



Emergency Department Deep Venous Thrombosis Management

STEP 1

Determine pretest probability (two level Wells Criteria)

Clinical Feature	SCORE
Active cancer (treatment ongoing or within the previous 6 months or palliative)	1
Paralysis, paresis or recent plaster immobilization of the lower extremities	1
Recently bedridden for more than 3 days or major surgery, within the last 12 weeks	1
Localized tenderness along the distribution of the deep venous system	1
Entire lower limb swollen	1
Calf swelling by more than 3cm when compared to the asymptomatic leg (measured 10cm below the tibial tuberosity)	1
Pitting oedema (greater in the symptomatic leg)	1
Collateral superficial veins (non-varicose)	1
Previously documented DVT	1
Alternative diagnosis as likely or more likely than that of DVT	-2

DVT unlikely
(1 or less)

☐

DVT likely
(2 or more)

☐

NOTES – Assessment of bleeding risk

Bleeding Risk - HAS-BLED score (Validated for AF)

1 point for each; high risk = 3 or more (3.74% / yr bleed); (2 = 1.88% / yr bleed)

- Uncontrolled hypertension (SBP>160)
- Impaired renal function (Cr>200)
- Impaired liver function (ALT/ALP>3x normal)
- History of stroke
- History of major bleeding
- Labile INRs
- Elderly (>65 years)
- Drugs (NSAIDs or Antiplatelets) 1 point each
- Alcohol consumption (>8 std/week)

Additional high risk factors for bleeding

- Recent surgery / trauma (discuss with surgical team)
- Active GI disease
- Inherited or acquired bleeding disorder
- Thrombocytopenia

STEP 2

Investigations

DVT unlikely
(1 or less)

☐

DVT likely
(2 or more)

☐

*D dimer

(high or moderate sensitivity)

Apply age adjusted cut off if:
Age > 50
Wells ≤ 4

< Age x 0.01ng/mL

Negative

Positive

**Ultrasound

Entire lower limb Doppler venous scan

See note below re timing of scan and limitations of above knee only scans

Negative

Positive

DVT excluded

consider alternative diagnosis

DVT confirmed

Go to Step 3 and DVT Management (next page)

*NOTES - D dimer exclusions

Do not do D dimer and proceed direct to ultrasound if:

Active cancer (<6/12 since therapy / palliative stage), DIC, obvious infection, inpatient (age >50), recent trauma or surgery <2/52 previously, third trimester of pregnancy, symptoms >7 days.

STEP 3

Additional investigations for proven DVT

Massive / Unprovoked or any recurrent DVT

Assessment of contraindications to treatment

- Assess bleeding risk - see note bottom left of page
- FBE / U+E / LFT / Coags

Malignancy screen

- History / Examination
- FBE / Ca++ / LFT / U/A / CXR
- Ensure age / sex appropriate cancer screening up to date
 - Mammogram / PAP / prostate + PSA / FOB
 - If not refer to GP to arrange

Thrombophilia screen

- To be determined at DVT clinic follow up

Anatomical variants

- Consider investigation (eg. May Thurner)

Provoked DVT

Assessment of contraindications to treatment

- Assess bleeding risk – see note bottom left of page
- FBE / U+E / LFT / Coags

Upper limb DVT with no intravascular device

Brachial, axillary or subclavian veins

Assessment of contraindications to treatment

- Assess bleeding risk – see note bottom left of page
- FBE / U+E / LFT / Coags
- CT venogram thoracic outlet <50yr (In Paget Schorroetter Synd)

**NOTES - timing of USS

If unable to perform ultrasound on the same day

DVT likely group - Treat with LMWH overnight and have patient return to ED the next morning (unless high bleeding risk – discuss with senior clinician)
DVT unlikely group - Do not treat and have patient return to ED the next morning

For DVT Likely group

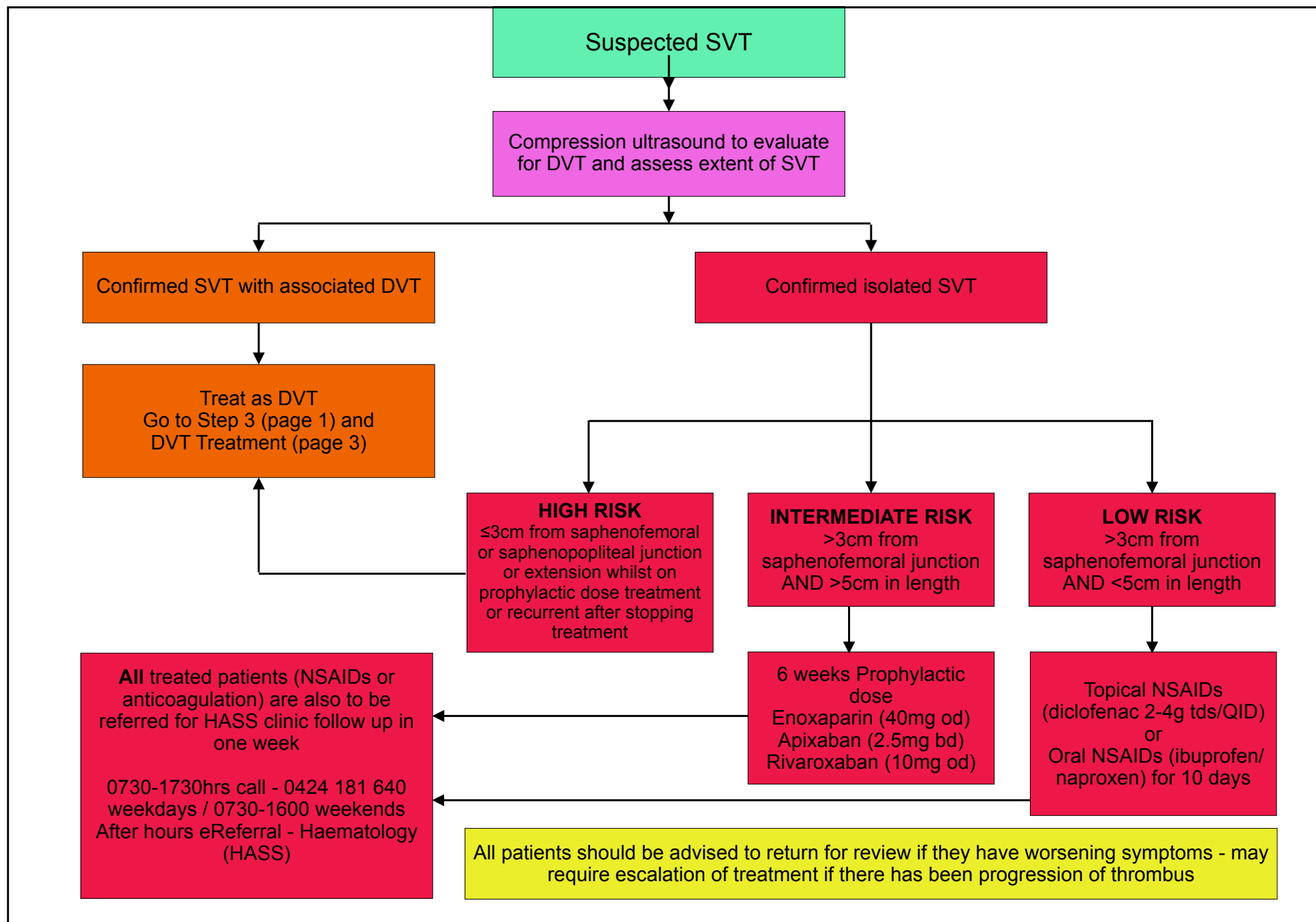
If below knee component of whole lower limb USS not possible for technical reasons then further assessment / follow up is required:

Perform high sensitivity D dimer

- D dimer negative then no further investigation for DVT required
- D dimer positive then repeat proximal lower limb USS at one week



SCGH Emergency Department Superficial Vein Thrombosis (SVT)





SCGH Emergency Department - Adult Deep Venous Thrombosis Treatment

Thrombus location / type	Massive DVT • Iliofemoral • +/- IVC	Proximal DVT (fem/pop) • Unprovoked or recurrent * Below knee DVT • Unprovoked and recurrent	Proximal DVT (fem/pop) • Provoked +	Below knee DVT (includes muscle veins) • Provoked or first unprovoked	Superficial vein thrombus • not associated with IV infusions or co-existent DVT)	Upper limb DVT • No intravascular device • Brachial, axillary or subclavian	Upper limb DVT Intravascular device present • Basilic, brachial, axillary or subclavian • See CCRVT Guideline form
Disposition	Vascular - whether phlegmasia or not	Vascular - if phlegmasia Discharge if good social support	Vascular - if phlegmasia Discharge if good social support	Discharge	Discharge Discuss with Vascular if post varicose vein surgery	Vascular	Discharge Discuss with own team
Referral	eReferral to Thrombosis clinic HASS - note if pt admitted	eReferral to Thrombosis clinic (refer oncology pts to own team) HASS - note if pt admitted	GP HASS	GP HASS	GP HASS - both treated and untreated	Vascular HASS	Own team HASS
Anti-coagulation	3 months minimum (ongoing Rx to be determined at Thrombosis clinic follow up)	3 months minimum (ongoing Rx to be determined at Thrombosis clinic follow up)	3 months	3 months	See SVT Guideline algorithm above 6 weeks prophylactic dose LMWH or DOAC (unless contraindication) [^]	3 months	Until device is removed and then for 3 months (if device required, patent, correct position and not infected leave and use)
Below knee stockings	HASS will arrange	HASS will arrange	HASS will arrange	HASS will arrange	HASS will arrange	No	No

Treatment Options for DVT

Prior to commencing anticoagulation all patients require a full clinical assessment / bleeding risk assessment / FBE, U&E, LFTs & coags to assess for any contraindication to therapy
See SCGH MR401/805.2 WA Anticoagulation Chart for recommendations for commencing treatment

DOACs	LMWH	Warfarin	Catheter directed lysis	IVC filter
Choice of either: • Apixaban • Rivaroxaban • Contraindications: Pregnancy, breastfeeding • See SCGH MR401/805.2 WA Anticoagulation Chart for commencing treatment • Refer to HASS for follow up	• Enoxaparin • In pregnant/breast feeding patients • In patients with failed oral therapy - obtain advise from Haematology • Whilst starting warfarin • Caution: Renal impairment, high bleeding risk • Contraindications: HITTS • See SCGH MR401/805.2 WA Anticoagulation Chart for commencing treatment • Refer to HASS for follow up	• Consider as first line in patients with lupus anticoagulant • CI to Rivaroxaban / Apixaban • Initiate whilst on LMWH • Caution: multiple, high bleeding risk • Contraindications: Pregnancy, allergy • See SCGH MR401/805.2 WA Anticoagulation Chart for commencing treatment • Refer to HASS for follow up	• Consider in massive / phlegmasia / upper limb (no intravascular device) • Vascular involvement - will assess / arrange with interventional radiology	Consider in consultation with Haematology in patients with: • Large PE and large clot burden • Acute DVT who have a contraindication to anticoagulation. In this setting a conventional course of anticoagulation should be given if the contraindication resolves • Remove filter when able to anticoagulate

NOTES

+ Provoked DVT – occurring in a patient with an antecedent (within 3 months) and transient major clinical risk factor for VTE (eg. Surgery / trauma / significant immobility (travel > 8 hours) / pregnancy or puerperium / HRT or OCP (transient if able to be stopped)).

* In patients already on blood thinners a decision needs to be made whether symptoms are due to clot extension or post-thrombotic changes. If thought due to clot extension, intensification of Rx is required - liaise with Haematology.

[^] In patients with superficial vein thrombosis and a contraindication to anticoagulation, anti-inflammatory medications and compression stockings (with follow up ultrasound scan in one week if there is worsening of symptoms or signs) is an alternative - see above SVT Guideline.

\$ HASS – Home anticoagulation support service. Contact on 0424 181 640 between 0730-1730 weekdays / 0730-1600 weekends or after hours send eReferral (Haematology (HASS))

References

- National Institute for Health and Care Excellence. NICE Pathways. www.nice.org.uk/pathways/venous-thromboembolism
- Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: Chest Evidence Based Clinical Practice Guidelines.
- Wells PS et al. Evaluation of D-dimer in the diagnosis of suspected deep vein thrombosis. New England Journal of Medicine 2003; 349:1227-35.
- The Management of Venous Thromboembolic Diseases and the Role of Thrombophilia Testing. NICE Guidelines, No. 144. National Clinical Guidelines Centre (UK). Royal College of Physicians (UK);2012 June. www.ncbi.nlm.gov/pubmedhealth/PMH0055222
- Tait C et al. Guidelines on the Investigation and Management of Venous Thrombosis at unusual sites. British Journal of Haematology 2012;159:28-38.
- Baglin et al. Clinical Guidelines for testing for Heritable Thrombophilia. British Journal of Haematology 2010;149:209-220.
- American Society of Haematology Education Book. 2013 p471-477. Risk assessment for recurrence and optimal agents for extended treatment of thromboembolism.
- Baglin et al. Duration of anticoagulation therapy after a first episode of an unprovoked pulmonary embolus or deep venous thrombosis: Guidance from the SSC of the ISTH. Journal of Thrombosis and Haemostasis;10:698-702.
- Carrier et al. Screening for Occult Cancer in Unprovoked Venous Thromboembolism. N Engl J Med 2015;373:697-704.
- Nybo M et al. Age-adjusted D-dimer cut-off in the diagnostic strategy for deep vein thrombosis: a systematic review. Scand J Clin Lab Invest. 2017 Dec;77(8):568-573.
- Gomez-Jabalera E et al. Age-adjusted D-dimer for the diagnosis of deep venous thrombosis. Phlebology 2018 Aug;33(7):458-463.
- Decousus H et al. Fondaparinux for the Treatment of Superficial-Vein Thrombosis in the legs. N Engl J Med 210 Sept;363:1222-1232.
- Decousus H et al. POST Study Group. Superficial venous thrombosis and venous thromboembolism: a large, prospective epidemiological study. Ann Intern Med. 2010;152:218-224.
- Galanaud JP et al. OPTIMEV SFMV Investigators. Predictive factors for concurrent deep vein thrombosis and symptomatic venous thromboembolic recurrence in case of superficial venous thrombosis. Thromb Haemost. 2011;105:31-39.
- Beyer-Westendorf J et al. SUPRISE Investigators. Prevention of thromboembolic complications in patients with superficial-vein thrombosis given rivaroxaban or fondaparinux: the open label, randomised, non-inferiority SUPRISE phase 3b trial. Lancet Haematol. 2017 Mar;4(3):e105-e113.
- Thrombosis Canada 2017. Superficial Thrombophlebitis, Superficial Vein Thrombosis.
- Agent W et al. Rivaroxaban treatment for six weeks versus three months in patients with symptomatic isolated distal deep vein thrombosis: randomised controlled trial. BMJ 2022;379:e072623.
- Dawns G et al. Apixaban Versus Rivaroxaban in Patients With Atrial Fibrillation and Valvular Heart Disease. Ann Intern Med. 2022;175:1506-1514.
- Dawns G et al. Risk of Recurrent Venous Thromboembolism and Bleeding With Apixaban Compared with Rivaroxaban: An Analysis of Real-World Data. Ann Intern Med. 2022;175:20-28.
- Cosmi B. Management of superficial vein thrombosis. J Thromb Haemost 2015; 13: 1175-83.
- Galanaud J-P et al. Long term risk of venous thromboembolism recurrence after isolated superficial vein thrombosis. J Thromb Haemostat 2017; 15: 1123-31.

Guideline designed by:

- Dr Richard Hay and Dr James Rippey (Emergency Physicians SCGH) in collaboration with:
 - Dr Carolyn Grove and Dr Rosslyn de Wet (Haematologists SCGH)
 - Dr Carolina Bravo Ceballos (Vascular Surgeon SCGH)
 - Home Anticoagulation Support Service