INTRODUCTION

- Venous thromboembolism (VTE) is up to ten times more common in pregnant women than in non-pregnant women of the same age and can occur at any stage of pregnancy but the puerperium is the time of highest risk.

RISK FACTORS

Pre-existing

- Previous VTE
- Thrombophilia (see Table below)

<table>
<thead>
<tr>
<th>Heritable</th>
<th>Acquired</th>
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<tbody>
<tr>
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- Age >35 yr
- Obesity (BMI >30 kg/m²) pre- or early pregnancy
- Parity >2
- Smoking
- Medical co-morbidities e.g. sickle cell disease, cardiac disease, proteinuria >3 g/day, inflammatory bowel disease, joint disease or myeloproliferative disorders
- IV drug user
- Gross varicose veins
- Paraplegia

Obstetric

- Multiple pregnancy
- Assisted reproductive therapy
- Pre-eclampsia
- Prolonged labour
- Mid-cavity, rotational operative vaginal delivery
- Caesarean section
- Excessive blood loss (>1 L) requiring transfusion

New onset/transient

- Hyperemesis/dehydration
- Ovarian hyper-stimulation syndrome
- Admission, immobility (>4 days bed rest) e.g. symphysis pubis dysfunction restricting mobility
- Surgical procedure in pregnancy or puerperium

Ongoing individual risk assessment

- Infection (requiring antibiotics or hospital admission) e.g. pneumonia, pyelonephritis
- Long-haul travel (>4 hr)

VTE RISK ASSESSMENT

- Complete local risk assessment proforma for thromboprophylaxis at:
  - antenatal booking
  - antenatal admission

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Perform VTE risk assessment and initiate appropriate action using local VTE assessment tool

General
- Do not allow woman to become dehydrated
- Encourage to mobilise
- If immobilised, arrange leg exercises as soon as possible after surgery
- Consider using regional anaesthesia if appropriate (risk of VTE is higher with general anaesthesia)
- Risk assessment (using local VTE assessment tool) to ascertain if further measures necessary [e.g. graduated compression stockings, low molecular weight heparin (LMWH)]

Graduated compression stockings (GCS)
- On admission, offer GCS, unless contraindicated (see below)
- Staff trained in the use of compression stockings should show woman how to wear them correctly and monitor their use
- Encourage women to wear GCS from admission until they return to their usual levels of mobility

Contraindications to GCS
- Peripheral vascular disease
- Severe dermatitis
- Recent skin graft
- Leg deformity
- Peripheral neuropathy

Low molecular weight heparin (LMWH)
- If risk of bleeding, give thromboprophylaxis in 2 divided doses
- One week thromboprophylaxis in most women but 6 weeks if high risk, including previous VTE

Standard thromboprophylaxis dose

<table>
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<tr>
<th>Early pregnancy weight</th>
<th>Dalteparin</th>
<th>Enoxaparin</th>
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<tr>
<td>&lt;50 kg</td>
<td>2500 units once daily</td>
<td>20 mg daily</td>
</tr>
<tr>
<td>50–90 kg</td>
<td>5000 units once daily</td>
<td>40 mg daily</td>
</tr>
<tr>
<td>91–130 kg</td>
<td>7500 units once daily</td>
<td>60 mg daily</td>
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<tr>
<td>131–170 kg</td>
<td>10000 units once daily</td>
<td>80 mg daily</td>
</tr>
<tr>
<td>&gt;170 kg</td>
<td>75 units/kg/day</td>
<td>0.6 mg/kg/day</td>
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High thromboprophylaxis dose
- If high thromboprophylaxis dose required, seek advice from haematologist
- Any woman weighing >90 kg (booking weight) receiving high dose low molecular weight thromboprophylaxis – check anti-Xa levels
- anti-Xa cannot be carried out as an urgent test and result may not be available for 2–3 days but would at least guide subsequent treatment
- If woman at very high risk of VTE or previously on long-term anticoagulation – Refer to thrombosis clinic or seek advice from haematologist
Contraindications to LMWH
- Active bleeding
- Platelet count <75 x 10^9/L
- Coagulopathies
- Renal impairment
- Uncontrolled hypertension (>200 systolic or >120 diastolic)
- Allergy to heparin/LMWH

Administration of LMWH and use of epidural/spinal anaesthesia – Precautions
- If vaginal bleeding or labour begins, stop LMWH
- Discontinue prophylactic LMWH on day of planned delivery
- High prophylactic dose or therapeutic dose – change to prophylactic dose on day before planned delivery
- Before carrying out regional anaesthetic procedures, (i.e. insertion of epidural catheter or administration of a spinal injection) you must record when the most recent dose of LMWH was given and follow the steps below:
  - wait 12 hr after a prophylactic dose of LMWH
  - wait 24 hr after a therapeutic dose of LMWH
  - After insertion/removal of an epidural catheter (or after insertion of a spinal anaesthetic) you must review the time that has elapsed before administering a dose of LMWH. LMWH can be given postnatally while epidural is in situ.
  - a prophylactic dose of LMWH can be given 4 hr after removal of epidural catheter
  - Do not remove epidural catheter within 10–12 hr of most recent LMWH