# Venous Thromboembolism Prevention Policy

## 1. Purpose

The purpose of this policy is to establish minimum practice standards for the care and management of prevention of venous thromboembolism (VTE) throughout the WA Country Health Service (WACHS).

This policy is to be used in conjunction with the WA Health Medication Chart Policy - MP 0078/18 and the Guidelines for the WA Hospital Medication Chart

Further information relating to specialty areas including Child and Adolescent Health Service (CAHS), Women and Newborn Health Services (WHNS) can be found via HealthPoint.

### 1.1 Scope

- All medical, nursing, midwifery, pharmacy and allied health staff employed within the WACHS.
- All health care professionals are to work within their scope of practice appropriate to their level of training and responsibility.
- Patient cohort: All **adult inpatients**, except:
  - Day admitted patients having a procedure under mild sedation or local anaesthetic
  - Children under 12 years old
- Further information may be found via HealthPoint or the Australian Health Practitioner Regulation Agency.

## 2. Policy

### 2.1 Considerations

**Minimum Requirement**

- Assessment of venous thromboembolism (VTE) risk and/or bleeding risk.
- Assessment of bleeding risk/relative contraindications in relation to prophylaxis options.
- Develop a VTE risk minimisation plan in consultation with the patient.
- Treating medical team to document within VTE risk assessment section of the WA Hospital Medication Chart (HMC)
  - Documentation of staff name, date and time of the VTE risk assessment
  - Documentation that VTE risk and/or bleeding risk has been considered
  - Documentation of the management of the VTE risk – i.e. prevention through use of pharmacological and/or mechanical prophylaxis where required
  - Use the MR80A.1 WACHS Antenatal Risk Assessment for VTE Prophylaxis or MR80A.2 WACHS Postnatal Risk Assessment for VTE Prophylaxis for maternity patients
- Document and communicate the plan for management on discharge.

## 2.2 General Information

All patients admitted as inpatients to WACHS are to have a VTE risk assessment and a prophylaxis plan documented in the healthcare record (as appropriate) within 24 hours of a patient's admission or prior to any elective and day surgery in pre-admission/anaesthetic clinics. Medical staff should consider the risk of developing a VTE, risk of bleeding and any relative contraindications to prevention strategies in the assessment and involve the patient in developing a management plan.

Treatment recommendations do not cover all clinical scenarios and do not replace the need for clinical judgement. The following resources may be useful to guide clinicians in decision making:

- Australian Commission on Safety and Quality in Health Care: Venous Thromboembolism Prevention Clinical Care Standard
- Stroke Foundation: Living Clinical guidelines for stroke management
- Arthroplasty Society of Australia guidelines for VTE prophylaxis for hip and knee arthroplasty
- Therapeutic Guidelines: Cardiovascular – Venous thromboembolism: prophylaxis
- European Society of Anaesthesiology and Intensive Care

General measures for VTE prophylaxis should be considered for all patients including:

- early mobilisation
- adequate hydration
- leg exercises and functional activity programs.

## 2.3 Assessment of VTE Risk

Initial risk assessment should be completed within 24 hours of a patient's admission.[1] This assessment may be completed as part of a preadmission appointment for elective surgery patients. VTE risk should be reassessed regularly (as a minimum every 7 days[(1)]) or if a patient's clinical condition changes.

### VTE risk factors

The presence of multiple risk factors leads to a higher risk of associated VTE complications. Some risk factors are listed below.[2]

For maternity patients refer to the MR80A.1 WACHS Antenatal Risk Assessment for VTE Prophylaxis or MR80A.2 WACHS Postnatal Risk Assessment for VTE Prophylaxis.

| Risk factors for VTE complications | |
|---|---|
| History of VTE | Cancer therapy<br>(hormonal, chemotherapy, or radiotherapy) |
| Increasing age<br>(incidence of VTE rises with each decade > 40 years of age) | Obesity (BMI > 30 kg/m$^2$) |

| | |
|---|---|
| Prolonged severe immobility including limb immobility | Acute ischaemic stroke with immobility |
| Inherited or acquired thrombophilia | Acute/acute on chronic chest infection |
| Oestrogen-containing hormone replacement therapy (HRT) or oral contraceptive | Heart or respiratory failure |
| Inflammatory bowel disease | Active rheumatic disease |
| Malignancy (active or occult) | Acute myocardial infarction |
| Myeloproliferative disorders | Rheumatologic disorders |
| Varicose veins with phlebitis | Smoking |
| All surgical procedures but especially abdominal, pelvic, thoracic and orthopaedic surgery | |

## 2.4 Bleeding Risk Assessment and Relative Contraindications for Prophylaxis

Patients at increased risk of bleeding have a relative contraindication to pharmacological management of VTE risk. Mechanical prophylaxis may cause reduced blood flow, contribute to pressure ulcers and can exacerbate peripheral arterial disease or arterial ulcer. See Appendix A for additional information.

Clinicians should consider and document any relative contraindications for VTE prophylaxis.

Pharmacological prophylaxis should be withheld for 6 hours after lumbar puncture, epidural or spinal anaesthetic or if these are planned within the next 12 hours. Consult with an anaesthetist if unsure. Specific requirements for administration after epidural removal are documented on the MR170.2 WACHS Epidural/Spinal Prescription and Additional Observation Chart.

There may be a delay in the administration or initiation of pharmacological prophylactic agents post procedures. Where unclear, the treating medical team should be consulted.

## 2.5 VTE prophylaxis

### Pharmacological prophylaxis

A range of pharmacological agents (medicines) are available for prophylaxis. Clinicians should consult current literature and guidelines for their specialities to determine the most appropriate medicine for patients. Medicines commonly available in WACHS include:

- Low molecular weight heparin (e.g. enoxaparin) (LMWH)[3]
  - Enoxaparin 40 mg subcutaneously once daily
  - Enoxaparin 20 mg subcutaneously once daily for CrCl < 30 mL/minute
- Low dose unfractionated heparin (LDUH)[3]
  - Heparin 5,000 units subcutaneously every 12 hours
  - Heparin 5,000 units subcutaneously every 8 hours for patients at high risk of VTE

**Note:**
- Heparins, including low molecular weight heparin formulations, are contraindicated in patients with a history of heparin induced thrombocytopenia (HIT). Discuss options with a haematologist.
- Patients who develop thrombocytopenia (platelet levels below 150 x $10^9$ or a 50% reduction in platelets) are at risk of HIT and should be discussed with a haematologist.

Hip and knee arthroplasty is considered a high risk procedure for VTE. Direct acting oral anticoagulants (DOAC) may be an option for these patients.
- Apixaban orally 2.5 mg twice a day commencing 12-24 hours post operatively[3]
- Dabigatran orally 110 mg daily 1-4 hours post operatively, followed by 220 mg once daily[3]
- Rivaroxaban orally 10 mg once daily commencing 6-10 hours post operatively provided haemostasis has been established[3]

Duration is generally 10-14 days post knee arthroplasty and 28-35 days post hip arthroplasty.[3]

Aspirin is also considered an option for use after hip and knee arthroplasty.[4] Low dose aspirin (100 mg daily) appears to be as effective as higher doses.[5]

Obese patients may require higher doses for VTE prophylaxis.[6] Seek specialist advice for these patients.

**Mechanical Prophylaxis**
- Graduated Compression Stockings (GCS)
- Intermittent Pneumatic Compression (IPC)
- Venous Foot Pumps (VFP)

## 2.6 Equipment Required

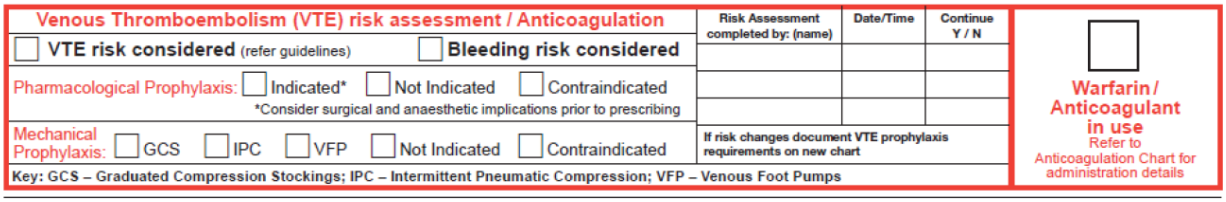
- Various graduated compression stocking sizes
- Tape measures
- Medicines for prophylaxis and reversal agents
- Intermittent Pneumatic Compression (IPC) devices such as foot Flowtron® devices
- Venous Foot Pumps (VFP)
- Equipment must be appropriate for the age and/or size of the patient cohort of the clinical area.
- Equipment must be serviced and calibrated in accordance with manufacturer's recommendations to ensure reliability and accuracy.
- Equipment stocks to be maintained for mechanical preventative equipment.

## 2.7 Clinical Communication and Documentation

**Clinical Handover**

Information exchange is to adhere to the WA Health - Clinical Handover Policy - MP 0095 using the iSoBAR framework.

**Documentation**



| Venous Thromboembolism (VTE) risk assessment / Anticoagulation | Risk Assessment completed by: (name) | Date/Time | Continue Y / N | |
|---|---|---|---|---|
| ☐ VTE risk considered (refer guidelines) ☐ Bleeding risk considered | | | | ☐ Warfarin / Anticoagulant in use Refer to Anticoagulation Chart for administration details |
| Pharmacological Prophylaxis: ☐ Indicated* ☐ Not Indicated ☐ Contraindicated *Consider surgical and anaesthetic implications prior to prescribing | | | | |
| Mechanical Prophylaxis: ☐ GCS ☐ IPC ☐ VFP ☐ Not Indicated ☐ Contraindicated | If risk changes document VTE prophylaxis requirements on new chart | | | |
| Key: GCS – Graduated Compression Stockings; IPC – Intermittent Pneumatic Compression; VFP – Venous Foot Pumps | | | | |

The VTE risk assessment section on the WA HMC is designed to prompt documentation of:

- VTE risk assessment and bleeding risk assessment
- contraindications to VTE prophylaxis (pharmacological and mechanical)
- prescribing of pharmacological and mechanical VTE prophylaxis, if indicated.

The clinician responsibility for assessing a patient's VTE risk (usually the admitting medical officer) should review the VTE risk, bleeding risk and contraindications, then document the outcome on the WA HMC.

For patients with multiple charts, the VTE risk assessment should be documented on the first chart.

**Patient Education**

During their admission and on discharge all patients and/or their family/carers should be offered verbal and written information relevant to them by clinical staff on:

- risk factors for developing a Deep Vein Thrombosis (DVT)/Pulmonary Embolus (PE)
- signs and symptoms of DVT and PE
- importance of seeking medical guidance and who to contact if DVT, PE or other adverse event suspected
- importance of using VTE prophylaxis at home correctly and for the recommended duration
- signs and symptoms of adverse events related to VTE prophylaxis.

There are a range of resources available online:

- Healthy WA Deep Vein Thrombosis
- Australian Commission on Safety and Quality in Health Care (ACSQHC) Consumer Fact Sheet: Venous Thromboembolism Prevention Clinical Care Standard
- ACSQHC Quick Facts for Consumers: Venous Thromboembolism Prevention Clinical care Standard

**Discharge**

Prior to discharge any plan to continue VTE prophylaxis must be communicated with patients and their carer, including how to use the prophylaxis.

On discharge, clinical staff must ensure that the:

- patient/carer is able to apply/administer the mechanical/pharmacological VTE prophylaxis
- patient's General Practitioner (GP) is notified of VTE prophylaxis measures via the patient's discharge summary.

The provision of information should be included in the patient discharge documentation.

## 3. Roles and Responsibilities

**T**he **treating medical team** are responsible for ensuring that the risk assessment is complete and documented on the relevant hospital medication chart. A plan for VTE prophylaxis on discharge, if required, should be documented in the patient healthcare record and within the discharge summary.
**Nursing staff** are responsible for ensuring options for the prevention of VTE are administered and mechanical prevention measures are used as prescribed.

**Allied Health staff** are responsible for ensuring that education is provided regarding the general prevention of VTE, that mechanical measures are used as prescribed, exercises and activity are prescribed as appropriate, and post-operative screening and education are provided in the rehabilitation setting.

## 4. Monitoring and Evaluation

### 4.1 Monitoring

Managers of clinical areas, health sites and services are responsible for monitoring compliance with this policy.

Any variance from this policy should be under the guidance of a senior medical practitioner and reported by the nurse manager to the Regional Drugs and Therapeutics Committee. This will prompt a review of the policy.

### 4.2 Evaluation

Adverse events and clinical incidents relating to the prescribing and administration of this medicine are to be reported and managed as per the WACHS Medication Prescribing and Administration Policy.

## 5. Compliance

Failure to comply with this policy may constitute a breach of the WA Health Code of Conduct (Code). The Code is part of the Integrity Policy Framework issued pursuant to Section 26 of the *Health Services Act 2016* and is binding on all WACHS staff which for this purpose includes trainees, students, volunteers, researchers, contractors for service (including all visiting health professionals and agency staff) and persons delivering training or education within WACHS.

WACHS staff are reminded that compliance with all policies and procedures is mandatory.

## 6. References

1. ACSQHC. Venous Thromboembolism Prevention Clinical Care Standard [Internet]. 2020 [cited 13 Oct 2022]. Available from: https://www.safetyandquality.gov.au/publications-and-resources/resource-library/venous-thromboembolism-prevention-clinical-care-standard-2020
2. Guyatt GH, Eikelboom JW, Gould MK, Garcia DA, Crowther M, Murad MH, et al. Approach to outcome measurement in the prevention of thrombosis in surgical and

medical patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest [Internet]. 2012 Feb [cited 13 Oct 2022];141(2 Suppl):e185S-e94S. Available from: https://pubmed.ncbi.nlm.nih.gov/22315260/.
3. Australian Medicine Handbook [Internet]. AMH Pty Ltd. 2022 July [cited 13 Oct 2022. Available from: https://amhonline-amh-net-au.wachslibresources.health.wa.gov.au/.
4. Agaba P, Kildow BJ, Dhotar H, Seyler TM, Bolognesi M. Comparison of postoperative complications after total hip arthroplasty among patients receiving aspirin, enoxaparin, warfarin, and factor Xa inhibitors. Journal of Orthopaedics [Internet]. 2017 Dec;14(4):537-43. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5574820/.
5. Faour M, Piuzzi NS, Brigati DP, Klika AK, Mont MA, Barsoum WK, et al. Low-Dose Aspirin Is Safe and Effective for Venous Thromboembolism Prophylaxis Following Total Knee Arthroplasty. The Journal of arthroplasty [Internet]. 2018 March;33(7s):S131-s5.Available from: https://www.arthroplastyjournal.org/article/S0883-5403(18)30236-5/fulltext.
6. Freeman AL, Pendleton RC, Rondina MT. Prevention of venous thromboembolism in obesity. Expert review of cardiovascular therapy [Internet]. 2010 Dec;8(12):1711-21. Available from: https://pubmed.ncbi.nlm.nih.gov/21108553/.

## 7. Definitions

| Term | Definition |
|---|---|
| **Carer** | A person who provides personal care, support and assistance to another individual who needs it because they have a disability, a medical condition (including a terminal or chronic illness) or a mental illness, or are frail and/or aged |
| **Patient** | A person who is receiving care in a health service organisation |

## 8. Document summary

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|---|---|
| **Coverage** | WACHS wide |
| **Audience** | All Clinical Staff |
| **Records Management** | Non Clinical: Records Management Policy<br>Clinical: Health Record Management Policy |
| **Related Legislation** | *Health Services Act 2016* |
| **Related Mandatory Policies / Frameworks** | Clinical Governance, Safety and Quality Framework<br>Clinical Handover Policy – MP 0095<br>Medication Chart Policy – MP 0078/18<br>WA Health Consent to Treatment Policy |
| **Related WACHS Policy Documents** | WACHS Patient Identification Policy |
| **Other Related Documents** | ACSQHC Consumer Fact Sheet – Venous Thromboembolism Prevention Clinical Care Standard<br>ACSQHC Quick Facts for Consumers – Venous Thromboembolism Prevention Clinical care Standard<br>ACSQHC Venous Thromboembolism Prevention Clinical Care Standard<br>WA Health Guidelines for the WA Hospital Medication Chart<br>Healthy WA – Deep Vein Thrombosis |
| **Related Forms** | MR170A WA Hospital Medication Chart – Adult Short Stay<br>MR171 WA Hospital Medication Chart – Adult Long Stay<br>MR170C Anticoagulant Medication Chart<br>MR80A.1 WACHS Antenatal Risk Assessment for VTE Prophylaxis<br>MR80A.2 WACHS Postnatal Risk Assessment for VTE Prophylaxis<br>MR170.2 WACHS Epidural/Spinal Prescription and Additional Observation Chart |
| **Related Training Packages** | Nil |
| **Aboriginal Health Impact Statement Declaration (ISD)** | ISD Record ID: 1801 |
| **National Safety and Quality Health Service (NSQHS) Standards** | 1.07, 4.15, 5.10, 5.11, 5.13, 5.24 |
| **Aged Care Quality Agency Accreditation Standards** | Nil |
| **National Standards for Mental Health** | Nil |

## 9. Document Control

| Version | Published Date | Current from | Summary of changes |
|---|---|---|---|
| 2.00 | 26 March 2019 | 26 March 2019 | |
| 3.00 | 06 January 2023 | 06 January 2023 | • Desktop review of medications.<br>• Moved to new policy template.<br>• Title change to policy (from CPS).<br>• Rivaroxaban to commence post operatively provided haemostasis has been established. |
| 3.01 | 15 October 2024 | 06 January 2023 | Minor amendment: forms |

## 10. Approval

| | |
|---|---|
| **Policy Owner** | EDCE |
| **Co-approver** | EDNMS |
| **Contact** | WACHS Chief Pharmacist |
| **Business Unit** | Pharmacy |
| **EDRMS #** | ED-CO-15-92917 |



**This document can be made available in alternative formats on request.**

# Appendix A: Venous Thromboembolism (VTE) Risk Assessment and Thromboprophylaxis Management Guideline

This appendix should be used in conjunction with the full policy.

## Step 1: Assess the Risk Factors

BASELINE RISK:

- Prior history of VTE
- Pregnancy or puerperium
- Malignancy
- Marked obesity
- Prolonged severe immobility including limb immobility
- Prolonged travel resulting in limited movement
- Oestrogen-containing hormone replacement therapy or oral contraceptive
- Thrombophilia
- Age (incidence of VTE rises with each decade >40 years of age)
- Varicose veins with phlebitis

| Surgical Patients | Medical patients | Obstetric |
|---|---|---|
| **HIGH RISK**<br>• Orthopaedic surgery (hip fracture , pelvic, hip / knee arthroplasty, lower limb<br>• Multiple trauma<br>• Prolonged surgery (> 45 -minutes)<br>• Other surgery with prior VTE or active cancer<br><br>LOW RISK:<br>Consider GCS for all surgery unless contraindicated | **HIGH RISK**<br>• Acute / acute on chronic chest Infection<br>• Congestive heart failure<br>• Myocardial infarction<br>• Stroke with immobility<br>• Undergoing cancer therapy<br>• Acute inflammatory bowel disease<br>• Active rheumatic disease | Refer to<br><br>MR80A.1 WACHS Antenatal Risk Assessment for VTE Prophylaxis<br><br>MR80A.2 WACHS Postnatal Risk Assessment for VTE Prophylaxis |

## Step 2: Bleeding Risk and Relative Contraindication

### Pharmacological Contraindication

- Active bleeding (≥ 2 units of blood products within 24 hours)
- High risk of bleeding or recent major surgery at high risk of bleeding.
- Bleeding disorders
- Severe platelet dysfunction
- Liver disease with associated coagulopathy
- Regional axial anaesthesia or recent lumbar puncture
- Severe renal dysfunction
- High risk of falls – take precautions
- Known hypersensitivity to LMWH or LDUH - consider discussion with haematologist

### Mechanical Contraindications

Mechanical prophylaxis may cause reduced blood flow, pressure ulcers or increase the risk of falls, and are contraindicated with:

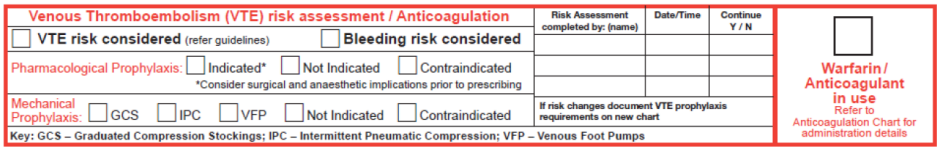
- Morbid obesity (where correct fitting of stocking cannot be achieved)
- Inflammatory conditions of the lower leg
- Severe peripheral vascular disease
- Diabetic neuropathy
- Severe oedema of the leg.
- Severe fall risk

IPC and VFP can exacerbate ischemic disease, so are contraindicated with peripheral arterial disease or arterial ulcers.

## Step 3: Determine Appropriate Prophylaxis

| Surgical patients | Medical patients | Obstetric |
|---|---|---|
| **HIGH RISK** - LMWH or LDUH and GCS / IPC<br><br>LOW RISK – consider GCS<br><br>Other oral agents may be appropriate for THA or TKA | Ischaemic Stroke - LMWH<br><br>General Medical – consider GCS and/or LMWH depending on risk | MR80A.1 WACHS Antenatal Risk Assessment for VTE Prophylaxis<br><br>MR80A.2 WACHS Postnatal Risk Assessment for VTE Prophylaxis |

## Step 4: Document Risk Assessment on WA Hospital Medication Chart




Pharmacological management is prescribed on the Anticoagulant chart. Mechanical treatment are recorded on the care plan

KEY- GCS – Graduated Compression Stocking. IPC – Intermittent Pneumatic Compression. VFP – Venous Foot Pump. LMWH – Low Molecular Weight Heparin. LDUH – Low Dose Unrationed Heparin