1 Guideline summary

1.1 Full list of recommendations

Risk assessment

1.1.1 Assess all patients to identify the risk of venous thromboembolism (VTE) and bleeding (see recommendations 1.1.2, 1.1.5, 1.1.9, 1.4.17 and 1.4.23).

People admitted to hospital

Medical patients

1.1.2 Assess all medical patients to identify the risk of VTE and bleeding:

- as soon as possible after admission to hospital or by the time of the first consultant review
- using a tool published by a national UK body, professional network or peer-reviewed journal. The most commonly used risk assessment tool for medical patients is the Department of Health VTE risk assessment tool[a] (see Appendix T). [**2018]**

1.1.3 Balance the person's individual risk of VTE against their risk of bleeding when deciding whether to offer pharmacological thromboprophylaxis to medical patients. **[2018]**

1.1.4 If using pharmacological VTE prophylaxis for medical patients, start it as soon as possible and within 14 hours of admission, unless otherwise stated in the population-specific recommendations (see chapters 9-13). **[2018]**

Surgical and trauma patients

1.1.5 Assess all surgical and trauma patients to identify the risk of VTE and bleeding:

- as soon as possible after admission to hospital or by the time of the first consultant review
- using a tool published by a national UK body, professional network or peer-reviewed journal. The most commonly used risk assessment tool for surgical patients is the Department of Health VTE risk assessment tool[b] (See Appendix T). **[2018]**

1.1.6 Balance the person's individual risk of VTE against their risk of bleeding when deciding whether to offer pharmacological thromboprophylaxis to surgical and trauma patients. **[2018]**

1.1.7 If using pharmacological VTE prophylaxis for surgical and trauma patients, start it as soon as possible and within 14 hours of admission, unless otherwise stated in the population-specific recommendations (see chapters 9-13). **[2018]**

Reassessment of risk of VTE and bleeding

1.1.8 Reassess all medical, surgical and trauma patients for risk of VTE and bleeding at the point of consultant review or if their clinical condition changes. **[2018]**

Pregnant women and women who gave birth or had a miscarriage or termination of pregnancy in the past 6 weeks

1.1.9 Assess all women on admission to hospital or midwife-led unit if they are pregnant or gave birth, had a miscarriage or had a termination of pregnancy in the past 6 weeks, to identify their

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risk of VTE and bleeding. Use a tool published by a national UK body, professional network or peer-reviewed journal. The most commonly used risk assessment tool was developed by the Royal College of Obstetricians and Gynaecologists[c] (See Appendix U). **[2018]**

1.1.10 Reassess risk of VTE and bleeding, and assess the need for thromboprophylaxis for all women:

- within 6 hours of giving birth, having a miscarriage or having a termination of pregnancy **or**
- if their clinical condition changes **and** they:
  - are pregnant **or**
  - gave birth, had a miscarriage or had a termination of pregnancy within the past 6 weeks. **[2018]**

1.2 Giving information and planning for discharge

1.2.1 On admission ensure that people understand the reason for having a risk assessment for VTE and bleeding. **[2018]**

1.2.2 For people admitted to hospital who are at increased risk of VTE, give them and their family members or carers (as appropriate) verbal and written information on the following before offering VTE prophylaxis:

- the person's risks and possible consequences of VTE
- the importance of VTE prophylaxis and its possible side effects – for example, pharmacological prophylaxis can increase bleeding risk
- the correct use of VTE prophylaxis – for example, anti-embolism stockings, intermittent pneumatic compression
- how people can reduce their risk of VTE (such as keeping well hydrated and, if possible, exercising and becoming more mobile). **[2018]**

1.2.3 Be aware that heparins are of animal origin and this may be of concern to some people[d]. Discuss the alternatives with people who have concerns about using animal products, after discussing their suitability, advantages and disadvantages with the person. **[2018]**

1.2.4 As part of the discharge plan, give patients and their family members or carers (as appropriate) verbal and written information on:

- the signs and symptoms of deep vein thrombosis (DVT) and pulmonary embolism (PE)
- how people can reduce their risk of VTE (such as keeping well hydrated and, if possible, exercising and becoming more mobile)
- the importance of seeking help if DVT, PE or other adverse events are suspected. **[2018]**

1.2.5 Give people discharged with VTE prophylaxis and their family members or carers (as appropriate) verbal and written information on:

- the importance of using VTE prophylaxis correctly (including the correct administration and disposal of pharmacological prophylaxis)

c Reproduced from: Royal College of Obstetricians and Gynaecologists. Reducing the risk of venous thromboembolism during pregnancy and the puerperium. Green-top Guideline No. 37a. London: RCOG, 2015, with the permission of the Royal College of Obstetricans and Gynaecologists.

d See Religion or belief: a practical guide for the NHS.

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- the importance of continuing treatment for the recommended duration
- the signs and symptoms of adverse events related to VTE prophylaxis
- the importance of seeking help and who to contact if people have problems using VTE prophylaxis. **[2018]**

1.2.6 Ensure that people who are discharged with anti-embolism stockings:

- understand the benefits of wearing them
- understand the importance of wearing them correctly
- understand the need to remove them daily for hygiene purposes
- are able to remove and replace them, or have someone available who will be able to do this for them
- know what to look for if there is a problem – for example, skin marking, blistering or discolouration, particularly over the heels and bony prominences
- know who to contact if there is a problem
- know when to stop wearing them. **[2018]**

1.2.7 Ensure that people who are discharged with pharmacological and/or mechanical VTE prophylaxis are able to use it correctly, or have arrangements made for someone to be available who will be able to help them. **[2018]**

1.2.8 Notify the person's GP if the person has been discharged with pharmacological and/or mechanical VTE prophylaxis to be used at home. **[2018]**

1.3 All patients

Mechanical prophylaxis

1.3.1 Do not offer anti-embolism stockings to people who have:

- suspected or proven peripheral arterial disease
- peripheral arterial bypass grafting
- peripheral neuropathy or other causes of sensory impairment
- any local conditions in which anti-embolism stockings may cause damage – for example, fragile 'tissue paper' skin, dermatitis, gangrene or recent skin graft
- known allergy to material of manufacture
- severe leg oedema
- major limb deformity or unusual leg size or shape preventing correct fit.

Use caution and clinical judgement when applying anti-embolism stockings over venous ulcers or wounds. **[2010, amended 2018]**

1.3.2 Ensure that people who need anti-embolism stockings have their legs measured and that they are provided with the correct size of stocking. Anti-embolism stockings should be fitted and patients shown how to use them by staff trained in their use. **[2010]**

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1.3.3 Ensure that people who develop oedema or postoperative swelling have their legs re-measured and anti-embolism stockings refitted. **[2010]**

1.3.4 If arterial disease is suspected, seek expert opinion before fitting anti-embolism stockings. **[2010]**

1.3.5 Use anti-embolism stockings that provide graduated compression and produce a calf pressure of 14–15 mmHg. (This relates to a pressure of 14–18 mmHg at the ankle and is in line with British Standards 6612:1985 Specification for graduated compression hosiery and 7672:1993 Specification for compression, stiffness and labelling of anti-embolism hosiery.) **[2010]**

1.3.6 Encourage people to wear their anti-embolism stockings day and night until they no longer have significantly reduced mobility. **[2010]**

1.3.7 Remove anti-embolism stockings daily for hygiene purposes and to inspect skin condition. In people with a significant reduction in mobility, poor skin integrity or any sensory loss, inspect the skin 2 or 3 times a day, particularly over the heels and bony prominences. **[2010]**

1.3.8 Monitor the use of anti-embolism stockings and offer assistance if they are not being worn correctly. **[2010]**

1.3.9 Stop the use of anti-embolism stockings if there is marking, blistering or discolouration of the skin, particularly over the heels and bony prominences, or if the person experiences pain or discomfort. If suitable, offer intermittent pneumatic compression as an alternative. **[2010, amended 2018]**

1.3.10 Do not offer intermittent pneumatic compression to people with a known allergy to the material of manufacture. **[2010, amended 2018]**

1.3.11 Advise the person to wear their device for as much time as possible. **[2010, amended 2018]**

Pharmacological prophylaxis

1.3.12 For pharmacological VTE prophylaxis in people under 18 follow the recommendations on apixaban, aspirin, dabigatran etexilate, fondaparinux sodium, LMWH and rivaroxaban in this guideline. At the time of publication (March 2018) these drugs did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information. **[2018]**

All surgery

1.3.13 Advise people to consider stopping oestrogen-containing oral contraceptives or hormone replacement therapy 4 weeks before elective surgery. If stopped, provide advice on alternative contraceptive methods. **[2010]**

Nursing care: early mobilisation and hydration

1.3.14 Encourage people to mobilise as soon as possible. **[2010]**

1.3.15 Do not allow people to become dehydrated unless clinically indicated. **[2010]**

People using antiplatelet agents

1.3.16 Consider VTE prophylaxis for people who are having antiplatelet agents for other conditions and whose risk of VTE outweighs their risk of bleeding. Take into account the risk of bleeding and of comorbidities such as arterial thrombosis.

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- If the risk of VTE outweighs the risk of bleeding, consider pharmacological VTE prophylaxis based on their condition or procedure.
- If the risk of bleeding outweighs the risk of VTE, consider mechanical VTE prophylaxis. **[2018]**

People using anticoagulation therapy

1.3.17 Consider VTE prophylaxis for people at increased risk of VTE who are interrupting anticoagulant therapy. [2018]

1.4 Medical patients

Acute coronary syndromes

1.4.1 Be aware that people receiving anticoagulant drugs as part of their treatment for an acute coronary syndrome do not usually need VTE prophylaxis. See also recommendation 1.3.17. **[2018]**

Acute stroke patients

1.4.2 Do not offer anti-embolism stockings for VTE prophylaxis to people who are admitted for acute stroke. **[2010, amended 2018]**

1.4.3 Consider intermittent pneumatic compression for VTE prophylaxis for people who are immobile and admitted with acute stroke. If using, start it within 3 days of acute stroke. **[2018]**

1.4.4 Explain to the person admitted with acute stroke and their family members or carers (as appropriate) that intermittent pneumatic compression:

- reduces the risk of deep vein thrombosis and may increase their chances of survival
- will not help them recover from stroke, and there may be an associated increased risk of surviving with severe disability. **[2018]**

1.4.5 When using intermittent pneumatic compression for people who are admitted with acute stroke, provide it for 30 days or until the person is mobile or discharged, whichever is sooner. **[2018]**

Acutely ill medical patients

1.4.6 Offer pharmacological VTE prophylaxis for a minimum of 7 days to acutely ill medical patients whose risk of VTE outweighs their risk of bleeding:

- Use low-molecular-weight heparin (LMWH)[e] as first-line treatment.

If LMWH[f] is contraindicated use fondaparinux sodium[g]. **[2018]**

[e] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[f] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[g] At the time of publication (March 2018), fondaparinux sodium did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full

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People with renal impairment

1.4.7 If using pharmacological VTE prophylaxis for people with renal impairment choose either LMWH[h] or unfractionated heparin (UFH). **[2018]**

1.4.8 If needed, reduce the dose of LMWH[i] and UFH for people with renal impairment. Base the decision on multidisciplinary or senior opinion, or locally agreed protocols. **[2018]**

People with cancer

1.4.9 Do not offer VTE prophylaxis to people with cancer who are receiving cancer modifiying treatments such as radiotherapy, chemotherapy or immunotherapy and who are mobile, except as outlined in recommendations 1.4.10 and 1.4.11, unless they are also at increased risk of VTE because of something other than the cancer. **[2018]**

1.4.10 Consider pharmacological VTE prophylaxis for people with myeloma who are receiving chemotherapy with thalidomide, pomalidomide or lenalidamide with steroids. Choose either:

- aspirin[j] (75 or 150 mg) **or**
- LMWH[k]. **[2018]**

1.4.11 Consider pharmacological VTE prophylaxis with LMWH[l] for people with pancreatic cancer who are receiving chemotherapy. **[2018]**

1.4.12 If giving VTE prophylaxis to people with cancer (see recommendations 1.4.10 and 1.4.11) continue for as long as they are receiving chemotherapy. **[2018]**

Palliative care

1.4.13 Consider pharmacological VTE prophylaxis for people who are having palliative care. Take into account temporary increases in thrombotic risk factors, risk of bleeding, likely life expectancy and the views of the person and their family members or carers (as appropriate):

- Use LMWH[m] as first-line treatment.

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responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[h] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[i] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

j At the time of publication (March 2018), aspirin did not have a UK marketing authorisation for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[k] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[l] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[m] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the

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- If LMWH[n] is contraindicated use fondaparinux sodium[o]. **[2018]**

1.4.14 Do not offer VTE prophylaxis to people in the last days of life. **[2018]**

1.4.15 For recommendations on shared decision-making in the last days of life, see the NICE guideline on care of dying adults in the last days of life. **[2018]**

1.4.16 Review VTE prophylaxis daily for people who are having palliative care, taking into account the views of the person, their family members or carers (as appropriate) and the multidisciplinary team. **[2018]**

People admitted to critical care

1.4.17 Assess all people admitted to the critical care unit for risk of VTE and bleeding. **[2018]**

1.4.18 Provide LMWH[p] to people admitted to the critical care unit if pharmacological VTE prophylaxis is not contraindicated. For people with renal impairment see recommendations 1.4.7 and 1.4.8. **[2018]**

1.4.19 Consider mechanical VTE prophylaxis for people admitted to the critical care unit if pharmacological prophylaxis is contraindicated based on their condition or procedure. **[2018]**

1.4.20 If using mechanical VTE prophylaxis for people admitted to the critical care unit, start it on admission and continue until the person no longer has reduced mobility relative to their normal or anticipated mobility. **[2018]**

1.4.21 Reassess VTE and bleeding risk daily for people in critical care units. **[2018]**

1.4.22 Assess VTE and bleeding risk more than once a day in people admitted to the critical care unit if the person's condition is changing rapidly. **[2018]**

People with psychiatric illness

1.4.23 Assess all acute psychiatric patients to identify their risk of VTE and bleeding:

- as soon as possible after admission to hospital or by the time of the first consultant review
- using a tool published by a national UK body, professional network or peer-reviewed journal. The most commonly used risk assessment tool for hospital patients is the Department of Health VTE risk assessment tool[q] (See Appendix T). **[2018]**

1.4.24 Reassess all people admitted to an acute psychiatric ward for risk of VTE and bleeding at the point of consultant review or if their clinical condition changes. **[2018]**

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decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[n] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[o] At the time of publication (March 2018), fondaparinux sodium did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[p] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

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1.4.25 Consider pharmacological VTE prophylaxis with LMWH[r] for people admitted to an acute psychiatric ward whose risk of VTE outweighs their risk of bleeding. **[2018]**

1.4.26 Consider pharmacological VTE prophylaxis with fondaparinux sodium[s] if LMWH[t] is contraindicated for people admitted to an acute psychiatric ward whose risk of VTE outweighs their risk of bleeding. **[2018]**

1.4.27 Continue pharmacological VTE prophylaxis for people admitted to an acute psychiatric ward until the person is no longer at increased risk of VTE. **[2018]**

1.5 Surgical and trauma patients

Anaesthesia

1.5.1 Consider regional anaesthesia for individual patients, in addition to other methods of VTE prophylaxis, as it carries a lower risk of VTE than general anaesthesia. Take into account the person's preferences, their suitability for regional anaesthesia and any other planned method of VTE prophylaxis. **[2010]**

1.5.2 If regional anaesthesia is used, plan the timing of pharmacological VTE prophylaxis to minimise the risk of epidural haematoma. If antiplatelet or anticoagulant agents are being used, or their use is planned, refer to the summary of product characteristics for guidance about the safety and timing of these in relation to the use of regional anaesthesia. **[2010]**

1.5.3 Do not routinely offer pharmacological or mechanical VTE prophylaxis to people undergoing a surgical procedure with local anaesthesia by local infiltration with no limitation of mobility. **[2010]**

Lower limb immobilisation

1.5.4 Consider pharmacological VTE prophylaxis with LMWH[u] or fondaparinux sodium[v] for people with lower limb immobilisation whose risk of VTE outweighs their risk of bleeding. Consider stopping prophylaxis if lower limb immobilisation continues beyond 42 days. **[2018]**

Fragility fractures of the pelvis, hip and proximal femur

[r] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[s] At the time of publication (March 2018), fondaparinux sodium did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[t] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[u] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[v] At the time of publication (March 2018), fondaparinux sodium did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

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1.5.5 Offer VTE prophylaxis for a month to people with fragility fractures of the pelvis, hip or proximal femur if the risk of VTE outweighs the risk of bleeding Choose either:

- LMWH[w], starting 6–12 hours after surgery **or**
- fondaparinux sodium[x], starting 6 hours after surgery, providing there is low risk of bleeding. **[2018]**

1.5.6 Consider pre-operative VTE prophylaxis for people with fragility fractures of the pelvis, hip or proximal femur if surgery is delayed beyond the day after admission. Give the last dose no less than 12 hours before surgery for LMWH[y] or 24 hours before surgery for fondaparinux sodium[z]. **[2018]**

1.5.7 Consider intermittent pneumatic compression for people with fragility fractures of the pelvis, hip or proximal femur at the time of admission if pharmacological prophylaxis is contraindicated. Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. **[2018]**

Elective hip replacement

1.5.8 Offer VTE prophylaxis to people undergoing elective hip replacement surgery whose risk of VTE outweighs their risk of bleeding. Choose any one of:

- LMWH[aa] for 10 days followed by aspirin[bb] (75 or 150 mg) for a further 28 days.
- LMWH[cc] for 28 days combined with anti-embolism stockings (until discharge).
- Rivaroxaban[dd]. Rivaroxaban, within its marketing authorisation, is recommended as an option for the prevention of venous thromboembolism in adults having elective total hip

[w] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[x] At the time of publication (March 2018), fondaparinux sodium did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

y At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

z At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information

[aa] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

bb At the time of publication (March 2018), aspirin did not have a UK marketing authorisation for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[cc] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

dd At the time of publication (March 2018), rivaroxaban did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for

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replacement surgery or elective total knee replacement surgery. [This text is from Rivaroxaban for the prevention of venous thromboembolism after total hip or total knee replacement in adults (NICE technology appraisal guidance 170).] **[2018]**

1.5.9 Consider one of the following if none of the options in recommendation 1.5.8 can be used:

- Apixaban[ee] is recommended as an option for the prevention of venous thromboembolism in adults after elective hip or knee replacement surgery. [This text is from Apixaban for the prevention of venous thromboembolism after total hip or knee replacement in adults (NICE technology appraisal guidance 245).]

- Dabigatran etexilate[ff], within its marketing authorisation, is recommended as an option for the primary prevention of venous thromboembolic events in adults who have undergone elective total hip replacement surgery or elective total knee replacement surgery. [This text is from Dabigatran etexilate for the prevention of venous thromboembolism after hip or knee replacement surgery in adults (NICE technology appraisal guidance 157).]

1.5.10 Consider anti-embolism stockings until discharge from hospital if pharmacological interventions are contraindicated in people undergoing elective hip replacement surgery. **[2018]**

Elective knee replacement

1.5.11 Offer VTE prophylaxis to people undergoing elective knee replacement surgery whose VTE risk outweighs their risk of bleeding. Choose any one of:

- Aspirin[gg] (75 or 150 mg) for 14 days.

- LMWH[hh] for 14 days combined with anti-embolism stockings until discharge.

- Rivaroxaban[ii]. Rivaroxaban, within its marketing authorisation, is recommended as an option for the prevention of venous thromboembolism in adults having elective total hip replacement surgery or elective total knee replacement surgery. [This text is from Rivaroxaban for the prevention of venous thromboembolism after total hip or total knee replacement in adults (NICE technology appraisal guidance 170).] [2018]

1.5.12 Consider one of the following if none of the options in recommendation 1.5.11 can be used:

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the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

ee At the time of publication (March 2018), rivaroxaban did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

ff At the time of publication (March 2018), rivaroxaban did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

gg At the time of publication (March 2018), aspirin did not have a UK marketing authorisation for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

hh At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

ii At the time of publication (March 2018), rivaroxaban did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

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- Apixaban[jj] is recommended as an option for the prevention of venous thromboembolism in adults after elective hip or knee replacement surgery. [This text is from Apixaban for the prevention of venous thromboembolism after total hip or knee replacement in adults (NICE technology appraisal guidance 245).]

- Dabigatran etexilate[kk], within its marketing authorisation, is recommended as an option for the primary prevention of venous thromboembolic events in adults who have undergone elective total hip replacement surgery or elective total knee replacement surgery. [This text is from Dabigatran etexilate for the prevention of venous thromboembolism after hip or knee replacement surgery in adults (NICE technology appraisal guidance 157).]

1.5.13 Consider intermittent pneumatic compression if pharmacological prophylaxis is contraindicated in people undergoing elective knee replacement surgery. Continue until the person is mobile. **[2018]**

Non-arthroplasty orthopaedic knee surgery

1.5.14 Be aware that VTE prophylaxis is generally not needed for people undergoing arthroscopic knee surgery where:

- total anaesthesia time is less than 90 minutes **and**

- the person is at low risk of VTE. **[2018]**

1.5.15 Consider LMWH[ll] 6–12 hours after surgery for 14 days for people undergoing arthroscopic knee surgery if:

- total anaesthesia time is more than 90 minutes **or**

- the person's risk of VTE outweighs their risk of bleeding. **[2018]**

1.5.16 Consider VTE prophylaxis for people undergoing other knee surgery (for example, osteotomy or fracture surgery) whose risk of VTE outweighs their risk of bleeding. **[2018]**

Foot and ankle orthopaedic surgery

1.5.17 Consider pharmacological VTE prophylaxis for people undergoing foot or ankle surgery:

- that requires immobilisation (for example, arthrodesis or arthroplasty). Consider stopping prophylaxis if immobilisation continues beyond 42 days (see recommendation 1.5.4) **or**

- when total anaesthesia time is more than 90 minutes **or**

- the person's risk of VTE outweighs their risk of bleeding. **[2018]**

Upper limb orthopaedic surgery

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jj At the time of publication (March 2018), rivaroxaban did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

kk At the time of publication (March 2018), rivaroxaban did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

ll At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

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1.5.18 Be aware that VTE prophylaxis is generally not needed if giving local or regional anaesthetic for upper limb surgery. **[2018]**

1.5.19 Consider VTE prophylaxis for people undergoing upper limb surgery if the person's total time under general anaesthetic is over 90 minutes or where their operation is likely to make it difficult for them to mobilise. **[2018]**

Elective spinal surgery

1.5.20 Offer mechanical VTE prophylaxis on admission to people undergoing elective spinal surgery. Choose either:

- anti-embolism stockings **or**
- intermittent pneumatic compression.

Continue for 30 days or until the person is mobile or discharged, whichever is sooner. **[2018]**

1.5.21 Consider adding pharmacological VTE prophylaxis with LMWH[mm] for people undergoing elective spinal surgery whose risk of VTE outweighs their risk of bleeding, taking into account individual patient and surgical factors (major or complex surgery) and according to clinical judgement. **[2018]**

1.5.22 If using LMWH[nn] for people undergoing elective spinal surgery, start giving it 24–48 hours postoperatively according to clinical judgement, taking into account patient characteristics and surgical procedure. Continue for 30 days or until the person is mobile or discharged, whichever is sooner. **[2018]**

1.5.23 If needed, start LMWH[oo] earlier than 24 hours after the operation for people undergoing elective spinal surgery. Base the decision on multidisciplinary or senior opinion, or a locally agreed protocol. **[2018]**

Cranial surgery

1.5.24 Consider mechanical VTE prophylaxis for people undergoing cranial surgery. **[2018]**

1.5.25 If using mechanical VTE prophylaxis for people undergoing cranial surgery, start it on admission. Choose either:

- anti-embolism stockings **or**
- intermittent pneumatic compression.

Continue for 30 days or until the person is mobile or discharged, whichever is sooner. **[2018]**

[mm] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[nn] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[oo] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

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1.5.26 Consider adding pre-operative pharmacological VTE prophylaxis with LMWH[pp]. Give the last dose no less than 24 hours before surgery for people undergoing cranial surgery whose risk of VTE outweighs their risk of bleeding. **[2018]**

1.5.27 Consider adding pharmacological VTE prophylaxis with LMWH[qq], starting 24–48 hours after surgery for people undergoing cranial surgery whose risk of VTE outweighs their risk of bleeding. Continue for a minimum of 7 days. **[2018]**

1.5.28 If needed, start LMWH[rr] earlier than 24 hours after the operation for people undergoing cranial surgery. Base the decision on multidisciplinary or senior opinion, or a locally agreed protocol. **[2018]**

1.5.29 Do not offer pharmacological VTE prophylaxis to people with ruptured cranial vascular malformations (for example, brain aneurysms) or people with intracranial haemorrhage (spontaneous or traumatic) until the lesion has been secured or the condition has stabilised. **[2018]**

Spinal injury

1.5.30 Consider mechanical VTE prophylaxis on admission for people with spinal injury. Choose either:

- anti-embolism stockings **or**
- intermittent pneumatic compression. **[2018]**

1.5.31 Reassess risk of bleeding 24 hours after initial admission in people with spinal injury. **[2018]**

1.5.32 Consider adding pharmacological VTE prophylaxis with LMWH[ss] 24 hours after initial admission for people with spinal injury who are not having surgery in the next 24–48 hours, if the benefit of reducing the risk of VTE outweighs the risk of bleeding. **[2018]**

1.5.33 Continue VTE prophylaxis in people with spinal injury for 30 days or until the person is mobile or discharged, whichever is sooner. **[2018]**

Major trauma

1.5.34 Offer mechanical VTE prophylaxis with intermittent pneumatic compression on admission to people with serious or major trauma. Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. **[2018]**

1.5.35 Reassess risk of VTE and bleeding in people with serious or major trauma whenever their clinical condition changes and at least daily. **[2018]**

[pp] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[qq] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[rr] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[ss] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

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1.5.36 Consider pharmacological VTE prophylaxis for people with serious or major trauma as soon as possible after the risk assessment when the risk of VTE outweighs the risk of bleeding. Continue for a minimum of 7 days. **[2018]**

Abdominal surgery

1.5.37 Offer VTE prophylaxis to people undergoing abdominal (gastrointestinal, gynaecological, urological) surgery who are at increased risk of VTE. For people undergoing bariatric surgery, follow recommendations 1.5.41–1.5.43. **[2018]**

1.5.38 Start mechanical VTE prophylaxis on admission for people undergoing abdominal surgery. Choose either:

- anti-embolism stockings **or**
- intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. **[2018]**

1.5.39 Add pharmacological VTE prophylaxis for a minimum of 7 days for people undergoing abdominal surgery whose risk of VTE outweighs their risk of bleeding, taking into account individual patient factors and according to clinical judgement. Choose either:

- LMWH[tt] **or**
- fondaparinux sodium[uu]. **[2018]**

1.5.40 Consider extending pharmacological VTE prophylaxis to 28 days postoperatively for people who have had major cancer surgery in the abdomen. **[2018]**

Bariatric surgery

1.5.41 Offer VTE prophylaxis to people undergoing bariatric surgery. **[2018]**

1.5.42 Start mechanical VTE prophylaxis on admission for people undergoing bariatric surgery. Choose either:

- anti-embolism stockings **or**
- intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. **[2018]**

1.5.43 Add pharmacological VTE prophylaxis for people undergoing bariatric surgery for a minimum of 7 days for people whose risk of VTE outweighs their risk of bleeding. Choose either:

[tt] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[uu] At the time of publication (March 2018), fondaparinux sodium did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

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- LMWH[vv] **or**
- fondaparinux sodium[ww]. **[2018]**

Cardiac surgery

1.5.44 Consider mechanical VTE prophylaxis on admission for people who are undergoing cardiac surgery who are at increased risk of VTE. Choose either:

- anti-embolism stockings **or**
- intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. **[2018]**

1.5.45 Consider adding pharmacological VTE prophylaxis for a minimum of 7 days for people who are undergoing cardiac surgery and are not having other anticoagulation therapy:

- Use LMWH[xx] as first-line treatment.
- If LMWH[yy] is contraindicated use fondaparinux sodium[zz]. **[2018]**

Thoracic surgery

1.5.46 Consider VTE prophylaxis for people undergoing thoracic surgery who are at increased risk of VTE. **[2018]**

1.5.47 Start mechanical VTE prophylaxis on admission for people undergoing thoracic surgery. Choose either:

- anti-embolism stockings **or**
- intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. **[2018]**

[vv] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[ww] At the time of publication (March 2018), fondaparinux sodium did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[xx] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[yy] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[zz] At the time of publication (March 2018), fondaparinux sodium did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

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1.5.48 Consider adding pharmacological VTE prophylaxis for people undergoing thoracic surgery for a minimum of 7 days to people whose risk of VTE outweighs their risk of bleeding:

- Use LMWH[aaa] as first-line treatment.
- If LMWH[bbb] is contraindicated use fondaparinux sodium[ccc]. **[2018]**

Vascular surgery

Open vascular surgery or endovascular aneurysm repair

1.5.49 Consider pharmacological VTE prophylaxis with LMWH[ddd] for a minimum of 7 days for people who are undergoing open vascular surgery or major endovascular procedures, including endovascular aneurysm repair whose risk of VTE outweighs their risk of bleeding. **[2018]**

1.5.50 Consider mechanical VTE prophylaxis on admission for people who are undergoing open vascular surgery or major endovascular procedures, including endovascular aneurysm repair, if pharmacological prophylaxis is contraindicated. Choose either:

- anti-embolism stockings **or**
- intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. **[2018]**

Lower limb amputation

1.5.51 Consider pharmacological VTE prophylaxis with LMWH[eee] for a minimum of 7 days for people who are undergoing lower limb amputation whose risk of VTE outweighs their risk of bleeding. **[2018]**

1.5.52 Consider mechanical VTE prophylaxis with intermittent pneumatic compression on the contralateral leg, on admission, for people who are undergoing lower limb amputation and if pharmacological prophylaxis is contraindicated. **[2018]**

1.5.53 For people undergoing lower limb amputation, continue mechanical VTE prophylaxis until the person no longer has significantly reduced mobility relative to their anticipated mobility. **[2018]**

[aaa] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[bbb] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[ccc] At the time of publication (March 2018), fondaparinux sodium did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[ddd] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[eee] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

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Varicose vein surgery

1.5.54 Be aware that VTE prophylaxis is generally not needed for people undergoing varicose vein surgery where:

- total anaesthesia time is less than 90 minutes **and**
- the person is at low risk of VTE. **[2018]**

1.5.55 Consider pharmacological VTE prophylaxis with LMWH[fff], starting 6–12 hours after surgery and continuing for 7 days for people undergoing varicose vein surgery if:

- total anaesthesia time is more than 90 minutes **or**
- the person's risk of VTE outweighs their risk of bleeding. **[2018]**

1.5.56 Consider mechanical VTE prophylaxis with anti-embolism stockings, on admission, for people undergoing varicose vein surgery:

- who are at increased risk of VTE **and**
- if pharmacological prophylaxis is contraindicated. **[2018]**

1.5.57 If using anti-embolism stockings for people undergoing varicose vein surgery, continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. **[2018]**

Head and neck surgery

Oral and maxillofacial surgery

1.5.58 Consider pharmacological VTE prophylaxis with LMWH[ggg] for a minimum of 7 days for people undergoing oral or maxillofacial surgery whose risk of VTE outweighs their risk of bleeding. **[2018]**

1.5.59 Consider mechanical VTE prophylaxis on admission for people undergoing oral or maxillofacial surgery who are at increased risk of VTE and high risk of bleeding. Choose either:

- anti-embolism stockings **or**
- intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. **[2018]**

ENT surgery

1.5.60 Consider pharmacological VTE prophylaxis with LMWH[hhh] for a minimum of 7 days for people undergoing ears, nose and throat (ENT) surgery whose risk of VTE outweighs their risk of bleeding. **[2018]**

[fff] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[ggg] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

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1.5.61 Consider mechanical VTE prophylaxis on admission for people undergoing ENT surgery who are at increased risk of VTE and high risk of bleeding. Choose either:

- anti-embolism stockings **or**
- intermittent pneumatic compression.

Continue until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility. **[2018]**

1.6 Pregnant women and women who gave birth or had a miscarriage or termination of pregnancy in the past 6 weeks

1.6.1 Consider LMWH[iii] for all women who are admitted to hospital or a midwife-led unit if they are pregnant or gave birth, had a miscarriage or had a termination of pregnancy in the past 6 weeks, and whose risk of VTE outweighs their risk of bleeding. **[2018]**

1.6.2 Do not offer VTE prophylaxis to women admitted to hospital or a midwife-led unit who are in active labour. **[2018]**

1.6.3 Stop pharmacological VTE prophylaxis when women are in labour. **[2018]**

1.6.4 If using LMWH[jjj] in pregnant women, start it as soon as possible and within 14 hours of the risk assessment being completed and continue until the woman is no longer at increased risk of VTE or until discharge from hospital or the midwife-led unit. **[2018]**

1.6.5 If using LMWH[kkk] in women who gave birth or had a miscarriage or termination of pregnancy, start 4–8 hours after the event unless contraindicated and continue for a minimum of 7 days. **[2018]**

1.6.6 Consider combined prophylaxis with LMWH[lll] plus mechanical prophylaxis for pregnant women or women who gave birth or had a miscarriage or termination of pregnancy in the past 6 weeks and who are likely to be immobilised, or have significantly reduced mobility relative to their normal or anticipated mobility for 3 or more days after surgery, including caesarean section:

- Use intermittent pneumatic compression as first-line treatment.
- If intermittent pneumatic compression is contraindicated use antiembolism stockings.

[hhh] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[iii] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[jjj] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[kkk] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

[lll] At the time of publication (March 2018), LMWH did not have a UK marketing authorisation for use in young people under 18 for this indication. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Prescribing guidance: prescribing unlicensed medicines for further information.

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Continue until the woman no longer has significantly reduced mobility relative to her normal or anticipated mobility or until discharge from hospital. **[2018]**

1.2 Key research recommendations

- What is the accuracy of individual risk assessment tools in predicting the risk of VTE and risk of bleeding in people admitted to hospital?
- What is the clinical and cost effectiveness of weight-based dose-adjustment strategies of LMWH compared with fixed dose strategies of LMWH for preventing VTE in people who are very obese (BMI >35) who are admitted to hospital or having day procedures (including surgery and chemotherapy)?
- What is the clinical and cost effectiveness of direct oral anticoagulants (DOACs) for preventing VTE in people with lower limb immobilisation?
- What is the clinical and cost effectiveness of aspirin alone versus other pharmacological and/or mechanical prophylaxis strategies (alone or in combination) for people with fragility fractures of the pelvis, hip or proximal femur?
- What is the clinical and cost effectiveness of standard versus extended duration pharmacological prophylaxis for preventing VTE in people undergoing elective total hip replacement surgery?

1.3 How this guideline was updated

The majority of the previous guideline was updated. Content from 2010 CG92 Venous thromboembolism guideline that has not been updated and retained in this guideline has been marked with grey highlighting throughout. Rationale for changes to recommendations can be found in the relevant linking evidence to recommendations sections and in the table in appendix S.

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