NHS
Shropshire
Clinical Commissioning Group

Supporting Information for the Diagnosis, Assessment and Management of a Suspected Deep Vein Thrombosis (DVT)

When to suspect a DVT

Suspect a DVT if:

- The patient has the signs and symptoms of a DVT including:
  - Pain and Swelling in one leg
  - Tenderness
  - Changes to skin colour
  - Temperature
  - Venous Distension

- The patient has one or more risk factors which may include:
  - Previous venous thromboembolism
  - Immobility, significant trauma or direct trauma to a vein
  - Pregnancy
  - Dehydration
  - Hormone treatment e.g. oestrogen containing contraceptives/HRT
  - Cancer
  - Increasing age
  - Being overweight
  - Male sex
  - Heart Failure
  - Acquired of familial thrombophilia
  - Chronic low-grade injury of the vascular wall e.g. vasculitis, hypoxia from venous stasis or chemotherapy

Remember to exclude an alternative cause:

- Carry out a physical examination
- Review the person's General Medical History

Differential diagnosis

- **Physical trauma:**
  - Calf muscle tear/strain
  - Haematoma in the muscle
  - Fracture
  - Sprain or rupture of Achilles tendon

- **Cardiovascular disorders:**
  - Superficial thrombophlebitis
  - Post-thrombotic syndrome
  - Venous obstruction or insufficiency
  - External compression of major veins (e.g. by foetus during pregnancy)
  - Arteriovenous fistula and congenital vascular abnormalities
  - Acute limb ischaemia
  - Vasculitis
  - Heart failure

- **Other conditions:**
    - Ruptured Baker's cyst
    - Cellulitis
    - Dependent (stasis) oedema
    - Lymphatic obstruction
    - Septic arthritis
    - Cirrhosis
    - Nephrotic syndrome
    - Compartment syndrome

Do NOT use:

- Individual symptoms and signs on their own as they are a poor indicator of the presence or absence of a DVT.
- A positive Homan's Sign (pain in the calf or popliteal region on passive, abrupt, forceful dorsiflexion of the ankle with the knee in a flexed position). This can be insensitive or non-specific also it can be painful and there is a theoretical possibility of dislodging a thrombus.

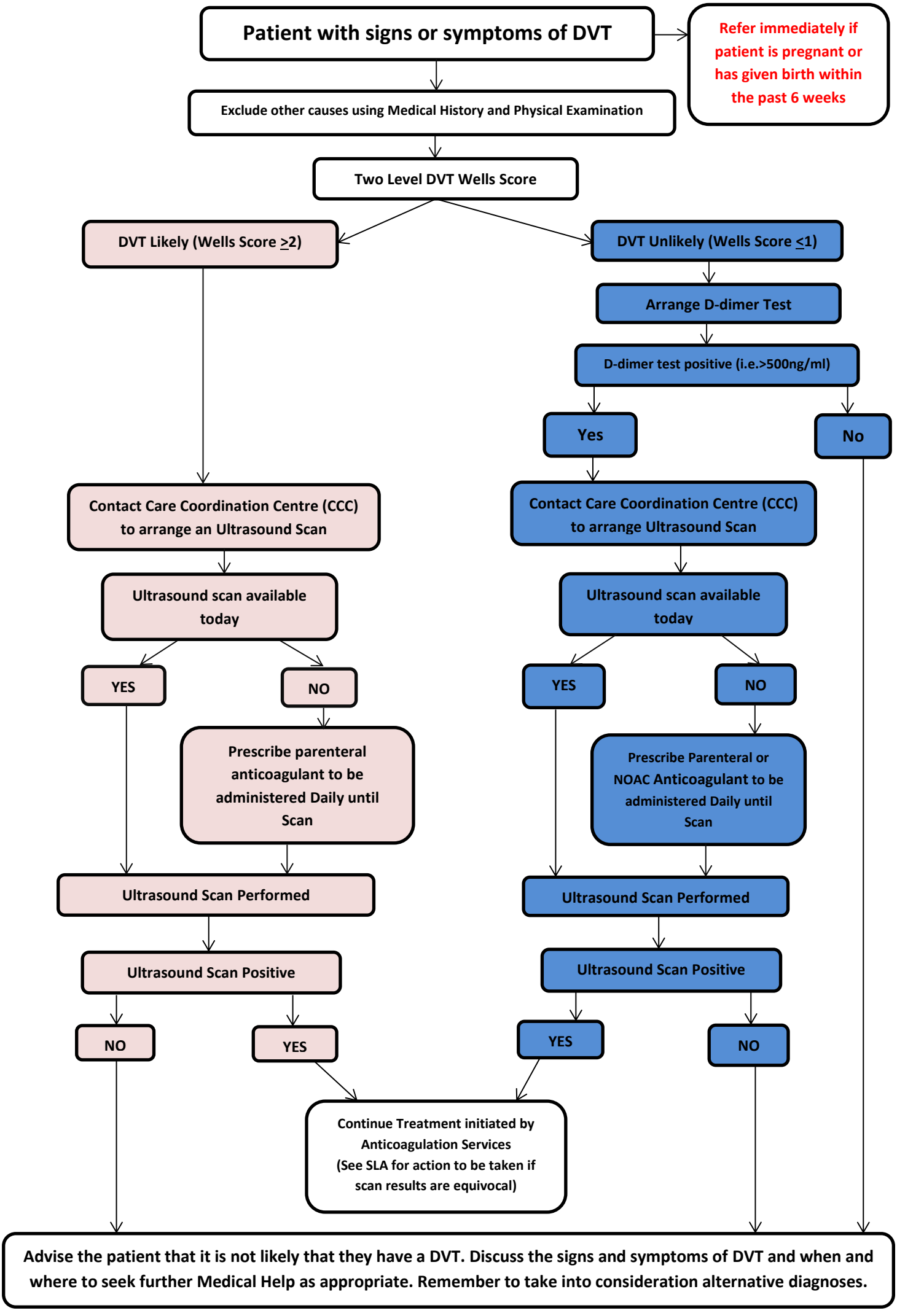
Criteria for Acute Referral

Refer to an Acute Assessment Unit:

- Any patient who is pregnant or has given birth within the last 6 weeks (immediate referral).
- Patients who meet any of the exclusion criteria listed below:

    - Under 18 years of age
    - Not registered with a Shropshire GP.
    - With suspected thrombosis of the upper limbs
    - With complex multiple medical conditions, which the Nurse led team will be unable to manage in terms of assessment and anticoagulation.
    - Who are bed bound or in a plaster cast
    - With bilateral leg swelling
    - With a previous history of a DVT in last 18 months
    - Already on anticoagulant treatment
    - In whom tinzaparin (or NOACs) are contraindicated
    - Severe acute venous obstruction (severe pain, tense swelling, decreased perfusion)
    - Suspected pulmonary embolus (e.g. chest pain, shortness of breath, haemoptysis)
    - Known heparin allergy or heparin induced thrombocytopenia
    - High bleeding risk i.e. active or recent Peptic ulcer disease/Oesophageal varices (or a GI bleed within the previous month)
    - Liver disease (INR >2 at baseline)
    - A verified bleeding disorder (e.g. haemophilia, platelets <100 x 10^9/L)
    - Uncontrolled hypertension (>200/110 mmHg)
    - Recent eye or CNS surgery (within 1 month)
    - Recent haemorrhagic stroke (within 1 month)
    - Renal Failure with serum creatinine > 170 micromoles/L
    - Patients unwilling or likely to be unable to co-operate with the service

For patients who meet the inclusion criteria follow the treatment pathway.


Patient with signs or symptoms of DVT
Refer immediately if patient is pregnant or has given birth within the past 6 weeks
Exclude other causes using Medical History and Physical Examination
Two Level DVT Wells Score
DVT Likely (Wells Score ≥2)
DVT Unlikely (Wells Score ≤1)
Arrange D-dimer Test
D-dimer test positive (i.e.>500ng/ml)
Yes
No
Contact Care Coordination Centre (CCC) to arrange an Ultrasound Scan
Contact Care Coordination Centre (CCC) to arrange Ultrasound Scan
Ultrasound scan available today
Ultrasound scan available today
YES
NO
YES
NO
Prescribe parenteral anticoagulant to be administered Daily until Scan
Prescribe Parenteral or NOAC Anticoagulant to be administered Daily until Scan
Ultrasound Scan Performed
Ultrasound Scan Performed
Ultrasound Scan Positive
Ultrasound Scan Positive
NO
YES
YES
NO
Continue Treatment initiated by Anticoagulation Services
(See SLA for action to be taken if scan results are equivocal)
Advise the patient that it is not likely that they have a DVT. Discuss the signs and symptoms of DVT and when and where to seek further Medical Help as appropriate. Remember to take into consideration alternative diagnoses.

TWO LEVEL DVT WELLS SCORING

CRITERIA	Score
Active Cancer (treatment ongoing, within last 6 months, or Palliative)	1
Paralysis, paresis, or recent plaster immobilisation of the lower extremities	1
Recently bed ridden for 3 days or more, major surgery within 12 weeks requiring general or regional anaesthesia	1
Localised tenderness along the distribution of the deep venous system	1
Entire Leg is swollen	1
Calf swelling is 3 cm larger than asymptomatic side	1
Pitting oedema confined to the symptomatic leg	1
Collateral Superficial veins (non- varicose)	1
Previously documented DVT	1
SUBTRACT IF:	
An alternative diagnosis is at least as likely as DVT	-2

Interpretation of the Two level DVT Wells Score

Two-Level DVT Wells Score (clinical probability simplified score)	
DVT likely	≥2
DVT unlikely	≤1

If DVT is Likely (i.e. if Two level Wells Score is 2 or more)

Refer via Care Co-ordinator Centre (CCC), ultrasound scan should be carried out preferably on the same day. Suspected DVT referral form should be used.

If an ultrasound scan cannot be carried out on the same day prescribe parenteral anticoagulation to be given once daily until ultrasound scan can be performed.

Wherever possible an ultrasound scan should be performed within 24 hours of being requested.

If DVT is Unlikely (i.e. if Two level Wells Score 1 or less)

Arrange D-Dimer testing.

If D-Dimer is Positive (i.e. >500ng/ml)
Refer, via Care Co-ordinator Centre for ultrasound scan to be carried out on the same day, Suspected DVT referral form should be used.

If ultrasound scan cannot be carried out on the same day: Prescribe initial treatment of parenteral anticoagulant or NOAC to be administered daily until ultrasound scan can be performed. (Please note that NOACs are not licensed for initial treatment of DVT).

If D-Dimer is Negative (i.e. < 500ng/ml)
Advise the patient that it is unlikely that they have a DVT.

Consider alternative diagnosis.

Provide advice on when and where patient can seek further advice or medical help as appropriate.

Treatment of a Confirmed DVT

- Continue prescribing anti-coagulation treatment as directed by the DVT clinic and ensure adequate and appropriate regular monitoring is in place. (See Anticoagulation Service Specification for details.)
- People with an unprovoked DVT should be investigated for the possibility of undiagnosed cancer and be offered thrombophilia testing as appropriate.
- Below the knee compression stockings should be prescribed.
  Before prescribing:
  - Exclude arterial insufficiency
  - Check the condition of the skin as fragile skin may be damaged while putting on/taking off stockings.
  - Consider if the person can manage to use the stockings e.g. Arthritis sufferers may find it difficult to put stockings on/or take them off
  - Patients may require an application aid

Class 3 stockings are preferred but may be poorly tolerated; consider using class 2 as an alternative. Stockings are usually worn for 2 years unless contraindicated. A spare pair should be prescribed if both legs are affected, (one to wear one to wash). Stockings should be replaced every 6 months ensuring leg measuring is carried out each time to ensure correct fit.

Patient advice

Walk regularly after discharge from DVT clinic.
Elevate the affected leg while sitting.
Refrain from extended travel or travel by aeroplane for at least 2 years after starting Anticoagulation treatment.

Tinzaparin Dosing Guide for DVT Prophylaxis

Body weight (kg)	ONCE daily dose	Injection volume (ml) (based on use of 2000 units per 0.1ml pre-filled syringes)	Most appropriate syringe size
40-42	7,000	0.35	8,000 units in 0.4ml
43-48	8,000	0.40	
49-54	9,000	0.45	10,000 units in 0.5ml
55-60	10,000	0.50	
61-65	11,000	0.55	12,000 units in 0.6ml
66-71	12,000	0.60	
72-77	13,000	0.65	14,000 units in 0.7ml
78-82	14,000	0.70	
83-88	15,000	0.75	16,000 units in 0.8ml
89-94	16,000	0.80	
95-100	17,000	0.85	18,000 units in 0.9ml
101-105	18,000	0.90	
106-111	19,000	0.95	Two syringes 10,000 units in 0.5ml
112-117	20,000	1.00	
118-122	21,000	1.05	Two syringes 12,000 units in 0.6ml
123-128	22,000	1.10	
129-134	23,000	1.15	
135-140	24,000	1.20	
141-145	25,000	1.25	Two syringes 14,000 units in 0.7ml
Less than 40kg or More than 145kg	= 175 x body weight (kg) Units ONCE daily	=175 x body weight (kg) 20,000 ml ONCE daily	

Contraindications for Tinzaparin

- Active bleeding or raised baseline INR >1.5 – seek advice
- Recent cerebral haemorrhage, neurosurgery or eye/ear surgery
- Acquired bleeding disorder (e.g. acute liver failure)
- Uncontrolled hypertension (BP>210/120 mmHg)
- Active peptic ulcer disease, oesophageal varices or risk of GI haemorrhage
- Severe liver disease
- Thrombocytopenia (platelets < 80 x 109/L)
- Untreated inherited bleeding disorder
- Previous heparin induced thrombocytopenia
- Sensitivity to heparin
- Endocarditis

(See product SPC for further details)

Monitoring Requirements

- Platelet count should be checked on day 1 (NB this should not delay the initiation of treatment).

- Platelet count should be re-checked 5-7 days after initiation, and repeated 10-14 days after initiation.
- Patients exposed to LMWH (or heparin) in the last 100 days should have platelet count re-checked 24 hours after starting LMWH and then every 2-3 days from day 4 to 14 or until heparin is stopped, whichever occurs first.

If the platelet count falls by ≥ 50% or the patient develops new thrombosis or skin allergy at injection site between Day 4 and day 14, consider a diagnosis of heparin induced thrombocytopenia and discuss with haematologist URGENTLY.