HYWEL DDA UNIVERSITY HEALTH BOARD

Diagnosis and Management of Venous Thromboembolism: Deep Vein Thrombosis (DVT) Procedure

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5		Thrombosis Committee	26/7/2018	31/7/2018	26/7/2021

Brief Summary of Document:	It is a standardised diagnostic pathway for patients presenting with suspected deep vein thrombosis. It outlines key principles in relation to the diagnosis and management of DVT in an outpatient setting. It is to be used across the Health Board so that all patients are assessed, diagnosed and treated in accordance with current NICE recommendations.
Scope	This procedure is to be used for the diagnosis and treatment of deep vein thrombosis in adults in the acute and outpatient setting. It does not include the management of pulmonary embolus. The management of deep vein thrombosis in children and obstetric patients are excluded from this procedure.

To be read in conjunction with:	482 - Anticoagulation Discharge Referral Information Procedure

Owning committee	Thrombosis Committee

Glossary of terms

Term	Definition
DVT	Deep Vein Thrombosis
PE	Pulmonary Embolism
COAD	Chronic Obstructive Airways Disease
VTE	Venous Thromboembolism
LMWH	Low Molecular Weight Heparin
FBC	Full Blood Count
LFT	Liver Function Test
INR	International Normalised Ratio
BP	Blood Pressure

Key words	Deep Vein Thrombosis, DVT, Venous Thromboembolism, VTE, Thromboprophylaxis, Thrombosis, Anticoagulation, LMWH, Warfarin, Rivaroxaban, Apixaban, Wells score.

Version number	Approval date	Comments
1	May 2015	New document
2	4.12.2015	Updated following NICE guidance
3	16.9.2016	Correction on page 11
4	1.6.2018	Full review
5	25.7.2018	Minor amendments

CONTENTS

1. INTRODUCTION

Deep vein thrombosis (DVT) is a common disorder with an annual incidence of 1 or 2 cases per 1000 persons in the general population. Anticoagulation is an effective treatment but on discontinuation the risk of recurrence remains and can reach 10% during the first year.

2. SCOPE

This procedure is to be used by competent staff for the assessment, diagnosis and treatment of suspected or proven deep vein thrombosis in adults in the outpatient setting. It does not include the management of pulmonary embolus.
The management of deep vein thrombosis in children and obstetric patients are excluded from this procedure.

- All medically qualified doctors are able to follow the procedure as they are competent in history taking, clinical examination and are able to prescribe the required medications.
- Counselling following diagnosis can be carried out by competent nurses who have completed the Birmingham anticoagulant course.

3. AIM

The aim of the procedure is to standardise the diagnosis and management of DVT across the Health Board, so that all patients presenting with suspected or proven deep vein thrombosis are assessed, diagnosed and treated appropriately, and therefore do not come to avoidable harm.

4. OBJECTIVES

The aim of the procedure is achieved by:

- The appropriate assessment of patients with suspected DVT
- The timely diagnosis of patients with proven DVT
- The appropriate treatment of patients with proven DVT

5. MONITORING COMPLIANCE

The NICE audit tool (NICE CG144 2012)[14], Venous thromboembolic diseases: the management of venous thromboembolic diseases and the role of thrombophilia testing must be used, with an annual audit undertaken in each acute hospital.

6. PROCEDURE

6.1 Overview of deep vein thrombosis

6.1.1 Clinical Features:

The clinical features of a deep vein thrombosis are variable. Patients may present with the following symptoms in their leg:

- Swelling
- Pain
- Redness
- Warmth

Signs of a DVT on examination include:

- Tenderness
- Warmth
- Erythema
- Cyanosis
- Palpable thrombotic vein
- Superficial venous dilation

6.1.2 Risk Factors:

The cause of a DVT is often multifactorial.

- Surgery
- Malignancy
- Prolonged bed rest
- Immobility/Pregnancy/recent childbirth
- Family history of venous thromboembolism
- Obesity
- Inherited thrombophilic defect
- Antiphospholipid syndrome
- Advanced age
- Chronic obstructive airways disease (COAD)
- Congestive cardiac failure
- Oral contraceptive pill/Hormone replacement therapy
- Intravenous drug users
- Steroid treatment

6.2 Criteria for assessment

6.2.1 Inclusion criteria:

- Patients presenting with a clinical suspicion of a DVT

6.2.2 Exclusion Criteria:

- Suspected or confirmed pulmonary embolus
- Thrombus in the iliac veins or vena cava
- Active bleeding e.g. intracranial bleed within last 6 months, gastro-intestinal bleed within 1 month, oesophageal varices
- Verified bleeding disorder e.g. haemophilia or thrombocytopenia(Platelets <90x10/L)
- Pregnancy
- Known liver failure
- Hypertension, systolic BP>180mm Hg or diastolic BP 115mmHg
- Age < 16years
- No fixed address
- Not contactable by phone
- Inability to understand instructions
- Anticipated compliance problems e.g. mental illness or alcohol misuse

6.3 Diagnosis

Refer to Appendices 1, 2 and 3 for the Wells Score table algorithm and assessment proforma for the outpatient assessment of patients with suspected DVTs

Appendix 3 – the DVT Assessment Proforma must be completed accurately and fully, as failure to do so may result in delays in scanning.

Referrals from Primary Care for Doppler investigations, must be accompanied with the completed DVT Assessment Proforma.

6.4 Treatment

6.4.1 Treatment for a first episode DVT:

The choice of treatment for a first episode DVT is:

1. Apixaban
2. Rivaroxaban

OR

3. Low molecular weight heparin initially followed by Warfarin. (agent of choice for patients below 40kg or above 120kg of weight)

All patients initiated on anticoagulation need the Anticoagulation Discharge Referral Form completed; refer to Hywel Dda UHB Procedure 482 - Anticoagulation Discharge Referral Information

6.4.2 Treatment for recurrent DVT:

The choice of treatment for recurrent DVT is:

1. Low molecular heparin and Warfarin

6.5 Monitoring of treatment

Patients on Warfarin will have INRs performed either in Primary Care if the GP practice is a 'level 3 or 4 Centre' or Secondary Care.

6.6 Duration of anticoagulation

The current all Wales adult in-patient Warfarin chart outlines the current recommended length of treatment for venous thromboemboli as follows:

- 1st idiopathic VTE: proximal DVT or PE >3months or longer (as determined by the consultant in charge of the patient)
- 1st proximal VTE/PE with precipitating factors e.g. trauma, surgery, pregnancy: 3 months
- 1st idiopathic, calf vein DVT: 3 months
- 1st calf vein DVT, with precipitating factors eg trauma, surgery: 6 weeks
- Recurrent VTE: long term
- VTE whilst taking Warfarin (discuss with haematologist): long term

6.7 Investigations for Patients with Cancer.

All patients with an unprovoked DVT must have a full history and examination to guide further investigations. Other investigations to perform are:

- A chest X-ray and
- Blood tests (FBC, serum calcium and LFT) and
- Urinalysis

Consider further investigations for cancer with an abdomino-pelvic CT scan (and a mammogram for women) in all patients aged over 40 years with a first unprovoked DVT who do not have signs or symptoms of cancer based on initial investigation

Cancer needs to be considered as a possible cause of a DVT particularly in the elderly, patients with bilateral DVTs, recurrent DVTs, markedly raised D-dimers at presentation or raised inflammatory markers.

Patients with cancer-associated VTE are at high risk of recurrence and LMWH has been shown to be more effective than warfarin for the first 6 months of treatment (Lee et al, 2003). The British Journal of Haematology recommends that **patients with cancer-associated VTE**

should initially be treated for 6 months with therapeutic dose LMWH rather than warfarin.

7 REFERENCES

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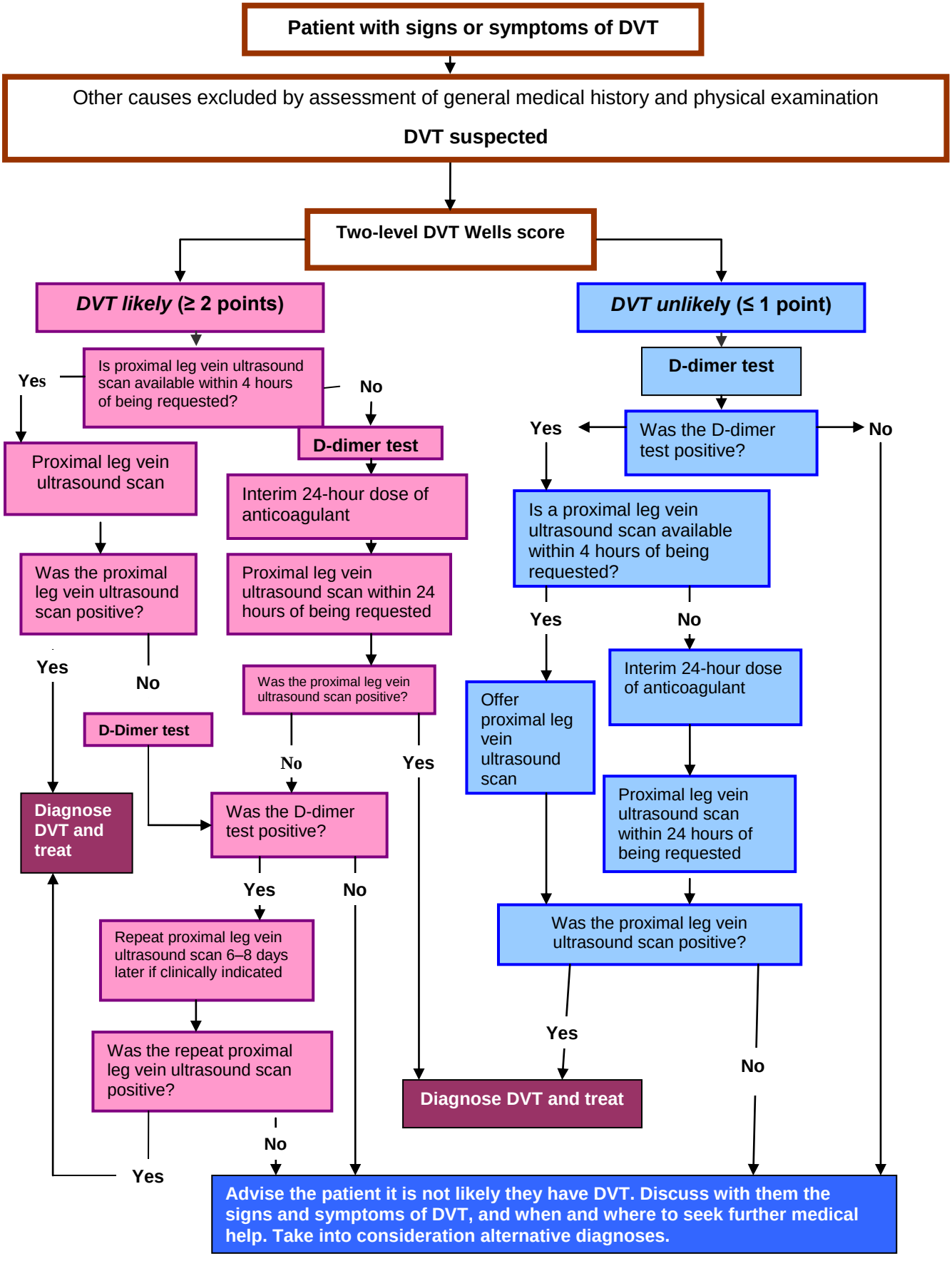
APPENDIX 1: TWO-LEVEL DVT WELLS SCORE FOR DIAGNOSIS OF DEEP VEIN THROMBOSIS (DVT)

Adapted by NICE (CG144) with permission from Wells PS et al (2003).

Clinical feature	Points
Active cancer (treatment ongoing, within 6 months, or palliative)	1
Paralysis, paresis or recent plaster immobilisation of the lower extremities	1
Recently bedridden for 3 days or more or major surgery within 12 weeks requiring general or regional anaesthesia	1
Localised tenderness along the distribution of the deep venous system	1
Leg swollen	1
Calf swelling at least 3cm larger than asymptomatic side	1
Pitting oedema confined to the symptomatic leg	1
Collateral superficial veins (non-varicose)	1
Previously documented DVT	1
An alternative diagnosis is at least as likely as DVT	−2
Clinical probability simplified score	
DVT likely	**2 points or more**
DVT unlikely	**1 point or less**

APPENDIX 2: ALGORITHM FOR DIAGNOSIS OF DVT

(Adapted from NICE CG144)



No Doppler scanning available on the weekend.
Interim anticoagulation will need to be continued until Doppler scan performed.

APPENDIX 3: PROFORMA FOR THE ASSESSMENT OF AN OUT-PATIENT WITH SUSPECTED DVT

DVT Investigation Proforma		**Hywel Dda Health Board**	
		Hospital:	
		Name of Clinician:	
1. Patient Identifier:		**Referred by (please tick):**	
Name		GP ☐ A&E ☐ AMAU ☐ Other ☐	
		GP details	
Hospital number			
DOB			
Address			
		Next of Kin	
Telephone number		**Next of Kin Contact Number**	
2. Pre-test probability (PTP) Two level DVT Wells score		**3. Are they suitable for OPD treatment?**	
Active cancer in the last 6/12	1	No, for the reasons below:	☐
Paralysis, paresis or recent leg plaster	1	Suspected or confirmed pulmonary embolus	☐
Bedridden for >3 days or major surgery in last 4/52	1	Thrombus in the iliac veins or vena cava	☐
Tenderness along deep venous system	1	Active bleeding (e.g. intracranial bleed within last 6 months, GI bleed within 1 month, oesophageal varices)	☐
Entire swollen leg	1	Verified bleeding disorder (e.g. Haemophilia or thrombocytopenia – platelets <90x10/L)	☐
Calf circumference difference >3cm (measured 10cm below tibial tuberosity)	1	Pregnancy	☐
Pitting Oedema (greater in symptomatic leg)	1	Heparin hypersensitivity or a history of HIT	☐
Collateral superficial veins (non-varicose)	1	Creatinine clearance <15ml/min	☐
Previously documented DVT	1	Known liver failure	☐
Alternative diagnosis seems more likely than DVT (minus)	-2	Hypertension, Systolic BP>180mm Hg or diastolic BP >115mm Hg	☐
Probability score		Age <16 years	☐
DVT likely: 2 points or more	☐	No fixed address	☐
DVT unlikely: 1 point or less	☐	Not contactable by phone	☐

	Inability to understand instructions ☐
	Anticipated compliance problems e.g. mental illness or alcohol misuse. ☐
	Yes, as none of the above ☐
4. D-Dimer Result:	
Negative ☐ Positive ☐	
5. Action (see table 1B)	
• If DVT 'unlikely' perform D-dimer test, if positive perform proximal vein ultrasound within 4 hours or offer interim anticoagulation prior to ultrasound scan (within 24 hours if possible). If scan positive treat DVT. If scan negative- unlikely to have DVT consider other diagnosis. • If DVT 'likely'- Request proximal leg ultrasound within 4 hours. If available proceed with imaging and treat DVT if confirmed. If negative and only a proximal leg scan was performed, perform a D-dimer test and if positive repeat scan in 7 days. If D-dimer negative consider other diagnosis. • If no proximal leg vein ultrasound scan is available within 4 hours of being requested perform D-dimer and offer interim anticoagulation. If scan positive –treat DVT , if negative and D dimer was positive consider repeating the scan in 7 days	
6. Medical notes	**7. Risk factors**
History	• Malignancy ☐
	• Surgery in last 6 weeks ☐
	• Prolonged bed rest ☐
	• Long haul flight ☐
	• Pregnancy/recent childbirth ☐
	• Family history of venous thromboembolism ☐
Past medical history	• Obesity ☐
	• Inherited thrombophilic defect ☐
	• Antiphospholipid syndrome ☐
	• Smoker ☐
	• HRT/OCP ☐
	8. Examination (please tick)
Medication:	Affected leg yes ☐ no ☐
	Pain yes ☐ no ☐
	Swelling yes ☐ no ☐
	Temperature yes ☐ no ☐
	Colour change in leg/foot/toe yes ☐ no ☐

Allergies:	Calf circumference: Right…….. Left:……..
	Temp: ……. Pulse:……. BP: ……. Weight:.....

9. Blood results		**10. Ultrasound Results**
Fbc	**U&E**	Date of first scan: ……/……/……
Hb	Na	Date of second scan: ……/……/……
Wbc	K	
Plt	Urea	Reason for repeat scan:
	Creat	
LFT	**Coag screen**	Result of USS scan:
Bili	PT	
Alb	APPT	
ALT	Fibrinogen	First:
Cockcroft-Gault creatinine clearance: (140-age) x weight (kg) x factor* Creatinine (um/l) * female=1.04, male=1.23		
All results to be copied to GP		Second (if applicable):

Action taken		**Additional notes**
Information sheet given to patient	☐	
If post-op inform surgeon	☐	
Treat patient	☐	
Discharge to GP and letter sent	☐	
Discuss with GP	☐	
Refer to A&E	☐	
Copy filed in patient's notes	☐	