pregnancy management of SVT may be complex as risk of extension into the deep vein may continue for longer depending on the stage of pregancy at diagnosis, see flowchart (appendix 2) below for management.

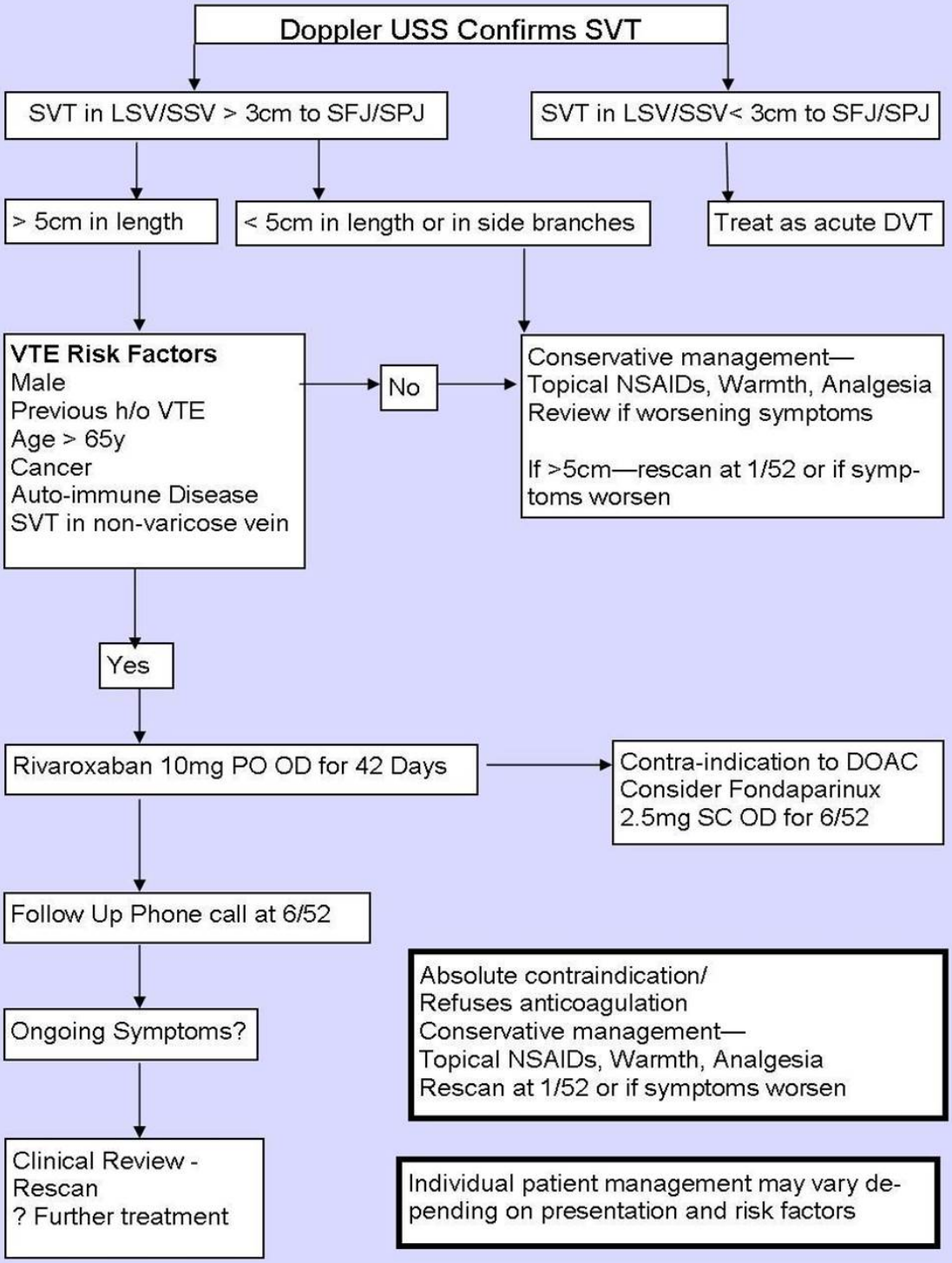
*Clinical assessment for malignancy if not k nown – further investigations as per SOP.

**Risk factors: BMI > 30, surgery in 12/52, trauma lower limb, medical inpatient 12/52, malignancy, previous DVT/PE, FH VTE, Childbirth 12/52, Pregnant, Varicose veins, immobile >3/7, Travel > 4hrs, inherited thrombophilia, Contraceptive Pill/HRT, IVDU

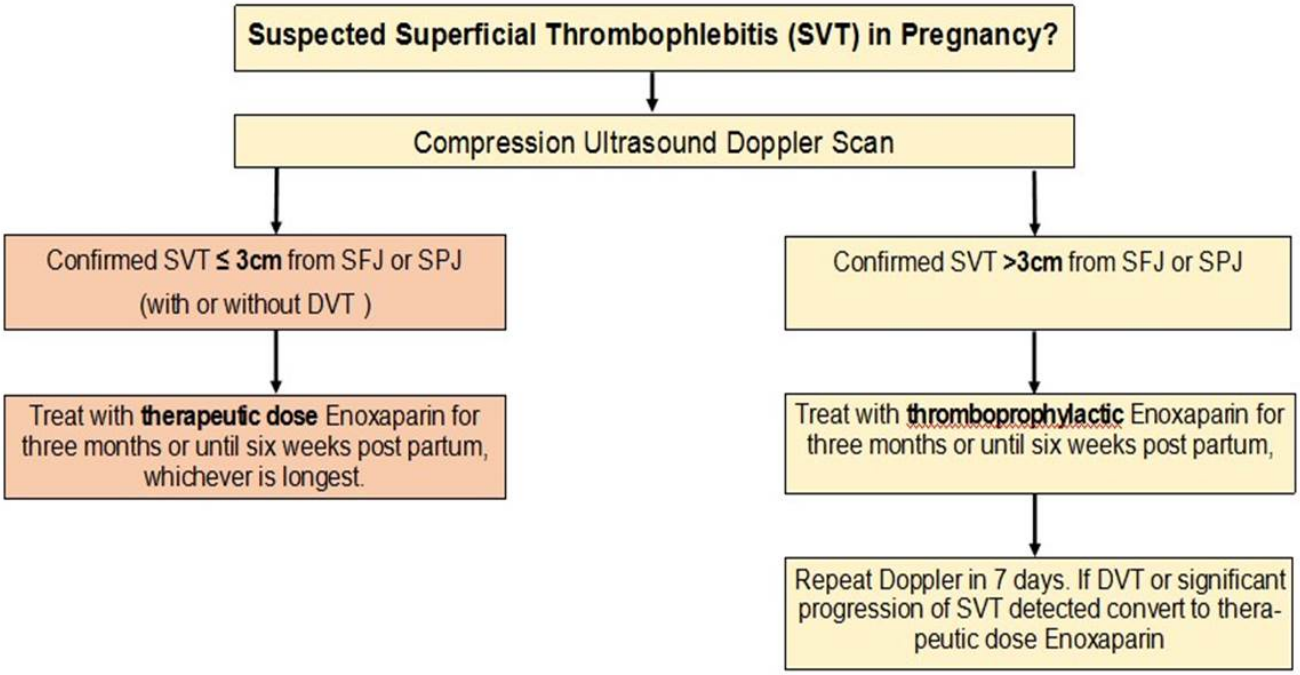
Management may differ based on individual presentation

Appendix 1

Clinical Suspicion of Superficial Vein Thrombosis (SVT)



Appendix 2 Dr Heledd Roberts Consultant Haematologist



Enoxaparin Therapeutic Dose
Confirm Creatinine Clearance >30 mL/min
1mg/kg **twice** daily, dose may be changed to 1.5mg/Kg **once** daily depending on clinical assessment. Arrange anti-Xa testing

Weight based dosing of enoxaparin thromboprophylaxis only applicable if Creatinine Clearance is >30mL/min	Weight ≤50kg	Weight >50-100kg	Weight 101-150kg	Weigh
In patient regimen	20mg **Once** daily	40mg **Once** daily	40mg **Twice** daily	60mg T
Out patient regimen	20mg **Once** daily	40mg **Once** daily	60mg **Once** daily	80mg

SFJ: Saphenofemoral ju
SPJ: Saphenopopliteal ju
DVT: Deep vein thro

Suspected upper limb DVT

- These patients will all have a Doppler ultrasound examination
- All patients with a confirmed upper limb DVT should have Doppler assessment (including Roos view) for thoracic outlet compression
- Patients with evidence of thoracic outlet syndrome (TOS **must** be discussed with the on-call vascular surgeon for review and consideration of thrombolysis / surgical management
- Patients not suitable for thrombolysis / surgical intervention will receive anticoagulant treatment.
- Recurrence rates for upper limb DVT after treatment for three months are low and it is likely that prolonged anticoagulation is not required for the majority of patients
- For most patients with upper limb DVT in association with an indwelling central or peripheral venous catheter, the catheter should not be removed if it is functional and there is an ongoing need for the

catheter. If the catheter is removed anticoagulant treatment should not be shortened to less than 3 months.

References (UPDATE)

ACCP Guideline for DVT and PE Treatment: Antithrombotic Therapy for VTE Disease (2016) http://journal.publications.chestnet.org/article

Beyer-Westendorf J, Schellong SM, Gerlach H, et al. Prevention of thromboembolic complications in patients with superficial-vein thrombosis given rivaroxaban or fondaparinux: the open-label, randomised, non-inferiority SURPRISE phase 3b trial. The Lancet Haematology. 2017;4(3):e105-e113

Decousus H, Prandoni P, Mismetti P, et al. Fondaparinux for the treatment of superficial-vein thrombosis in the legs. N Engl J Med. 2010;363(13):1222–1232. doi: 10.1056/NEJMoa0912072.

NICE clinical guideline 144 (June 2012) Venous thromboembolic diseases: the management of venous thromboembolic diseases and the role of thrombophilia testing. http://www.nice.org.uk/CG144

NICE technology assessment (2012) Rivaroxaban for the treatment of deep vein thrombosis and prevention of recurrent deep vein thrombosis and pulmonary embolism.

http://www.nice.org.uk/guidance/TA261

NICE technology appraisal guidance (2015). Apixaban for the treatment and secondary prevention of deep vein thrombosis and/or pulmonary embolism http://www.nice.org.uk/guidance/TA341.

NICE guideline 158 (March 2020). Venous thromboembolic diseases: diagnosis, management and thrombophilia testing. http://www.nice.org.uk/guidance/NG158