SCGH Emergency Department — Deep Vein Thrombosis Assessment

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)

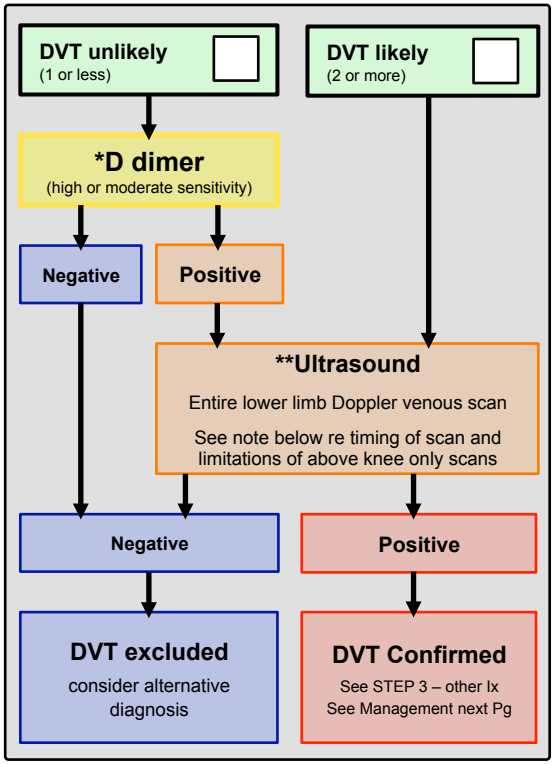
1 point for each; high risk = 3 or more (3.74% / yr bleed); (2 = 1.88% / yr bleed)

- 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

STEP 2
Investigations



NOTES – D-Dimer exclusion and timing of USS

***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.

****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)

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

STEP 3
Additional investigations for proven DVT

Massive (iliofemoral) DVT

CT venogram for phlegmasia / pre lysis consideration

Assessment of contraindications to treatment
- Assess bleeding risk
- 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)

Unprovoked or any recurrent DVT

Assessment of contraindications to treatment
- Assess bleeding risk
- 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

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
Basilic, brachial, axillary or subclavian veins

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

Consider CT venogram thoracic inlet (for cervical rib / fibrous band)

SCGH Emergency Department — Deep Vein Thrombosis Management

Thrombus location / type	Massive DVT • Iliofemoral • +/- IVC	Proximal DVT • Unprovoked or • Recurrent * **Below knee DVT** • Unprovoked and recurrent	Proximal DVT • Provoked +	Below knee DVT# • Provoked or first unprovoked	Calf muscle vein thrombus#	Superficial vein thrombus / thrombophlebitis^ • not associated with IV infusions or co-existent DVT)	Upper limb DVT • No intravascular device • Basilic, brachial, axillary or subclavian	Upper limb DVT Intravascular device present • Basilic, brachial, axillary or subclavian • See CCRVT Guideline form
Disposition	Admit	Discharge if good social support	Discharge if good social support	Discharge	Discharge	Discharge	Discharge	Discharge
Referral • All treated pts to HASS$	Vascular (urgent review if phlegmasia) eReferral to DVT clinic (refer oncology pts to own team)	eReferral to DVT clinic (refer oncology pts to own team)	GP	GP	GP	GP Discuss with Vascular if LSV / SSV involved post varicose vein surgery / ablation	Vascular	Own team
Anti-coagulation	3 months minimum (ongoing Rx to be determined at DVT clinic follow up)	3 months minimum (ongoing Rx to be determined at DVT clinic follow up)	3 months	3 months #	6 weeks anticoagulation NOAC or LMWH (unless contraindication) #	6 weeks anticoagulation NOAC or LMWH (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	Offer HASS will arrange	Offer HASS will arrange	Offer HASS will arrange	Offer if symptomatic HASS will arrange	No	No (if anticoagulated)	No	No

Treatment Options for DVT

Prior to commencing anticoagulation all patients require a full clinical assessment, FBE, U&E, LFTs & coags to assess for any contraindication to therapy

NOACs

Choice of either
- Apixaban
- Dabigatran
- Rivaroxaban
- eReferral to HASS for follow up

- See WATAG 'Prescribing a NOAC' quick reference below
- For more detailed information see the WATAG New Oral Anticoagulant Prescribing Guidelines:

(WATAG – Western Australian Therapeutics Advisory Group)

LMWH

- In pregnant patients
- In oncology patients
- Dalteparin preferred in oncology patients
- In patients with failed oral therapy
- Whilst starting warfarin
- Enoxaparin 1.5mg/kg daily or 1mg/kg bd (modify in renal impairment – see MR401/805.2)
- Refer to HASS if pt not self administering otherwise eReferral to HASS for follow up
- Caution: Renal impairment, high bleeding risk
- Contraindications: HITTS

Warfarin

- Consider as first line in patients with lupus anticoagulant
- CI to Rivaroxaban / Apixaban / Dabigatran
- Initiate whilst on LMWH
- See MR401/805.2 for commencement regimen
- eReferral to HASS for follow up
- Target INR 2-3 (if VTE whilst on warfarin aim 2.5-3.5)
- Caution: multiple, high bleeding risk
- Contraindications: Pregnancy, allergy

Catheter directed lysis

- Consider when iliofemoral DVT
- Symptomatic with symptoms less that 2 weeks
- Good functional status
- Life expectancy > 1 year
- Low bleeding risk
- Discuss with vascular surgery who will liaise with interventional radiology

IVC filter

May be considered in those with:
- Acute DVT or PE who have a contraindication to anticoagulation. In this setting a conventional course of anticoagulation should be given if the risk of bleeding resolves
- Recurrent proximal DVT or PE despite adequate anticoagulation (alternate options such as LMWH or high intensity oral anticoagulant therapy should be explored prior to considering IVC filter)
- 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).

* 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 e.g. LMWH cover for 5 days and increase target INR.

In patients with acute isolated distal DVT or calf vein thrombosis without severe symptoms or risk factors for extension serial imaging over two weeks is an alternative to anticoagulant therapy. Anticoagulation should be initiated if there is evidence of thrombus extension, even if it remains confined to the distal veins.
- Risk factors for extension = positive D-dimer, clot >5cm in length, involves multiple veins, >7mm diameter or close to proximal veins, unprovoked, cancer, thrombophilia, history of VTE, inpatient admission, ongoing immobilisation.

^ In patients with superficial vein thrombosis and a contraindication to anticoagulation or short, distal thrombus 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.

$ HASS – Home anticoagulation support service. Contact on 0424 181 640 between 0730-2130 or after hours send eReferral (sub-division of HITH) attention Michaela Walters

WATAG 'Prescribing a NOAC' quick reference

Prior to NOAC initiation:
Record: FBC, renal and liver function

Take detailed history:
Ensure patient doesn't have any exclusion criteria

Assess bleeding risk

Consider concomitant medications

If the patient is on warfarin:
Discontinue warfarin and start NOAC when INR is 2.0 or less

EXCLUSION Criteria:
- Known hypersensitivity to NOAC preparation
- Active significant bleeding
- Pregnant or breastfeeding
- Valvular Atrial Fibrillation: prosthetic heart valve, valve repair or stenosis
- Recent stroke

Lab CONTRAINDICATIONS:
- Poor renal function (dabigatran, rivaroxaban* CrCl <30 mL/min, apixaban: <25 mL/min)
- Liver disease (e.g. ALT >2x upper limit of normal)

Bleeding Risk CONTRAINDICATIONS:
- Disorder of haemostasis e.g. Von Willebrand disease or coagulation factor deficiency
- Recent surgery ≤ 1 month ago (except VTE prophylaxis following elective hip or knee surgery)
- GI bleed ≤ 12 months, ulcer < 30 days
- Skin ulcer ≤ 30 days ago
- Fibrinolytic treatment last 10 days
- Dual antiplatelet therapy

CONTRAINDICATED concomitant medications:

Dabigatran
- Systemic azole antifungals (except fluconazole)
- dronedarone
- cyclosporin and tacrolimus
- HIV-protease inhibitors e.g. ritonavir

Rivaroxaban / apixaban
- Systemic azole antifungals (except fluconazole)
- HIV-protease inhibitors e.g. ritonavir

Dabigatran (Pradaxa)

Treatment or prevention of recurrent DVT/PE

• CrCl ≥ 50ml/min – 150mg bd
• CrCl 30-49ml/min or ≥ 75yrs – 110mg bd

Apixaban (Eliquis)

Treatment of recurrent DVT/PE

• CrCL > 25ml/min – 10mg bd for first 7 days then 5mg bd thereafter

Prevention of recurrent DVT/PE (note – this would be a decision made by Haematology at follow up)

• CrCl > 25ml/min – 2.5mg bd after at least 6 months of treatment

Rivaroxaban (Xarelto)

Treatment or prevention of recurrent DVT/PE

• CrCl ≥ 30ml/min 15mg bd for 3 weeks then 20mg od thereafter

Adapted from WATAG 'Prescribing a NOAC' quick reference – www.watag.org.au

References

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- WATAG – Western Australian Therapeutics Advisory Group. Department of Health. www.watag.org.au

Guideline designed by:

• Dr Richard Hay and Dr James Rippey (Emergency Physicians SCGH) in collaboration with;

• Dr Carolyn Grove (Haematologist SCGH)

• Mr Stefan Ponosh (Vascular Surgeon SCGH)