South Infirmary-Victoria University Hospital

Guideline for venous thromboembolism thromboprophylaxis of patients undergoing lower limb arthroplasty (hip or knee joint replacement) at the South Infirmary Victoria University Hospital

Document Reference Number	**THEA0012ORG**	**Document Developed by** **Document Revised by**	**Orthopaedic service at SIVUH Clinical lead: Mr. M. Dolan** **Orthopaedic service at SIVUH**
Revision Number	**1**	**Document Approved by** **Date**	**Clinical Governance Committee** **20th March 2023**
Implementation Date **Revised**	**October 2015** **March 2023**	**Responsibility for Implementation**	**Orthopaedic Service at SIVUH**
Next Revision Date	**March 2026**	**Responsibility for Review and Audit**	**Orthopaedic Service at SIVUH**

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Table of Contents Pg. No.

1.0 Guideline Statement:

While in the past, rates of VTE (no prophylaxis) in patients undergoing major orthopedic surgery were reported to be as high as 30 percent, data since then have reported rates less than 5 percent. The American College of Chest Physicians (ACCP) has estimated that the baseline risk for 35 days beyond surgery is 4.3 percent, with the highest risk occurring in the first 7 to 14 days (1.8 percent for symptomatic deep vein thrombosis [DVT] and 1 percent for pulmonary embolism [PE]); rates fall in the subsequent 15 to 35 days (1 and 0.5 percent for symptomatic DVT and PE, respectively) [1].

There is little doubt that prophylaxis for VTE is required in orthopaedic patients undergoing lower limb arthroplasty (hip or knee joint replacement) due to an increased risk and incidence of post-operative VTE. The perioperative administration of anticoagulant prophylaxis has proved to reduce the rates of death and complications associated with VTE after these procedures. Some controversy exists as to the duration of anticoagulation required post operatively with studies recommending between 14 and 35 days of pharmacological thromboprophylaxis.

Both pharmacological and mechanical thromboprophylaxis against VTE occurrence for patients undergoing lower limb arthroplasty at SIVUH will be guided by this document.

2.0 Purpose:

The purpose of this guideline is to develop a standardisation of VTE prophylaxis practice for **lower limb arthroplasty** across the elective orthopaedic service at SIVUH. This will lead to optimisation of VTE

thromboprophylaxis for patients undergoing lower limb arthroplasty at SIVUH.

VTE risk in lower limb arthroplasty is recognised as being high- risk. However obviously, some patients will have individual clinical problems unsuited to the standard regime of VTE thromboprophylaxis and require individualised therapy. Patients requiring bridging anticoagulation pre-op are managed individually at Consultant level in the post operative period for VTE risk and concurrent rationale for anticoagulation are excluded from this document. Deviation from the guideline will be at the behest of the individual Consultants responsible for patient care and on an individual patient basis only.

3.0 Scope:

Medical staff – particularly pharmacological thromboprophylaxis

Nursing staff- particularly mechanical thromboprophylaxis

4.0 Legislation/Related Policies

5.0 Glossary of Terms and Definitions

SIVUH **–** South Infirmary Victoria University Hospital

VTE **-** Venous Thromboembolism

PPI **–** Proton Pump Inhibitor

NSAIDs **–** Non Steroidal Anti Inflammatory Drugs

SSRI's – Selective Serotonin Reuptake Inhibitors

SC – Subcutaneously

PO – Per Oral

Day 0 – Day of Surgery

Day 1 – 1 Day Post Op

Day 2 – 2 Days Post Op

Day 3 – 3 Days Post Op

6.0 Roles and Responsibilities

The overall responsibility for the dissemination and utilisation of this guideline throughout the orthopaedic service is with the orthopaedic Consultant group based at SIVUH. It is the responsibility of the orthopaedic team supervising the care of the patient to ensure the specific requirements for pharmacological VTE thromboprophylaxis are appropriately assessed on an individual patient basis at either pre-operative assessment or at the time of surgery. Consideration of VTE prophylaxis and prescription of pharmacological prophylaxis should occur in operating theatre and be prescribed prior to a patient's return to the ward from theatre or earlier if appropriate. While out of hours medical staff at the SIVUH form part of the continuum of the orthopaedic team, VTE prophylaxis should be prescribed prior to their involvement.

Pharmacological thromboprophylaxis for VTE for lower limb arthroplasty should be prescribed within the parameters of this guideline. Clinical reasons for deviation from the thromboprophylaxis guideline must be documented clearly in the medical notes and available for review by others.

Nursing staff may play an ancillary role in aiding the standardisation of prescription of pharmacological thromboprophylaxis by directing new, temporary or out of hour's orthopaedic or medical staff to the existence and location of the guideline on the intranet.

It will be the responsibility of nursing staff to ensure that mechanical thromboprophylaxis is provided to all patients. Deviation from routine

mechanical prophylaxis will need to be discussed with the orthopaedic service and documented.

7.0 Guideline:

This practice guideline is based on publications from the American College of Chest Physicians (ACCP) 2012 and the American Academy of Orthopaedic Surgeons (AAOS) 2011.

Post operative instructions:

1. All patients should be offered mechanical prophylaxis e.g. foot pumps and/or anti-embolism stockings.
2. Encourage mobilisation as early as clinically possible.
3. All patients who have undergone lower limb arthroplasty should be reminded of the risks of VTE and the associated symptoms to report to nursing/medical staff relating to same.
4. If the risk of bleeding from any site is deemed to outweigh the risk of VTE, this should be documented in the notes and mechanical prophylaxis for VTE should be provided only. Inferior Vena-Cava filters are not recommended in this setting.
5. Enoxaparin 40mg sc once daily is given for three doses (Day 0, Day 1 and Day 2). A reduced dose of Enoxaparin 20mg OD is more appropriate in renally impaired patients with a CrCl <30mls/min. The first dose is commenced 6-12 hours after the end/finish of surgery. For standardisation purposes, the administration time of Enoxaparin 40mg at SIVUH will be at 22.00 hours unless the end/finish of surgery is before 10.00 hours. In this case, the time will be specified by the prescriber. Patient's who are being discharged on day 2 can have their third dose of enoxaparin at 17:00hrs to facilitate discharge.

6. Aspirin 150mg po once daily is commenced on Day 3 - the third day post surgery and continued for 5 weeks post discharge.
7. Enoxaparin should be considered in addition to aspirin for patients who are immobile or poorly mobile. Discontinue enoxaparin once patient is mobile.
8. All patients on Aspirin should be commenced on a Proton Pump Inhibitor (assuming no contraindication) to mitigate/protect against the potential gastrointestinal bleeding from aspirin.

On discharge from hospital:

- Each patient should again be made aware of the signs/symptoms of VTE.
- All patients on Aspirin should concurrently be prescribed a PPI (unless contraindicated) for the duration of the aspirin therapy.
- Each patient should be warned of the risks of GI upset/bleeding, particularly with concomitant drugs which increase the risk of bleeding e.g. Selective Serotonin Reuptake Inhibitors (SSRIs) and non-steroidal anti inflammatory drugs (NSAIDs).
- If NSAIDs are prescribed, there must be a stop date. Ibuprofen may be preferable to Diclofenac as it has a slightly better safety profile.
- There should be a clear stop date for Aspirin.
- If a patient is on Aspirin (usually 75mg) on admission to hospital for other medical reasons before their arthroplasty, there should be a date set to revert to admission dose of aspirin from the VTE prophylaxis dose (150mg).

Patients already on other pre-existing anticoagulant agents:

In General:

Some patients with certain medical conditions are at a very high risk of early post operative thrombosis (e.g. patients with Mitral Valve Replacement) and may require therapeutic level anticoagulation early in the post operative period. These cases are rare and would have been recognised at the pre-operative assessment clinic and reviewed by the Anaesthesiologist and their individual management planned in advance in consultation with the orthopaedic surgeon. These very high risk patient's are excluded from this guideline.

In the past, a significant number of patients required bridging anticoagulation for co-morbid medical conditions. However more recent studies indicate that early post operative therapeutic level anticoagulation is unnecessary and excessively increases the risk of haemorrhage. Therefore, the level of anticoagulation achieved by the post operative prophylactic dose of Enoxaparin provides the most appropriate dose of anticoagulation for the vast majority of medical conditions to balance the risk of thrombosis and haemorrhage.

Patients normally on Warfarin:

Warfarin is usually omitted for 6 doses prior to surgery. An INR is performed preop for warfarinised patients to confirm reversal of effect. For further information on this, please refer to the document "General Guidance List on Discontinuation of Medicines prior to Surgery in SIVUH".

Post-operatively, in addition to the Enoxaparin 40 mg sc once daily (or reduced dose of 20mg OD in renal impairment CrCl <30mls/min) for 3 doses

recommended by this guideline, re-start Warfarin at 1800 on the day after surgery i.e. Day 1, at one and a half times the patient's last pre-operative dose once daily for two days, followed by an INR check prior to the third dose.

Do not administer Aspirin for VTE prophylaxis in addition to Warfarin.

Stop Enoxaparin when INR > 2 for two consecutive days

Patients normally on Aspirin 75mg OD:

Aspirin 75mg is rarely stopped pre-operatively. Prescribe aspirin 75mg od in addition to Enoxaparin 40mg sc once daily(or reduced dose of 20mg OD in renal impairment CrCl <30mls/min) for three doses on Day 0, Day 1 and Day 2. Increase the aspirin dose to 150mg once daily post-operatively on Day 3 for 5 weeks post discharge. Revert to aspirin 75mg after 5 week period.

Patients normally on both Aspirin and Clopidogrel:

Clopidogrel is discontinued 7 days prior to surgery while Aspirin is continued. Aspirin 75mg is rarely stopped pre-operatively. Prescribe aspirin 75mg od in addition to Enoxaparin 40mg sc once daily(or reduced dose of 20mg OD in renal impairment CrCl <30mls/min) for three doses on Day 0, Day 1 and Day 2. Clopidogrel is recommenced after cessation of Enoxaparin on the third day post operatively in combination with **Aspirin 75mg OD**.

Patients normally on Clopidogrel:

Clopidogrel is discontinued 7 days prior to surgery. Prescribe Enoxaparin 40mg sc once daily (or reduced dose of 20mg OD in renal impairment CrCl <30mls/min) for three doses on Day 0, Day 1 and Day 2. Clopidogrel is recommenced after cessation of Enoxaparin on Day 3.

Patients normally on DOACs (Apixaban, Edoxaban. Rivaroxaban and Dabigatran):

DOACs are omitted prior to surgery as per the document "General Guidance List on Discontinuation of Medicines prior to Surgery in SIVUH".

Post-operatively Enoxaparin 40mg sc once daily (or reduced dose of 20mg OD in renal impairment CrCl <30mls/min) is administered for two / three doses as recommended by this guideline on Day 0, Day 1 +/- Day 2.

DOACs may be recommenced on Day 2 / 3 (the second/third post operative day) at the patient's usual dose when there is good clinical evidence that adequate haemostasis has been achieved (oozing, wounds, drains, haemodynamics etc.). Please note that haemorrhage associated with DOACs is difficult to reverse.

DOACs must only be restarted 24 hours after the final Enoxaparin dose has been administered.

Do not administer Aspirin for VTE prophylaxis post operatively in addition to the DOAC.

Allergy to Aspirin

True allergy to Aspirin is rare; patients may indicate an allergy to Aspirin when the real problem is GI intolerance/bleed. If the risk of bleeding is deemed high the ACCP recommends the sole use of mechanical means of VTE prophylaxis.

If a patient has a true allergy an alternative may be considered e.g. LMWH or newer oral anticoagulant e.g.

-Apixaban 2.5mg BD for 10-14 days (TKR) or for 32-38 days (THR)

OR

-Rivaroxaban 10mg OD for 2 weeks in (TKR)and for 5 weeks in (THR).

The DOAC is commenced on Day 2 / 3 - the second / third day post surgery after enoxaparin 40mg sc once daily (or reduced dose of 20mg OD in renal impairment CrCl <30mls/min) is given for two / three doses (Day 0, Day 1 +/- Day2).

DOACs must only be restarted 24 hours after the final Enoxaparin dose has been administered.

Do not administer Aspirin for VTE prophylaxis post operatively in addition to the DOAC.

8.0 Implementation Plan

Communicate the guidelines throughout the orthopaedic service. Communicate and make the guidelines available to relevant SIVUH personnel.

Monitor, review and adjust as necessary.

Provide education if necessary.

9.0 Revision and Audit:

There will be ongoing assessment of these guidelines by the orthopaedic service during clinical practice.

10.0 References:

The American Academy of Orthopaedic Surgeons

Preventing Venous Thromboembolic Disease in Patients Undergoing Elective Hip and Knee Arthroplasty September 2011.

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The American College of Chest Physicians

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"Prevention of VTE in orthopedic surgery patients: antithrombotic therapy and prevention of thrombosis, 9th ed. ACCP evidence-based clinical practice guidelines," Chest, vol. 141, pp. e278–e325, 2012.

http://www.chestnet.org/accp/guidelines/accp-antithrombotic-guidelines-9th-ed-now-available

Thrombosis

Review Article

Thromboembolic Prophylaxis in Total Joint Arthroplasty

David Knesek, Todd C. Peterson, and David C.Markel

Thrombosis Volume 2012, Article ID 837896, 8 pages

doi:10.1155/2012/837896

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New England Journal of Medicine

Aspirin for Preventing the Recurrence of Venous Thromboembolism

Cecilia Becattini, Giancarlo Agnelli, Alessandro Schenone et al

N Engl J Med 2012; 366:1959-67

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Inpatient enoxaparin and outpatient aspirin chemoprophylaxis regimen after primary hip and knee arthroplasty: a preliminary study.

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J Arthroplasty2012 Oct; 27(9):1594-8

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Aspirin Versus Low-Molecular-Weight Heparin for Extended Venous Thromboembolism Prophylaxis After Total Hip Arthroplasty. A Randomized Trial

David R. Anderson, MD; Michael J. Dunbar, MD; Eric R. Bohm, MD et al

Ann Intern Med. 2013;158:800-806.

http://annals.org/article.aspx?articleid=1692573

11.0 Appendices

For the purposes of this document, the day of surgery is referred to as day 0. The day after surgery is day 1. The second day after surgery is day 2. The third day after surgery is day 3.

12.0 Revision History