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# "Post-Op VTE Prophylaxis: Who, When and How long?" Balancing Risk and Benefit in Lower Limb Surgical Practice

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# Guidance:

The background of the slide features several tall, vertical stacks of white paper. A hand is visible in the upper right corner, holding a single sheet of paper as if about to place it on top of one of the stacks. The stacks vary in height and are arranged in a slightly staggered fashion across the width of the slide.

- **NICE (NG89)** updated 2019
- **British Orthopaedic Foot and Ankle Society (BOFAS)** – position statement 2025
- **European Journal of Anaesthesiology** (2024)
- **American College of Chest Physicians (ACCP)** – updated 2012
- **American Orthopaedic Foot and Ankle Society (AOFAS)** - position statement 2020
- **Local policy**

# Recommendations:

## Individualised risk assessment:

- **Every patient** should have a risk assessment for venous thromboembolism (VTE) before **surgery** or **immobilisation**.

## Pharmacological prophylaxis:

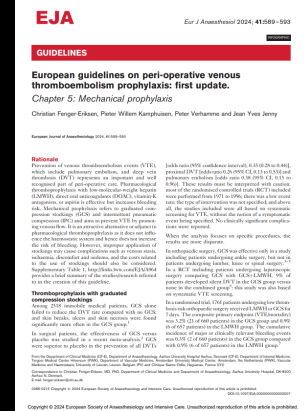
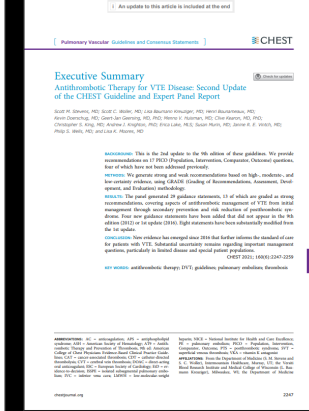
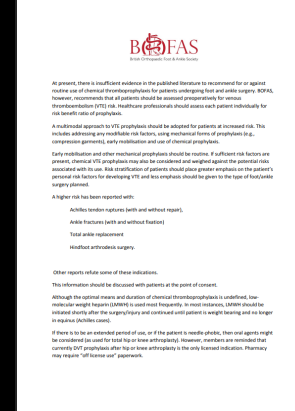
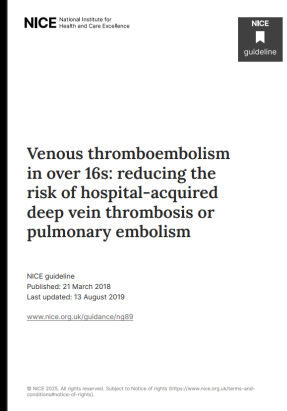
- It appears that **ROUTINE** use of chemical thromboprophylaxis is not beneficial for **low-risk** patients with foot and ankle injuries or those undergoing foot and ankle surgery.

## Mechanical Prophylaxis?

- **low thrombosis risk**, such as **day surgery** and/or immediate mobilisation: we recommend general measures of thromboprophylaxis (including early ambulation and optimal hydration) over mechanical or pharmacological prophylaxis (Journal of European Anesthesiology).

## Patient education and management:

- A **multimodal approach** to VTE prophylaxis should be adopted for patients at increased risk of a thromboembolic event. This includes addressing any **modifiable risk factors**, minimising **immobilisation** and encouraging **early weight bearing** where possible.
- Advise people to consider stopping **oestrogen-containing oral contraceptives** or **hormone replacement therapy 4 weeks before** elective surgery. If stopped, provide advice on alternative contraceptive methods.



# Risk assessment tools.

- NICE recommend using a tool published by a national UK body, professional network or peer-reviewed journal.

- The DoH risk assessment tool is an example suggested.

NICE state:

- Assess all surgical patients, and all medical patients with significantly reduced mobility should be considered for further risk assessment.
- Any tick for thrombosis risk should prompt thromboprophylaxis according to NICE guidance.
- The risk factors identified are not exhaustive. Clinicians may consider additional risks in individual patients and offer thromboprophylaxis as appropriate.

**RISK ASSESSMENT FOR VENOUS THROMBOEMBOLISM (VTE)**


**STEP ONE**  
Assess all patients admitted to hospital, and all medical patients further risk assessment.

**STEP TWO**  
Review the patient-related factors ticking each box that applies (Any tick for thrombosis risk should prompt clinical review to preclude pharmacological intervention).

**STEP THREE**  
Review the patient-related factors (more than one box can be ticked). Any tick should prompt clinical review to preclude pharmacological intervention.

Guidance on thromboprophylaxis: <http://www.nice.org.uk/guidance/CG94>

This document has been authorised by the Department of Health  
Gateway reference no: 10278



**RISK ASSESSMENT FOR VENOUS THROMBOEMBOLISM (VTE)**

Mobility – all patients (tick one box)	Tick		Tick		Tick
Surgical patient		Medical patient expected to have ongoing reduced mobility relative to normal state		Medical patient NOT expected to have significantly reduced mobility relative to normal state	
Assess for thrombosis and bleeding risk below			Risk assessment now complete		

Thrombosis risk			
Patient related	Tick	Admission related	Tick
Active cancer or cancer treatment		Significantly reduced mobility for 3 days or more	
Age > 60		Hip or knee replacement	
Dehydration		Hip fracture	
Known thrombophilias		Total anaesthetic + surgical time > 90 minutes	
Obesity (BMI >30 kg/m <sup>2</sup> )		Surgery involving pelvis or lower limb with a total anaesthetic + surgical time > 60 minutes	
One or more significant medical comorbidities (eg heart disease; metabolic, endocrine or respiratory pathologies; acute infectious diseases; inflammatory conditions)		Acute surgical admission with inflammatory or intra-abdominal condition	
Personal history or first-degree relative with a history of VTE		Critical care admission	
Use of hormone replacement therapy		Surgery with significant reduction in mobility	
Use of oestrogen-containing contraceptive therapy			
Varicose veins with phlebitis			
Pregnancy or < 6 weeks post partum (see NICE guidance for specific risk factors)			

Bleeding risk			
Patient related	Tick	Admission related	Tick
Active bleeding		Neurosurgery, spinal surgery or eye surgery	
Acquired bleeding disorders (such as acute liver failure)		Other procedure with high bleeding risk	
Concurrent use of anticoagulants known to increase the risk of bleeding (such as warfarin with INR >2)		Lumbar puncture/epidural/spinal anaesthesia expected within the next 12 hours	
Acute stroke		Lumbar puncture/epidural/spinal anaesthesia within the previous 4 hours	
Thrombocytopenia (platelets < 75x10 <sup>9</sup> /l)			
Uncontrolled systolic hypertension (230/120 mmHg or higher)			
Untreated inherited bleeding disorders (such as haemophilia and von Willebrand's disease)			

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# Multi-modal approach:



Modifiable:



Mechanical:



Pharmacological:





Summary



Within the study population, pharmaco-thromboprophylaxis alone is non-inferior to a combination of pharmaco-thromboprophylaxis plus graduated compression stockings

Population

1888 participants

Venous thromboembolism risk at baseline:  
Moderate: 15.9%, High: 84.1%

63.3% women

Adult elective surgical inpatients

Study design

Randomised controlled trial

Single blinded

Randomisation allocation was 1:1 between intervention and control

Comparison

**Intervention**

Low molecular weight heparin **only**

948\*

**Control** Standard care

Low molecular weight heparin **and** graduated compression stockings

940†

Outcomes



Primary outcome

Venous thromboembolism: imaging confirmed lower limb deep vein thrombosis with or without symptoms, or pulmonary embolism with symptoms within 90 days of surgery

Significance

Prespecified non-inferiority margin of 3.5%

# Mechanical Prophylaxis?



Graduated compression stockings as Adjuvant to Pharmaco-thromboprophylaxis in elective Surgical patients (**GAPS**) RCT Study (2020).

# Case scenarios:



## LOW RISK

Low-risk procedures (e.g. minor foot surgery) may not require prophylaxis.

## HIGH RISK

High-risk patients (e.g. prolonged immobilisation, comorbidities) should receive tailored thromboprophylaxis.



### Example:

- Forefoot procedures & no comorbidities.
- Soft tissue procedures.



1<sup>st</sup> MTPJ arthrodesis?  
1<sup>st</sup> MCJ arthrodesis?

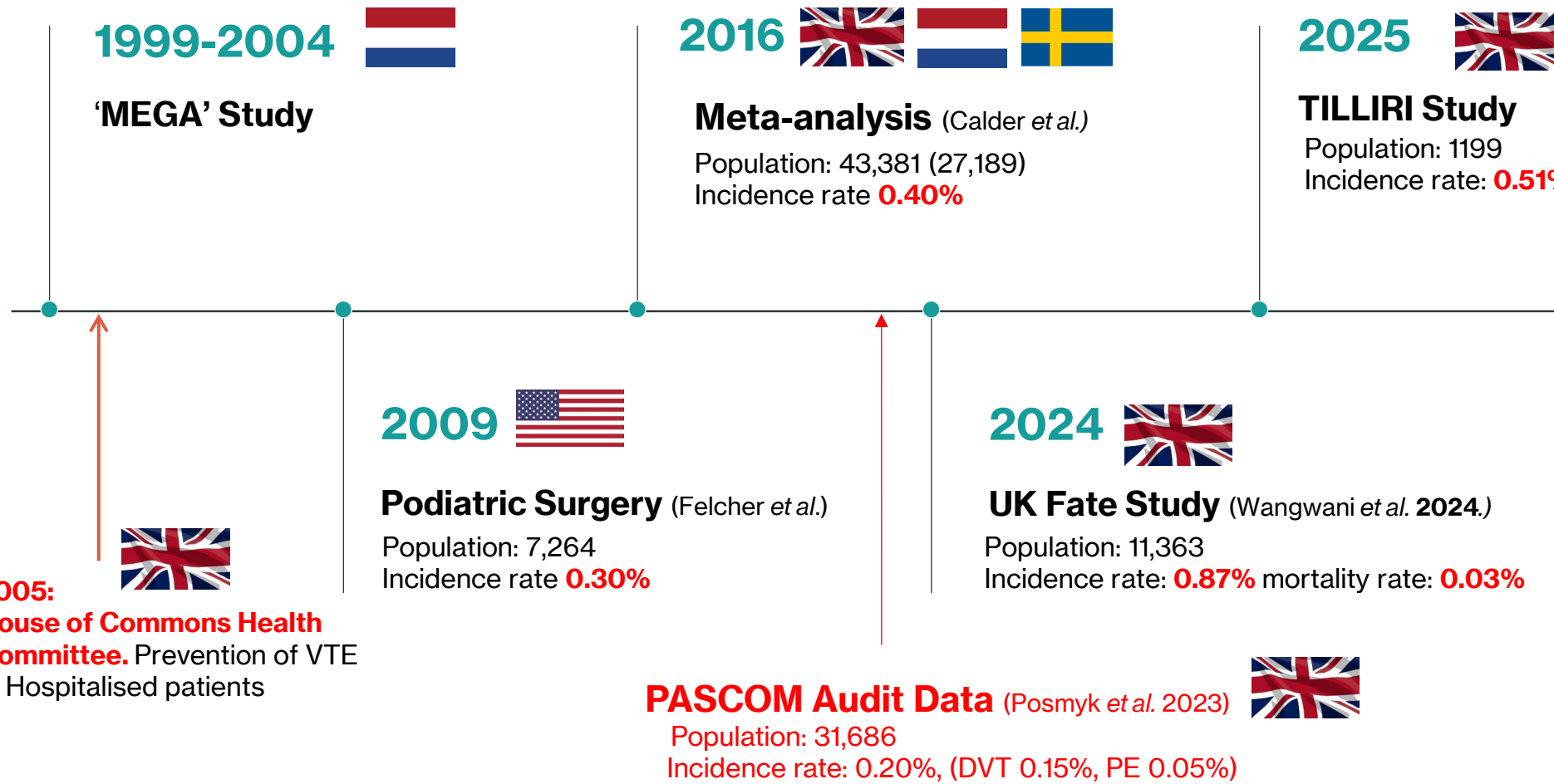
### Example:

- Midfoot/hindfoot procedures requiring prolonged immobilisation
- Previous VTE history & first degree relative.
- Known thrombophilia
- HRT/OCP
- Multiple co-morbidities

# Timeline

## Limitations:

- Retrospective data
- Variation in practice
- Heterogenicity



### Future research

<b>VTE risk assessment</b> - ↑Personalisation Eg TRIIP-Plasty in orthopaedics* - Validated scores for bleeding risk	<b>Anticoagulant prophylaxis</b> - Dosing in obesity - Optimal duration in acutely ill medical patients - Agents with lower bleeding risk eg FXI inhibitors
<b>Mechanical prophylaxis</b> - Role of stockings in surgical cohorts* - Duration of IPC in surgical patients - Role of IPC in medical/obstetric patients at high bleeding risk	<b>Special patient groups</b> - Pregnancy - Lower limb immobilisation*

Research needs

### Advances and current research.

(Roberts *et al.* 2024)

# Conclusion:



Every patient needs a risk assessment for VTE.



Routine pharmacological prophylaxis is not warranted in low-risk groups.



MDT communication is required for high-risk groups.



Documentation required as part of formal consent process and a standard of good practice.



Further research is required and currently underway.

# Thanks...



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# References:

American Orthopaedic Foot and Ankle Society (2020) Position statement. Available at: [https://www.aofas.org/docs/default-source/research-and-policy/position-statements/vted-prophylaxis-in-foot-and-ankle-surgery-position-statement.pdf?sfvrsn=21490028\\_2](https://www.aofas.org/docs/default-source/research-and-policy/position-statements/vted-prophylaxis-in-foot-and-ankle-surgery-position-statement.pdf?sfvrsn=21490028_2)

British Orthopaedic Foot and Ankle Society (2025) Position statement. Available at: <https://www.bofas.org.uk/clinician/home>

Calder JD, Freeman R, Domeij-Arverud E, van Dijk CN, Ackermann PW. Meta-analysis and suggested guidelines for prevention of venous thromboembolism (VTE) in foot and ankle surgery. *Knee Surg Sports Traumatol Arthrosc.* 2016 Apr;24(4):1409-20. doi: 10.1007/s00167-015-3976-y.

Cannegieter SC, Doggen CJ, van Houwelingen HC, Rosendaal FR. (2006). Travel-related venous thrombosis: results from a large population-based case control study (MEGA study). *PLoS Med.* 2006 Aug;3(8):e307. doi: 10.1371/journal.pmed.0030307.

Fenger-Eriksen, Christian; Kamphuisen, Pieter Willem; Verhamme, Peter; Jenny, Jean Yves. European guidelines on peri-operative venous thromboembolism prophylaxis: first update.: Chapter 5: Mechanical prophylaxis. *European Journal of Anaesthesiology* 41(8):p 589-593 Available at: [https://journals.lww.com/ejanaesthesiology/fulltext/2024/08000/european\\_guidelines\\_on\\_peri\\_operative\\_venous.8.aspx](https://journals.lww.com/ejanaesthesiology/fulltext/2024/08000/european_guidelines_on_peri_operative_venous.8.aspx)

Falck-Ytter Y, Francis CW, Johanson NA, Curley C, Dahl OE, Schulman S, Ortel TL, Pauker SG, Colwell CW Jr.(2012) Prevention of VTE in orthopedic surgery patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. American College of Chest Physicians <https://doi.org/10.1378/chest.11-2404>

Felcher AH, Mularski RA, Mosen DM, Kimes TM, DeLoughery TG, Laxson SE. Incidence and risk factors for venous thromboembolic disease in podiatric surgery. *Chest.* 2009 Apr;135(4):917-922. doi: 10.1378/chest.08-1631.

Halloran TPO, Bassa BA, Nemeth B, Cannegieter S, Breslin T, Wakai A, O'Driscoll J, O'Rourke S, O'Connell N, Ainle FN, Watts M, Keeffe DO; TILLIRI study investigators. The (T) thrombosis (I) in patients with (L) lower (L) limb (I) injuries (R) requiring (I) immobilisation (TILLIRI) study. *J Thromb Haemost.* 2025 Mar;23(3):947-956. doi: 10.1016/j.jtha.2024.11.010.

House of Commons Health Committee (2005). Prevention of Venous thromboembolism Patient in Hospitalised Patients. Available at: <https://publications.parliament.uk/pa/cm200405/cmselect/cmhealth/99/99.pdf>

Mangwani J, Houchen-Wolloff L, Malhotra K, et al. (2024). UK Foot and Ankle Thromboembolism (UK-FATE). *Bone Joint J.* 106-B(11):1249-1256. doi:10.1302/0301-620X.106B11.BJJ-2024-0128.R1

NICE (2019) NG89. Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism. Available at: <https://www.nice.org.uk/guidance/ng89>

Roberts LN, Arya R, Hunt BJ. Advances and current research in primary thromboprophylaxis to prevent hospital-associated venous thromboembolism. *Br J Haematol.* 2024 May;204(5):1635-1648. doi: 10.1111/bjh.19424.

Shalhoub J, Lawton R, Hudson J, Baker C, Bradbury A, Dhillon K, Everington T, Gohel MS, Hamady Z, Hunt BJ, Stansby G, Warwick D, Norrie J, Davies AH (2020). Graduated compression stockings as adjuvant to pharmacothromboprophylaxis in elective surgical patients (GAPS study): randomised controlled trial. *BMJ.* doi: 10.1136/bmj.m1309.

Zambelli R, Frölke S, Nery C, Baumfeld D, Ortiz C, Cannegieter S, Nemeth B, Rezende SM. Venous Thromboembolism Prophylaxis in Foot and Ankle Surgery: A Worldwide Survey. *J Foot Ankle Surg.* 2024 Jan-Feb;63(1):59-63. doi: 10.1053/j.jfas.2023.08.014.