Royal Cornwall Hospitals
NHS Trust

Elective Knee and Hip Arthroplasty Venous Thromboembolism (VTE) Prevention Guidelines

V1.0

August 2025

1. Aim/Purpose of this Guideline

1.1. This guideline contains recommendations for Venous Thromboembolism (VTE) prophylaxis for all adult patients aged ≥ 16 years old undergoing elective knee or hip arthroplasty at RCHT.

1.2. The contents of this guideline follow closely the recommendations published by the National Institute for Health and Care Excellence (NICE). [NICE Guideline (NG89): VTE in Over 16s - Recommendations]

1.3. It is recognised that it will not be possible to capture all potential pharmacological options for post operative thromboprophylaxis and accept that there will be situations where prescribing requirements differ from the guideline below, which are supported if justified. Clinicians should continue to use their clinical judgement when prescribing.

Data Protection Act 2018 (UK General Data Protection Regulation – GDPR) Legislation.

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Royal Cornwall Hospital Trust rch-tr.infogov@nhs.net

2. The Guidance

2.1. All patients to have a VTE Risk Assessment completed on EPMA.

2.1.1. Any patients with a previous VTE diagnosis, active cancer or cancer treatment who have an increased risk of VTE, and any patients who have had an upper GI bleed in the last three months, or an aspirin allergy/intolerance are to have thromboprophylaxis (TP) prescribed under **Increased Risk Pathway** (see Appendix 3).

2.1.2. All other patients to have thromboprophylaxis prescribed under **Standard Risk Pathway** (see Appendix 3).

2.1.3. Record which pathway should be followed in surgical operation note after discussion in **WHO Time Out**. This should be based on: risk of precipitating bleeding in the context of completed surgery, anaesthetic (e.g. neuraxial) and whether patient was on anti-coagulation pre-operatively and for what reason.

2.1.4. Surgeons are responsible for allocation and prescription of VTE thromboprophylaxis (TP); it is useful for this to be discussed as a team with the anaesthetist.

2.1.5. Prescribing TP requires knowledge of eGFR. In extremes of weight eGFR is inaccurate as it assumes the patient to have a BSA of 1.73m2 so CrCl should be calculated to ensure correct TP is prescribed.

2.2. All patients to receive VTE TP according to NICE guidance (see Appendix 3 for standard and increased risk of VTE). [NICE Guideline (NG89): VTE in Over 16s - Overview]

2.2.1. Note that RCHT LMWH of choice is Enoxaparin (see RCHT guideline 'Prescribing Prophylactic and Therapeutic Doses of Enoxaparin Including Dose Banding Clinical Guideline'). In elective orthopaedic surgery RCHT decision is to use Dalteparin. (See 2.2.2.)

2.2.2. The 'Elective Knee and Hip Arthroplasty VTE Prevention Guideline' is applicable to all hospital sites of RCHT, so applicable to elective orthopaedic arthroplasty in RCH.

2.3. All patients to be prescribed Intermittent Pneumatic Compression (IPC) post operatively for 24 hours, or until mobilising to the bathroom, whichever is sooner.

2.4. Patients taking Direct-Acting Oral Anticoagulant (DOAC) will have this suspended pre-operatively according to eGFR (48hrs - 72hrs).

2.4.1 For patients who have had surgery in the morning, restart patients usual DOAC at 22:00 on the day of surgery

2.4.2 For patients who have had surgery in the afternoon, restart patients' usual DOAC at 08:00 the day after surgery (Day one).

2.5. Patients on warfarin with a target INR 2-3 should have an INR < 1.5 prior to surgery. Prescribe prophylactic LMWH according to eGFR post op Day 0. Restart warfarin on normal dosing strategy on discharge or surgical instruction. Prophylactic LMWH can be stopped once target INR 2-3 is reached.

2.6. Patients on warfarin with a target INR 3-4 should have an INR < 1.5 prior to surgery. If bridging is required, there should be a written plan for pre and post-op bridging anti-coagulation from Pre Op Assessment, with input from relevant specialty (usually cardiology) to guide this.

2.6.1. Pertinent information includes: 24 hours needs to elapse post therapeutic LMWH for a neuraxial procedure or arthroplasty to commence, four hours to elapse before therapeutic LMWH can be given after a neuraxial procedure or arthroplasty has been undertaken. If neuraxial procedure is traumatic then consider waiting 24 hours prior to therapeutic LMWH (AoA 2013).

2.6.2. Day zero post-operative LMWH is usually given as an evening prophylactic dose. Day one therapeutic dose LMWH is given as a divided twice daily dose on surgical instruction. The rationale for the mediated introduction of LMWH post-operative is to offer protection from

post-operative and neuraxial bleeding.

2.6.3 Patients should be placed first on the list to allow monitoring of the patient post-operatively in daylight hours. Restart warfarin Day one on patient's normal dosing regimen on surgical instruction (no warfarin loading dose required). Bridging anticoagulation can be stopped once target INR 3-4 obtained.

2.7. Patients taking aspirin can continue aspirin throughout their surgical pathway, their existing dose of 75mg will suffice as their TP aspirin dose (150mg dose is not required). Aspirin should be suspended if patient is prescribed a DOAC as part of their post operative TP. Patient's taking clopidogrel pre-operatively will have this stopped and exchanged for Aspirin seven days pre-operatively if tolerated or simply omitted if not. Patients taking both clopidogrel and aspirin will have clopidogrel omitted and continue aspirin.

2.7.1. Post-operatively follow the appropriate VTE prophylaxis guideline based on patient's risk of VTE. If patient takes clopidogrel and or aspirin and is on standard risk VTE prevention pathway, normal antiplatelets can be restarted in place of aspirin in VTE pathway.

2.7.2. If patient usually takes aspirin and is on increased risk VTE pathway, aspirin can continue to be prescribed (unless patient prescribed a DOAC as per 2.7.) Clopidogrel can be restarted once Increased Risk VTE pathway is complete (see Appendix 3 for increased risk VTE pathway).

2.8. For any concerns regarding appropriate VTE prescribing especially in the context of patient's own anticoagulation medicines, refer to anaesthetic and surgical team for review.

3. Monitoring compliance and effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	Adherence to guideline. Appropriate VTE prophylaxis prescribing.
Lead	Rose Gibson, Specialist Clinical Practitioner for VTE Prevention.
Tool	Risk assessment for venous thromboembolism (VTE) (nice.org.uk)
Frequency	Initial monitoring six months after introduction of guideline, thereafter annually or after substantial amendments to guideline.
Reporting arrangements	Thrombosis Prevention and Anticoagulation Steering Group (TPAS). Trauma and Orthopaedic Clinical Governance Meeting.
Acting on recommendations and Lead(s)	TPAS.

Information Category	Detail of process and methodology for monitoring compliance
Change in practice and lessons to be shared	Educational responsibilities lie within TPAS, more pertinently the VTE Prevention Practitioner. Decisions as to how to implement changes in practice to be made by TPAS in collaboration with the Trauma and Orthopaedic Governance Team. Lessons will be shared with all the relevant stakeholders.

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the Equality Diversity And Inclusion Policy or the Equality and Diversity website.

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Elective Knee and Hip Arthroplasty VTE Prevention Guidelines V1.0
This document replaces (exact title of previous version):	New document
Date Issued/Approved:	July 2025
Date Valid From:	August 2025
Date Valid To:	August 2028
Directorate/Department responsible (author/owner):	Rose Gibson, Specialist Clinical Practitioner for VTE Prevention. Mr. David Burckett-St Laurent, Consultant Anaesthetist.
Contact details:	01872 252638.
Brief summary of contents:	Recommendations for VTE prophylaxis for patients undergoing elective orthopaedic arthroplasty.
Suggested Keywords:	Elective orthopaedic; hip replacement; knee replacement; VTE prevention, VTE.
Target Audience:	**RCHT:** Yes **CFT:** No **CIOS ICB:** No
Executive Director responsible for Policy:	Chief Medical Officer.
Approval route for consultation and ratification:	Medication Practice Committee (MPC). TPAS. Trauma and Orthopaedic Clinical Governance Meeting.
Manager confirming approval processes:	Paul Sylvester, Peripheral Sites Care Group General Manager.
Name of Governance Lead confirming consultation and ratification:	Natasha Andrews, Peripheral Sites Care Group Governance Manager.
Links to key external standards:	Overview | Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism | Guidance |

Information Category	Detailed Information
	NICE
Related Documents:	Prescribing Prophylactic and Therapeutic Doses of Enoxaparin Including Dose Banding Clinical Guideline
Training Need Identified?	No.
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet.
Document Library Folder/Sub Folder:	Trauma and Orthopaedics / Elective.

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
July 2025.	V1.0.	Initial issue.	Rose Gibson, VTE Prevention Practitioner. Mr. David Burckett-St Laurent, Consultant Anaesthetist.

All or part of this document can be released under the Freedom of Information Act 2000.

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing.

Controlled Document.

This document has been created following the Royal Cornwall Hospitals NHS Trust The Policy on Policies (Development and Management of Knowledge Procedural and Web Documents Policy). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity, and Inclusion Team rcht.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy/policy/proposal/service function to be assessed:	Elective Knee and Hip Arthroplasty VTE Prevention Guidelines V1.0.
Directorate and service area:	Orthopaedics, Peripheral Sites Care Group Department.
Is this a new or existing Policy?	New.
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Rose Gibson, Specialist Clinical Practitioner for VTE Prevention.
Contact details:	01872 252638.

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	Medical staff at RCHT looking after patients undergoing elective hip or knee replacements.
2. Policy Objectives	Ensure safe and NICE recommended VTE prophylaxis for elective arthroplasty patients at RCHT.
3. Policy Intended Outcomes	Safe and evidence based VTE Prophylaxis prescribed for elective arthroplasty patients at RCHT.
4. How will you measure each outcome?	Planned audit as listed above.
5. Who is intended to benefit from the policy?	Adult patients undergoing elective arthroplasty at RCHT.

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category)	• Workforce: Yes • Patients/visitors: No • Local groups/system partners: Yes • External organisations: Yes • Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	Mr. David Burckett-St Laurent. Mr. Andrew Bastin. TPAS. Trauma and Orthopaedic Clinical Team.
6c. What was the outcome of the consultation?	Agreed.
6d. Have you used any of the following to assist your assessment?	No.

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	
Religion or belief	No	

Protected Characteristic	(Yes or No)	Rationale
Marriage and civil partnership	No	
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Rose Gibson, VTE Prevention Practitioner.

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:
Section 2. Full Equality Analysis

Appendix 3. VTE Risk patients (Hip and Knee)

Theatre and Ward Information Sheet

RCHT Arthroplasty Hip and Knee VTE Prophylaxis (VTEp) v1.0

- The default standard VTEp bundle will be prescribed with EPMA arthroplasty bundles
- WHO TIME OUT- allocate patient to VTEp plan and confirm a plan for any pre-existing anti-coag meds
- Record plan in Surgical Op note EPMA bundle - Surgical speciality is responsible for amending prescription

Elective Hip VTEp

Flowtrons for 24 hrs or until mobilising to toilet
TEDS are not indicated

Hip - standard risk

Start Day 0 22:00 - First 10 days - daily

eGFR >30 = 1 **Dalteparin 5000 units**

eGFR <30 = 2 **Enoxaparin 20mg**

Next 28 days - daily
Aspirin 75 mg

Hip - increased risk or aspirin contraindicated

- Previous VTE
- Active Cancer or Cancer treatment
- Upper GI bleed in last 3/12's
- Aspirin allergy or intolerance

Am surgery Day 0 22:00 / Pm surgery Day 1 08:00

35 days – once daily
Rivaroxaban 10 mg 3
(Caution if recent GI bleed)

OR

Start Day 0 22:00

28 days – once daily

eGFR >30 = 4 **Dalteparin 5000 units**

eGFR <30 = 5 **Enoxaparin 20mg**

Elective Knee VTEp

Flowtrons for 24 hrs or until mobilising to toilet
TEDS are not indicated

Knee VTEp - standard but associated VTE risks

- Aspirin allergy or intolerance
- Active Cancer or Cancer treatment
- HRT therapy
- High BMI
- Poor mobility
- Poorly controlled diabetes
- Cigarette smoking

Knee VTEp - Rivaroxaban preferred...

- Previous VTE
- Active Cancer or Cancer treatment
- Considered the most efficacious therapy

Knee - standard risk

Start Day 0 22:00

Aspirin 75 mg 1
14 days - once daily

Knee - standard and increased Risk

Start Day 0 22:00 (Use for GI bleed last 3/12's)

14 days - daily

eGFR >30 = 2 **Dalteparin 5000 units**

eGFR <30 = 3 **Enoxaparin 20mg**

Knee - increased Risk

Am surgery Day 0 22:00 / Pm surgery Day 1 08:00

14 days - daily 4
Rivaroxaban 10 mg
(Caution if history of GI bleed)

HIP VTEp EPMA Bundles

1- Hip standard VTEp eGFR > 30
2- Hip standard VTEp eGFR < 30
3- Hip increased + Aspirin Contr. VTEp Rivaroxaban
4- Hip increased + Aspirin Contr. VTEp eGFR > 30
5- Hip increased + Aspirin Contr. VTEp eGFR < 30

KNEE VTEp EPMA Bundles

1- Knee standard VTEp
2- Knee standard + increased VTEp eGFR > 30
3- Knee standard + increased VTEp eGFR < 30
4- Knee increased VTEp Rivaroxaban preferred

If patient normally takes DOAC or Warfarin INR (2-3)
Post-op VTEp is LMWH according to eGFR
Only stop LMWH after 1st dose of DOAC or when INR 2-3

If patient normally takes antiplatelets:
Aspirin continues (max dose 75mg) unless VTEp contains DOAC. Clopidogrel continues when VTEp is aspirin (stopped if VTEp contains DOAC or LMWH).

See: RCHT Elective Knee and Hip Arthroplasty VTEp Prevention Guidelines