1. Purpose

This guideline outlines the requirement for risk assessment, prescribing, administration and monitoring of venous thromboembolism (VTE) prophylaxis for adult women admitted to the Women’s Hospital.

Venous thromboembolism (VTE) is a major cause of morbidity and mortality and is one of the most preventable causes of death\(^2\). Hospitalised women are 100 times more likely to develop VTE than those in the community.

- Pregnancy is a risk factor for VTE\(^3,4\) and is higher post-partum, following caesarean section, preterm or stillbirth or women with a very high body mass index (BMI)\(^5\).
- Major gynaecological surgery has a significant risk of both asymptomatic and symptomatic VTE.

There is a substantial level of evidence supporting the use of pharmacological VTE prophylaxis, together with adequate hydration, early mobilisation and graduated compression stockings (GCS) in hospitalised women with risk factors. Low molecular weight heparin for VTE prophylaxis in pregnant women is preferred\(^,1,5,7\). Aspirin is not first-line therapy for prophylaxis\(^1\).

2. Definitions

- Pharmacological: Medicines used for thromboprophylaxis. This may include the use of low molecular weight heparin, unfractionated heparin, warfarin and/or aspirin
- Mechanical prophylaxis: Stockings, pneumatic compression, early mobilisation and surveillance
- BMI: body mass index
- HRT: hormonal replacement therapy
- IPC: intermittent pneumatic calf compression
- GCS: graduated compression stocking
- LMWH: low molecular weight heparin
- PAC: pre-admission clinic
- ONC-PAC: Oncology pre-admission clinic.

3. Responsibilities

The decision to administer VTE prophylaxis is a team responsibility i.e. both surgeons and anaesthetists have an equal responsibility to consider VTE prophylaxis.

Medical staff responsibilities:

- VTE risk assessment and documentation (should include consideration of age, renal function, co-morbidities, other medicines and appropriate indications/contraindications).
- VTE prophylaxis prescribed when indicated:
  - Caesarean section – VTE prophylaxis to be prescribed by anaesthetists
  - Gynaecology/Oncology – VTE prophylaxis to be prescribed by surgical registrar
  - Antenatal and vaginal birth - Obstetric medical team has overall responsibility for ensuring the VTE risk assessment is performed and documented and VTE prophylaxis is prescribed where indicated.
- Ongoing risk assessment and safety monitoring for VTE prophylaxis.

Nursing/midwifery staff responsibilities:

- Correct administration of prescribed VTE prophylaxis and application of mechanical prophylaxis
- Notify the prescriber when the condition of the patient changes.

4. Guideline

There are 4 steps to ensuring all women at risk receive appropriate VTE prophylaxis: (also see Appendix 1)

**Step 1: Assess the patient for VTE risk.**

**Step 2: Assess for contraindications to VTE prophylaxis.**
Guideline

Venous Thromboembolism (VTE) Prophylaxis Guideline

Reasons for contraindication include active bleeding or a high risk of bleeding. These women require compression stockings and/or sequential compression devices.

Assess patient for CONTRAINDICATIONS to mechanical prophylaxis, e.g. Local trauma to the lower limb.

Step 3: Prescribe VTE prophylaxis.

Prophylaxis should generally be started within 24 hours of admission or after surgery and should be continued until discharge or post-discharge where appropriate.

Step 4: Review the patient.

At discharge, review the patient for the need of extended VTE prophylaxis.

5. Evaluation, monitoring and reporting of compliance to this guideline

Compliance to this guideline will be monitored, evaluated and reported through incidents, and/or audit.

6. References


7. Legislation/Regulations related to this guideline
Not applicable.

8. Appendices
Appendix 1 – Risk Stratification and Recommended VTE Prophylaxis.
Step 1: Assess the patient for VTE prophylaxis

- Every woman on admission to the Women’s hospital must have a formal assessment for VTE prophylaxis which will require review if the clinical status changes.
- The VTE Risk Assessment section on the Medicines Chart must be completed.
- VTE prophylaxis, when indicated, must be prescribed by the medical staff responsible for the care of the patient. The prescription for VTE prophylaxis must include compression stockings when indicated.
- The risk of VTE and the appropriateness of prophylaxis must be reviewed during the patient’s hospital stay to ensure changes to the patient’s clinical condition (e.g. sepsis, bleeding, surgical intervention) are not compromised by prophylaxis treatment.

Risk factors for VTE that require VTE prophylaxis consideration:

| 1. Pregnancy | • Assisted birth (Rotational forceps) |
|             | • Parity of 3 or more                |
|             | • Caesarean birth                    |
|             | • Labour ≥ 24 hours                  |
|             | • Pregnancy related medical illness (such as pre-eclampsia) |
|             | • Stillbirth                         |
| 2. Current cancer                                   |
| 3. Blood dyscrasia                                  |
| • Antiphospholipid syndrome/antibody                |
| • Personal history of VTE                          |
| • Family History or Thrombophilia                  |
| 4. Lower body pathophysiology                       |
| • Major pelvic or abdominal surgery                 |
| • Gross varicose veins                              |
| • Paralysis of lower limbs                          |
| 5. Patient factors (3 or more)                      |
| • Age > 35 years                                    |
| • BMI ≥ 30                                          |
| • Current infection                                 |
| • Continuous travel > 3 hours (air travel) or prolonged immobility |
| • Excessive blood loss                              |
| • Dehydration                                       |
| • Pre-existing major medical illness (e.g. heart/lung disease, inflammatory bowel disease) |
| • Central venous catheter in situ                   |
| • Oral contraceptive or HRT                        |
| • Smoker                                            |

Step 2: Assess the patient for contraindications

Contraindications to pharmacological VTE prophylaxis:

- On current therapeutic anticoagulation
- Active bleeding
- Individual risks of bleeding as assessed by treating doctor or surgeon
- Severe coagulation disorders or haemorrhaging of major organ
Appendix 1

Risk Stratification and Recommended VTE Prophylaxis

- Adverse reaction to low molecular weight heparin e.g. rash, HITTs
- Hepatic failure or renal failure.

Contraindications to mechanical prophylaxis:
- Severe peripheral vascular disease
- Severe peripheral neuropathy
- Severe lower limb oedema
- Extreme leg deformity
- Inflammatory conditions of the lower leg e.g.: ulcer
- Morbid obesity (where correct fitting of GCS cannot be achieved).

For antiplatelet and anticoagulant cessation prior to surgery, refer to the guideline Perioperative Management of Antiplatelet and Anticoagulation in Elective Surgery.

Step 3: Prescribe VTE prophylaxis

The decision about timing of the dose is guided by the responsible surgical unit and/or anaesthetist if the patient had regional anaesthetic.

The low molecular weight heparin of choice for VTE prophylaxis at the Women’s is dalteparin, however other low molecular weight heparins are also available.

Dose of dalteparin for VTE prophylaxis

In general, the dose of VTE prophylaxis depends on the patient’s body weight, age and renal function. In women with normal renal function and < 75 years of age, the recommended dose is according to the table below:

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Dose of dalteparin (in patients with normal renal function)</th>
<th>Dosing frequency (subcutaneous injection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 40kg</td>
<td>2500 units</td>
<td>daily</td>
</tr>
<tr>
<td>40 to 100kg</td>
<td>2500 to 5000 units</td>
<td></td>
</tr>
<tr>
<td>&gt; 100 kg</td>
<td>7500 units</td>
<td></td>
</tr>
</tbody>
</table>

In women with renal impairment or ≥ 75 years, the dose of VTE prophylaxis may need to be reduced. Consult the haematology unit for further advice.

Administration of dalteparin for VTE prophylaxis

The dosing frequency is usually every 24 hours. The timing of the dose is guided by the type of procedure as well as the post-operative bleeding risk.

Unless specified by the surgical treating unit, the following is recommended:

Epidural:
- Epidural catheters should be removed at least 12 hours after a dose of VTE prophylaxis
- Following epidural catheter removal, subsequent doses of VTE prophylaxis should be administered no earlier than 6 hours after removal and subsequent doses should be administered daily.

Regional anaesthesia:
- Regional anaesthesia should be administered 12 hours AFTER the last dose of VTE prophylaxis
- VTE prophylaxis should be administered no earlier than 6 hours after regional anaesthesia and subsequent doses should be administered daily.

Mechanical VTE prophylaxis

Adequate hydration and early mobilisation reduces the risk of VTE. There is little evidence that mechanical VTE prophylaxis provides added benefit to pharmacological prophylaxis, but intermittent pneumatic compression (IPC) reduces VTE risk in comparison to no prophylaxis.
Appendix 1

Risk Stratification and Recommended VTE Prophylaxis

Mechanical VTE prophylaxis (such as graduated compression stockings (GCS) or IPC) is recommended for women who have contraindications to pharmacological VTE prophylaxis or as an adjunctive therapy in women with a high risk of VTE.

Mechanical VTE prophylaxis must be prescribed or initiated on the medicines chart.

- GCS must be measured and fitted for each woman and should be worn continuously
- Ideally IPC should begin at induction of anaesthesia and continue post-operatively unless contraindicated.

Step 4: Review the patient

Duration of dalteparin for VTE prophylaxis

The decision regarding the duration of prophylaxis should be made for each patient individually. Generally, VTE prophylaxis is recommended to be continued until the patient is fully mobile or for 7-10 days following gynaecology/oncology surgery and 5-7 days following caesarean birth.

High-risk patients:

- Obstetric patients consider VTE prophylaxis for up to 6 weeks after birth\(^2,8\).
- Women undergoing major abdominal/pelvic surgery for cancer with other risk factors may require extended duration of VTE prophylaxis up to 4 weeks from discharge\(^2,14\).
- For women who developed ovarian hyper-stimulation syndrome while undergoing assisted reproduction, consider VTE prophylaxis for up to 3 months post resolution of the syndrome\(^2\).