GUIDELINES FOR IMAGING FOR LOWER LIMB DEEP VEIN THROMBOSIS

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

Introduction

Deep vein thrombosis (DVT) commonly presents with unilateral leg pain, swelling, erythema, tenderness, warmth or pitting oedema. Clinical diagnosis alone is unreliable; fewer than one-third of investigated patients have confirmed DVT. These guidelines outline the referral pathway for lower limb ultrasound, aligned to **NICE NG158** recommendations, and apply to all adult patients aged ≥18 years.

Pregnancy and puerperium are excluded; refer to the Trust pregnancy VTE imaging policy.

This guideline is for use by the following staff groups :

Referrers in primary and secondary care
Radiologists and Sonographers.

Lead Clinician(s)

Dr Matthew Halls	Consultant Radiologist
Approved by Radiology Directorate Governance meeting	10th June 2026
Review Date: This is the most current document and should be used until a revised version is in place	10th June 2029

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Key amendments to this guideline

Date	Amendment	Approved by:
	Reviewed and updated into clinical guideline template	Radiology directorate governance meeting
08.03.2023	Full review in Radiology	Radiology Directorate Governance Meeting
10.06.2026	Further information regarding NICE guidance documented. Included differences between patients who have the whole leg vs proximal leg scanned. Update to report templates.	Radiology Directorate Governance Meeting

1. Purpose and Scope

To provide a standardised, evidence-based approach for:

- Assessing suspected lower-limb DVT
- Referring appropriately for ultrasound
- Ensuring consistent imaging standards
- Clarifying the responsibilities of referrers and imaging providers
- Incorporating the two NICE-supported ultrasound options (proximal vs whole-leg

2. Definitions

Wells Score:
A pre-test probability assessment (Keeling*, et al* 2004, Wells*, et al* 1997, Wells*, et al* 2003, Wells*, et al* 1995) by a clinician and be classified as unlikely or likely to have a DVT (see table below).

Active cancer (patient receiving treatment for cancer within the previous six months or currently receiving palliative treatment)	1
Paralysis, paresis, or recent plaster immobilisation of the lower extremities	1
Recently bedridden for 3 days or more, or major surgery within previous twelve weeks	1
Localised tenderness along the distribution of the deep venous system	1
Entire leg swollen	1
Calf swelling at least 3 cm larger than the asymptomatic leg (measured ten cm below tibial tuberosity)	1
Pitting oedema confined to the symptomatic leg	1

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Collateral superficial veins (nonvaricose)	1
Previously documented venous thromboembolism	1
Alternative diagnosis at least as likely as deep vein thrombosis	**-2**

A score will be calculated and the probability is as follows:

- **≥2 points** → DVT *likely*
- **≤1 point** → DVT *unlikely*

Ultrasound Options

- **Proximal leg vein ultrasound doppler**
  → Imaging of femoral and popliteal segments of leg deep veins

- **Whole leg vein ultrasound doppler**
  → Imaging from groin to calf veins
  → Considered equivalent as part of NICE guidance evidence base with proximal leg favoured around total cost effectiveness and more availability of trained workforce
  (Ref: NICE Venous thromboembolic diseases: the management of venous thromboembolic diseases and the role of thrombophilia testing. Clinical Guideline : Methods, evidence and recommendations June 2012 Section 5.4).

3. Roles and Responsibilities

4.1 Referrer Responsibilities

A. Clinical Assessment

- Perform full history and physical examination.
- Calculate and *document* the **Wells score** in the request.
- Record an alternative diagnosis if this is equally or more likely and apply in Wells score (-2)
- State symptom laterality, severity, and onset.

B. D-dimer

- Ultrasound scans are unlikely to be performed within 4 hours outside of an inpatient setting so **D-Dimer measurement is recommended prior to anticoagulation in all out patients**
- Required for **all DVT unlikely** patients- exclusion test.
- Use **age-adjusted thresholds** (age × 10 µg/L for those ≥50).
- Do **not** use D-dimer if the patient has already received therapeutic anticoagulation.

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- Point of care D-dimer will need to document reference range for system used
- Will need to be done in all patients to determine eligibility for any potential second ultrasound scan.

C. Appropriate Referral for ultrasound

Referral must include:

- Wells score
- D-dimer result if available
- Anticoagulant status
- Symptoms and examination findings

D. Interim Anticoagulation

- If **DVT likely** and ultrasound is **not available within 4 hours**,
  →Follow anticoagulation guidance and initiate *interim therapeutic anticoagulation*,

E. Acting on Results

Receipt of results should prompt a further review of the patient with appropriate actions taken.

3.2 Responsibilities of the Ultrasound Service Provider

A. Timeliness

- Aim to perform urgent DVT scans **as soon as is reasonably practicable,** allowing for the geography of the referral population area, service pressures and patient factors.

B. Selection of Appropriate Scan Type

Radiology will perform **one** of the following:

- Proximal Leg Vein Ultrasound Doppler
- Whole Leg Vein Ultrasound Doppler

C. Reporting Standards

The radiology department imaging protocol for lower limb doppler studies lays out the process of reporting and templates are provided on the reporting module.

Reports should state:

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- The area examined
- Whether there were any study limitations
- Urgent/safety-critical findings
- An alternate diagnosis for patient symptoms, if found.

D. Escalation of urgent findings

Reports escalated as per department protocol (SOP for the management of radiology outpatients with urgent or emergency imaging findings)

4. Diagnostic Algorithm

Step 1 — Initial Assessment

1. Assess symptoms/signs of DVT.
2. Perform examination to exclude alternative causes.
3. Calculate the **Wells score**.

Step 2 — Pathway by Wells Category

A. DVT Likely (Wells ≥2)

1. Perform proximal leg vein ultrasound within 4 hours**,** OR
2. If unavailable
    - Perform quantitative D-dimer (age-adjusted).
    - Start interim therapeutic anticoagulation
    - Request ultrasound doppler lower limb

B. DVT Unlikely (Wells ≤1)

1. Perform quantitative D-dimer (age-adjusted).
2. **D-dimer negative** - DVT excluded; consider alternative diagnosis.

D-dimer positive

- Start interim therapeutic anticoagulation
- Request ultrasound doppler lower limb

Step 3 — Receipt of ultrasound report

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Whole leg vein ultrasound doppler performed

Scan positive for Deep Vein Thrombosis (DVT) or Superficial Vein Thrombosis (SVT) within 3cm of a junction with deep vein OR measuring greater than 5cm in length. **Follow anticoagulation guidance**

Scan negative

- **DVT excluded - no indication for repeat ultrasound** without further clinical review and justification on any request
- Consider any alternate diagnoses provided in the report

Proximal leg vein ultrasound doppler performed

Scan positive for Deep Vein Thrombosis (DVT) or Superficial Vein Thrombosis (SVT) within 3cm of a junction with deep vein OR measuring greater than 5cm in length. **Follow anticoagulation guidance**

Scan negative – Review scan report along with clinical history and findings (see NICE flow-chart)

- If D-Dimer positive and DVT unlikely - Consider any alternate diagnoses (plus any provided in the report)
- If D-Dimer negative - Consider any alternate diagnoses
- If D-Dimer positive, follow anticoagulation guidance and request repeat ultrasound doppler lower limb at 6-8 days if there is ongoing concern for DVT after case review.

Doppler requests for resolution of clot

NICE does not recommend any follow up Doppler study to assess resolution of thrombus. Please see guidance on stopping or continuing anticoagulation (under 1.4 of NICE guidelines NG158 – long term anti-coagulation for secondary prevention). Requests from Haematology consultants will be accepted after clinical discussion with radiologist.

5. Special Clinical Situations

Bilateral Leg Symptoms

Usually caused by a systemic cause, this should be considered in the first instance.
If ongoing concern, scan **only the worse-affected limb**, unless radiologist advises otherwise.

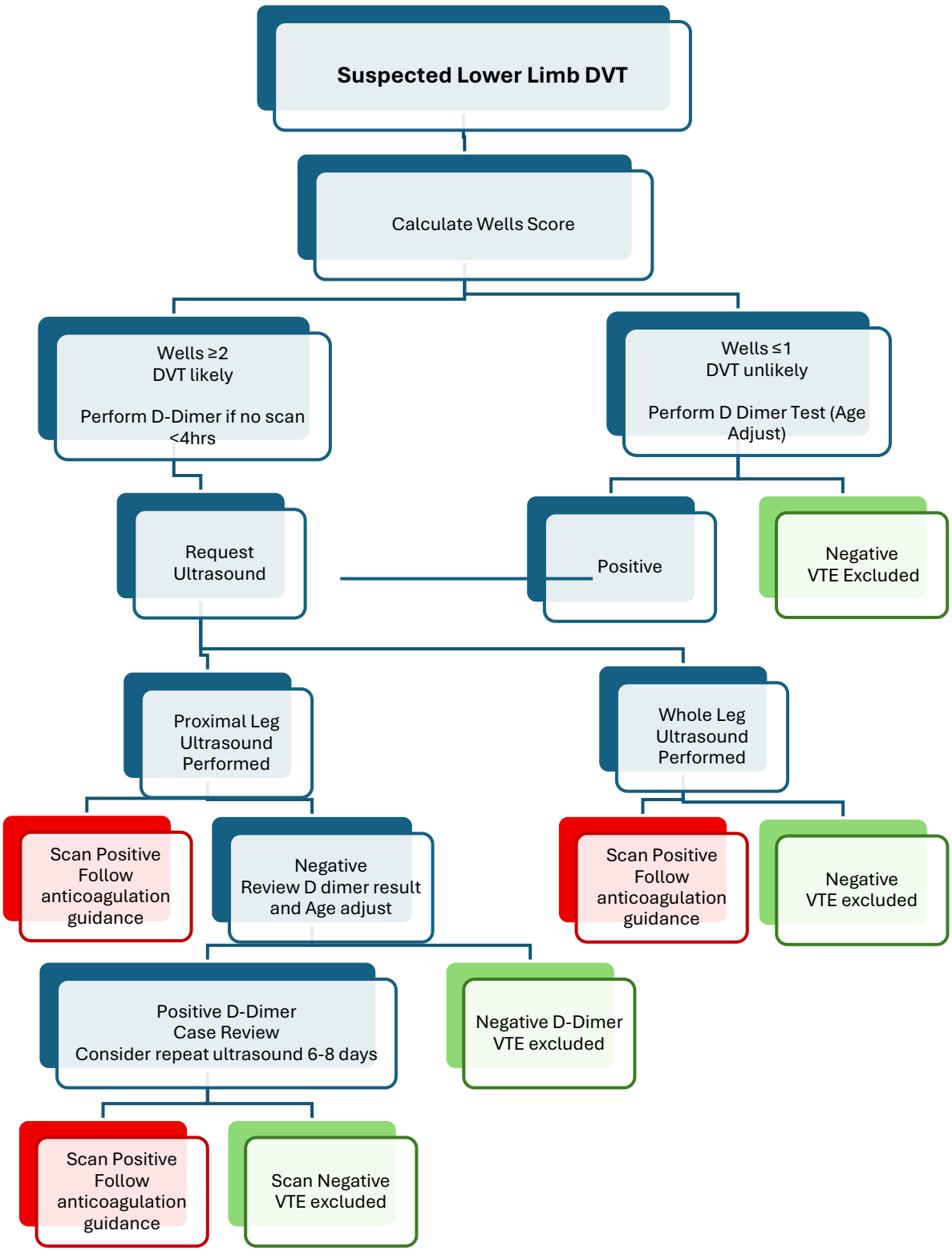
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Superficial Thrombophlebitis

If clear clinical diagnosis, does not usually require imaging
If identified incidentally, report **length, distance to SFJ or SPJ** , the deep vein convergences (≤3 cm vs >3 cm), as this affects anticoagulation decisions.

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6. Graphic Flowchart



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7. Appendices

Ultrasound DVT Protocol

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Communication of Critical and Urgent Radiology Reports

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Monitoring Tool

This should include realistic goals, timeframes and measurable outcomes.

How will monitoring be carried out?

Who will monitor compliance with the guideline?

Page/ Section of Key Document	Key control:	Checks to be carried out to confirm compliance with the policy:	How often the check will be carried out:	Responsible for carrying out the check:	Results of check reported to: *(Responsible for also ensuring actions are developed to address any areas of non-compliance)*	Frequency of reporting:
	WHAT?	**HOW?**	**WHEN?**	**WHO?**	**WHERE?**	**WHEN?**
	These are the 'key' parts of the process that we are relying on to manage risk. We may not be able to monitor every part of the process, but we MUST monitor the key elements, otherwise we won't know whether we are keeping patients, visitors and/or staff safe.	What are we going to do to make sure the key parts of the process we have identified are being followed? (Some techniques to consider are; audits, spot-checks, analysis of incident trends, monitoring of attendance at training.)	Be realistic. Set achievable frequencies. Use terms such as '10 times a year' instead of 'monthly'.	Who is responsible for the check? Is it listed in the 'duties' section of the policy? Is it in the job description?	Who will receive the monitoring results? Where this is a committee the committee's specific responsibility for monitoring the process must be described within its terms of reference.	Use terms such as '10 times a year' instead of 'monthly'.
	Referring appropriately for ultrasound.	Re-audit on DVT referrals from primary care physicians.	Annually	Ultrasound Lead Sonographers	This will be presented in the US Leads meeting.	Once in a year.

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References

Venous thromboembolic diseases: diagnosis, management and thrombophilia testing
NICE guideline - Reference number:NG158 -Published: 26 March 2020 - Last updated: 02 August 2023

Contribution List

This key document has been circulated to the following individuals for consultation:

Designation
Primary Care Consultants
Haematologists

This key document has been circulated to the chair(s) of the following committee's / groups for comments:

Committee
Radiology Divisional Governance Meeting

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Worcestershire Acute Hospitals NHS Trust

Supporting Document 1 - Equality Impact Assessment Tool

Equality and Health Inequalities Impact Assessment (EHIA) Tool

Herefordshire & Worcestershire STP - Equality and Health Inequalities Impact Assessment (HEIA) Form
Please read HEIA guidelines when completing this form

Section 1 - Name of Organisation (please tick)

Herefordshire & Worcestershire STP		Herefordshire Council		Herefordshire CCG	
Worcestershire Acute Hospitals NHS Trust	✓	Worcestershire County Council		Worcestershire CCGs	
Worcestershire Health and Care NHS Trust		Wye Valley NHS Trust		Other (please state)	

Name of Lead for Activity	Dr Matthew Halls

Details of individuals completing this assessment	Name	Job title	e-mail contact
	Dr Matthew Halls	Consultant Radiologist & US Lead Radiologist	matthew.halls@nhs.net
Date assessment completed	10.06.2026		

Section 2

Activity being assessed (e.g. policy/procedure, document, service redesign, policy, strategy etc.)	Title: GUIDELINES FOR IMAGING FOR LOWER LIMB DEEP VEIN THROMBOSIS			
What is the aim, purpose and/or intended outcomes of this Activity?	To outline the referral pathway for lower limb ultrasound, aligned to NICE NG158 recommendations			
Who will be affected by the development & implementation of this activity?	☒ Service User ☒ Patient ❑ Carers ❑ Visitors		❑ Staff ❑ Communities ❑ Other _____	
Is this:	☒ Review of an existing activity ❑ New activity ❑ Planning to withdraw or reduce a service, activity or presence?			
What information and evidence have you reviewed to help inform this assessment?	Discussions with primary care and reference from NICE guidance			

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(Please name sources, eg demographic information for patients / services / staff groups affected, complaints etc.	
Summary of engagement or consultation undertaken (e.g. who and how have you engaged with, or why do you believe this is not required)	Via email communications
Summary of relevant findings	

Section 3
Please consider the potential impact of this activity (during development & implementation) on each of the equality groups outlined below. **Please tick one or more impact box below for each Equality Group and explain your rationale**. Please note it is possible for the potential impact to be both positive and negative within the same equality group and this should be recorded. Remember to consider the impact on e.g. staff, public, patients, carers etc. in these equality groups.

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Age		√		
Disability		√		
Gender Reassignment		√		
Marriage & Civil Partnerships		√		
Pregnancy & Maternity		√		
Race including Traveling Communities		√		
Religion & Belief		√		
Sex		√		

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Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Sexual Orientation		√		
Other Vulnerable and Disadvantaged Groups (e.g. carers; care leavers; homeless; Social/Economic deprivation, travelling communities etc.)		√		
Health Inequalities (any preventable, unfair & unjust differences in health status between groups, populations or individuals that arise from the unequal distribution of social, environmental & economic conditions within societies)		√		

Section 4

What actions will you take to mitigate any potential negative impacts?	Risk identified	Actions required to reduce / eliminate negative impact	Who will lead on the action?	Timeframe
		.		
How will you monitor these actions?				

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When will you review this EIA? (e.g in a service redesign, this EIA should be revisited regularly throughout the design & implementation)	During document review

Section 5 - Please read and agree to the following Equality Statement

1. Equality Statement

1.1. All public bodies have a statutory duty under the Equality Act 2010 to set out arrangements to assess and consult on how their policies and functions impact on the 9 protected characteristics: Age; Disability; Gender Reassignment; Marriage & Civil Partnership; Pregnancy & Maternity; Race; Religion & Belief; Sex; Sexual Orientation

1.2. Our Organisations will challenge discrimination, promote equality, respect human rights, and aims to design and implement services, policies and measures that meet the diverse needs of our service, and population, ensuring that none are placed at a disadvantage over others.

1.3. All staff are expected to deliver services and provide services and care in a manner which respects the individuality of service users, patients, carer's etc, and as such treat them and members of the workforce respectfully, paying due regard to the 9 protected characteristics.

Signature of person completing EIA	Dr M Halls
Date signed	10.06.2026
Comments:	
Signature of person the Leader Person for this activity	Dr M Halls
Date signed	10.06.2026
Comments:	

NHS Worcestershire Acute Hospitals NHS Trust
NHS Herefordshire and Worcestershire Health and Care NHS Trust
NHS Wye Valley NHS Trust
Herefordshire General Practice Taurus Healthcare
worcestershire county council
Herefordshire Council

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Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	Yes/No
1.	Does the implementation of this document require any additional Capital resources	No
2.	Does the implementation of this document require additional revenue	No
3.	Does the implementation of this document require additional manpower	No
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	No
	Other comments:	

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval.

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