NICE National Institute for Health and Care Excellence

Putting NICE guidance into practice

Resource impact report:
Venous thromboembolic diseases: diagnosis, management and thrombophilia testing (NG158)

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Summary

This report focuses on the recommendations from NICE's guideline on venous thromboembolic diseases: diagnosis, management and thrombophilia testing that we think will have the greatest resource impact nationally (for England), and will need the most additional resources to implement or potentially generate the biggest savings. They are:

- treating people with proximal deep vein thrombosis (DVT) or pulmonary embolism (PE) with anticoagulant therapy (recommendations 1.3.8, 1.3.15, 1.3.17 and 1.3.18)
- reducing further investigations, include imaging, for cancer in people with unprovoked DVT or PE unless they have relevant clinical symptoms or signs (recommendations 1.8.1 and 1.8.2).

Resource impact

The estimated financial impact of implementing this guideline for the population of England in the next 5 years is a saving of around £0.8 million in 2020/21 rising to a saving of around £4.1 million per year from 2024/25 onwards as set out in table 1 and figure 1 below. The resource impact from 2024/25 onwards is made up of cash savings of around £2.1 million to prescribing budgets in both primary and secondary care and around £2.0 million non-cash releasing savings for providers. The resource impact results from:

- savings as a result of a changes in the treatment pathway for people being treated with anticoagulant therapy (cash releasing saving)
- savings as a result of reductions in imaging screening (non-cash releasing savings).

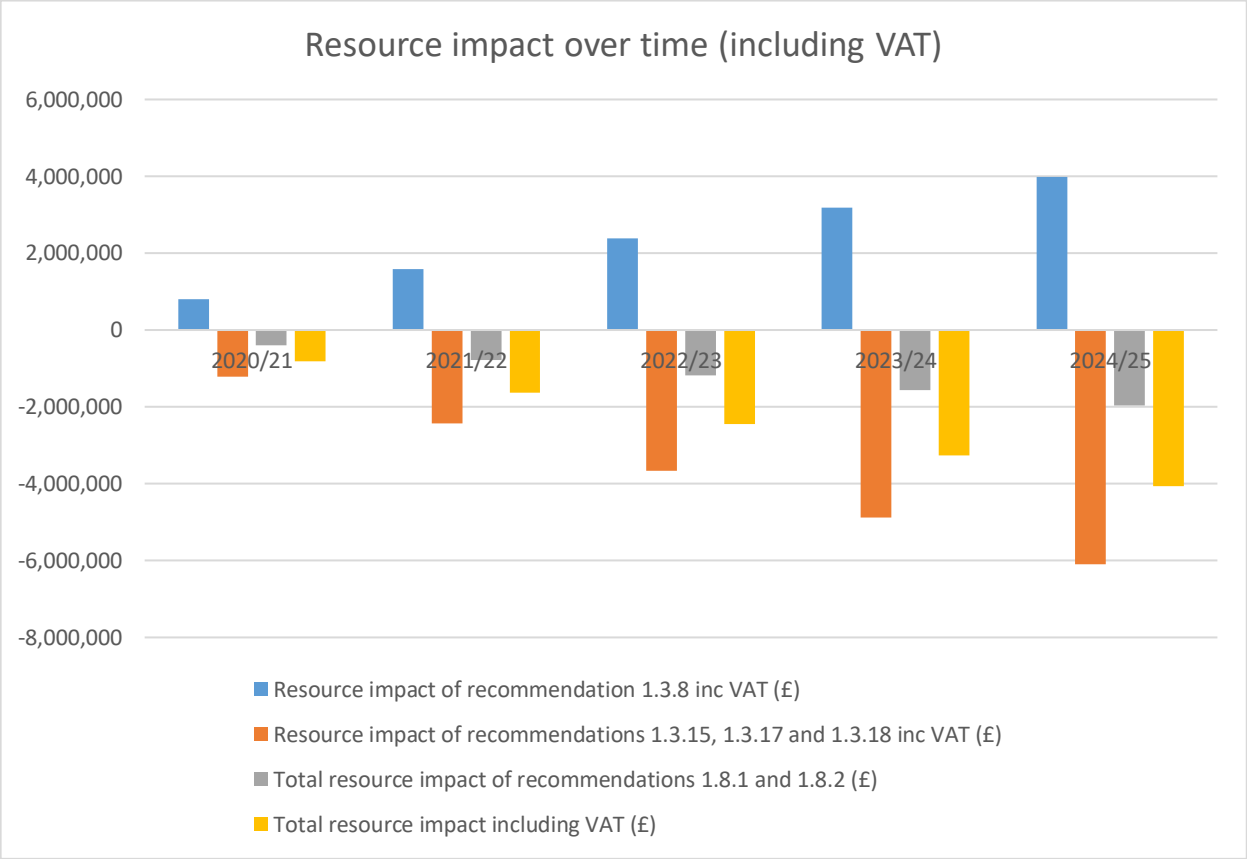
Table 1 Estimated budget impact (£m) of implementing the guideline for the population of England

	2020/21	2021/22	2022/23	2023/24	2024/25
Implementation rate of guideline	20%	40%	60%	80%	100%
Estimated cost for recommendation 1.3.8 (cash cost) (£m) **(a)**	0.8	1.6	2.4	3.2	4.0
Estimated savings for recommendations 1.3.15, 1.3.17 and 1.3.18 (cash saving) (£m) **(b)**	-1.2	-2.4	-3.7	-4.9	-6.1
Estimated savings for recommendations 1.8.1 and 1.8.2 (non-cash saving) (£m) **(c)**	-0.4	-0.8	-1.2	-1.6	-2.0
Total resource impact for the population of England (£m)	**-0.8**	**-1.6**	**-2.5**	**-3.3**	**-4.1**
Total cash saving (£m) **(a+b)**	-0.4	-0.8	-1.3	-1.7	-2.1
Total non-cash saving (£m) **(c)**	-0.4	-0.8	-1.2	-1.6	-2.0

Table 2 Estimated budget impact (£000) of implementing the guideline per average 100,000 population

	2020/21	2021/22	2022/23	2023/24	2024/25
Implementation rate of guideline	20%	40%	60%	80%	100%
Total cash saving (£000)	-0.8	-1.5	-2.3	-3.1	-3.8
Total non-cash saving (£000)	-0.7	-1.4	-2.1	-2.8	-3.5
Total resource impact per 100,000 population (£000)	**-1.5**	**-2.9**	**-4.4**	**-5.9**	**-7.3**

Figure 1 Estimated budget impact of implementing the guideline for England



Introduction

1.1 The guideline offers best practice advice on venous thromboembolic diseases: diagnosis, management and thrombophilia testing.

1.2 This report discusses the resource impact of implementing our guideline on venous thromboembolic diseases: diagnosis, management and thrombophilia testing in England. It aims to help organisations plan for the financial implications of implementing this NICE guideline.

1.3 A resource impact template accompanies this report to help with assessing the resource impact at a local level in England, Wales or Northern Ireland.

1.4 We have considered direct costs and savings to the NHS (and local authorities if applicable) and not those for the individual, the private sector or the not-for-profit sector.

1.5 Services for people with venous thromboembolism (VTE) are commissioned by clinical commissioning groups. Providers are NHS hospital trusts and primary care services.

2 Background

2.1 VTE is a condition in which a blood clot forms most often in the deep veins of the leg, groin or arm (known as deep vein thrombosis, DVT) and travels in the circulation, lodging in the lungs (known as pulmonary embolism, PE). Together, DVT and PE are known as VTE.

2.2 Each year in the UK 1 to 2 people in every 1,000 has a VTE (NICE Scope NG158). The annual incidence of VTE rises with age, from around 1 in every 10,000 people aged under 40, to 1 in every 100 people aged over 80. Every year around 25,000 people in England develop a DVT in hospital that leads to a fatal PE).

2.3 Diagnosis of DVT and PE is based on symptoms and signs, a two-level Well's score, a blood test to check for D-dimer and imaging. Pharmacological treatment options for diagnosed PE and DVT include low molecular weight heparin, fondaparinux, unfractionated heparin and a vitamin K antagonist. Direct-acting oral anticoagulants (DOACs) are also used to prevent and treat PE and DVT.

3 Significant resource impact recommendations

There are 6 recommendations which are likely to lead to a significant resource impact. One of these is considered in section 3.1, a further 3 are considered together in section 3.2 while the final 2 recommendations are considered in section 3.3.

3.1 **Offer either apixaban or rivaroxaban to people with proximal DVT or PE (but see recommendations 1.3.11 to 1.3.21 for people with any of the clinical features listed in recommendation 1.3.7). If neither apixaban nor rivaroxaban is suitable offer:**

- **low molecular weight heparin (LMWH) for at least 5 days followed by dabigatran or edoxaban or**
- **LMWH concurrently with a vitamin K antagonist (VKA) for at least 5 days, or until the INR is at least 2.0 in 2 consecutive readings, followed by a VKA on its own. (recommendation 1.3.8)**

Background

3.1.1 The standard of care for the treatment of DVT has been the use of a combination of low-molecular-weight heparin (LMWH) and warfarin. Recently, several direct-acting oral anticoagulants (DOACs) have become available (rivaroxaban, apixaban, edoxaban and dabigatran) which do not require monitoring to confirm therapeutic anticoagulation. This development has the

potential to improve the convenience of treatment for people with a VTE and, as a result, improve quality of life.

Assumptions made

3.1.2 Expert clinical opinion is that currently around 40% of people with VTE (around 21,000) who are not known to have cancer are treated only with direct-acting oral anticoagulants. This is split equally between apixaban and rivaroxaban. It is assumed 35% of people (around 18,000) are treated with LMWH for 5 days followed by dabigatran or edoxaban, and the remaining 25% of people (around 13,000) are treated with LMWH concurrently with a VKA for at least 5 days followed by a VKA on its own.

3.1.3 Expert clinical opinion is that in future practice, 70% of people with VTE and who are not known to have cancer (around 37,000) will be treated with direct-acting oral anticoagulants. It is expected that 35% of people will be treated with apixaban and 35% will be treated with rivaroxaban. It is also expected that 20% of people (around 10,500) will be treated with LMWH for 5 days followed by dabigatran or edoxaban, and the remaining 10% of people (around 5,300) will be treated with LMWH concurrently with a VKA for at least 5 days followed by a VKA on its own.

3.1.4 The treatment duration for people with provoked VTE (30% of this population) is expected to be 3 months. The treatment duration for people with unprovoked VTE (70% of this population) is expected to be 12 months.

3.1.5 It is assumed that apixaban is administered as an initial dose of 10mg twice daily for 7 days and the maintenance dose is 5mg twice daily.

3.1.6 It is assumed that rivaroxaban is administered as an initial dose of 15mg twice daily for 21 days and the maintenance dose is 20mg once daily.

3.1.7 It is assumed that the LMWH used will be either dalteparin sodium, tinzaparin sodium or enoxaparin sodium and the LMWH will be followed by either dabigatran or edoxaban. Average costs have been used in the template.

3.1.8 Dosages are assumed to be 15,000 units of dalteparin sodium once daily, 175 units/kg of tinzaparin sodium once daily or 1.5mg/kg of enoxaparin sodium once daily for 5 days. Each LMWH treatment is followed by either dabigatran or edoxaban.

3.1.9 It is assumed that the LMWH that will be used will be either dalteparin sodium, tinzaparin sodium or enoxaparin sodium and the VKA will be warfarin. An average cost of dalteparin sodium, tinzaparin sodium and enoxaparin sodium has been used in the template.

3.1.10 Treatment with LMWH and VKA uses the same LMWH dosages as used when followed by either dabigatran or edoxaban. Each treatment is taken in combination with 5mg of warfarin.

3.1.11 Expert clinical opinion is that an INR of at least 2.0 in 2 consecutive readings can be achieved after 10 days of combined LMWH and VKA treatment. After 10 days combined treatment, treatment will continue with VKA (warfarin) on its own.

3.1.12 The average weight of a person who is not known to have cancer is estimated to be 78kg (Health survey for England 2016).

3.1.13 It is expected that drug treatments will be initiated in secondary and continued in primary care. VAT is chargeable on drugs in secondary care but not on drugs in primary care. The template adjusts the costs of drugs to take VAT into account for 4 weeks for people receiving a DOAC as part of their treatment, and for 10 days for people who are treated with LMWH and a VKA, followed by a VKA on its own.

3.1.14 Most people (85%) are expected to self-administer LMWH. Due to the funding for community services being based on a block contract, no extra administration costs have been estimated in the template for people who do not self-administer LMWH. Providers should be aware that there may be a local impact for any change in prescribing LMWH.

3.1.15 No extra costs have been estimated in the template for additional GP or clinical appointments as it is not expected that any extra staff will be needed as a result of these recommendations.

Table 3 Current and future practice for people who have VTE and who are not known to have cancer

Population	Current practice		Future practice	
	%	Number	%	Number
People with VTE who are not known to have cancer who are treated with apixaban.	20	10,500	35	18,400
People with VTE who are not known to have cancer who are treated with rivaroxaban.	20	10,500	35	18,400
People with VTE who are not known to have cancer who are treated with LMWH followed by either dabigatran or edoxaban.	35	18,400	20	10,500
People with VTE who are not known to have cancer who are treated with LMWH and a VKA, followed by a VKA on its own.	25	13,100	10	5,200
	100	**52,500**	**100**	**52,500**

Costs

3.1.16 Table 4 summarises the costs of the treatment options.

Table 4 Cost of treatment options for people not known to have cancer

Treatment	Dosage	Reference	Cost (£)
People with VTE and who are not known to have cancer who are treated with apixaban for 3 months.	Initial dose 10mg twice daily for 7 days. Maintenance dose 5mg twice daily.	NHS Electronic Drug Tariff Feb 2020	550.76
People with VTE and who are not known to have cancer who are treated with rivaroxaban for 3 months.	Initial dose 15mg twice daily for 21 days. Maintenance dose 20mg once daily.	NHS Electronic Drug Tariff Feb 2020	546.98
People with VTE and who are not known to have cancer who are treated with LMWH followed by either dabigatran or edoxaban for 3 months.	15,000 units of dalteparin sodium once daily or 175 units/kg of tinzaparin sodium once daily or 1.5mg/kg of enoxaparin sodium once daily for 5 days, followed by 150mg twice daily of dabigatran or 60mg once daily of edoxaban.	NHS Electronic Drug Tariff and British National Formulary Feb 2020	518.32
People with VTE and who are not known to have cancer who are treated with LMWH and a VKA, followed by a VKA on its own.	15,000 units of dalteparin sodium once daily or 175 units/kg of tinzaparin sodium once daily or 1.5mg/kg of enoxaparin sodium once daily in combination with warfarin for 5 days, followed by warfarin on its own.	British National Formulary and Drugs and pharmaceutical electronic market information tool (eMIT) Feb 2020	82.42

Resource impact

3.1.17 The resource impact of implementing recommendation 1.3.8 is summarised in table 5. Cash costs are expected for both primary

and secondary care prescribing budgets, depending on where the prescribing takes place.

Table 5 Estimated annual cost (£m) of implementing recommendation 1.3.8

	Current practice	2019/20	2020/21	2021/22	2022/23	2023/24
Implementation rate		20%	40%	60%	80%	100%
Activity						
People with VTE who are not known to have cancer and who are treated with apixaban	10,501	12,076	13,651	15,226	16,801	18,376
People with VTE who are not known to have cancer and who are treated with rivaroxaban	10,501	12,076	13,651	15,226	16,801	18,376
People with VTIE who are not known to have cancer and who are treated with LMWH followed by either dabigatran or edoxaban	18,376	16,801	15,226	13,651	12,076	10,501
People with VTE who are not known to have cancer who are treated with LMWH with a VKA, followed by a VKA on its own	13,126	11,551	9,976	8,401	6,826	5,251
Total activity	**52,504**	**52,504**	**52,504**	**52,504**	**52,504**	**52,504**
Cost £m						
People with VTE who are not known to have cancer and who are treated with apixaban	5.9	6.8	7.6	8.5	9.4	10.3
People with VTE who are not known to have cancer and who are treated with rivaroxaban	5.8	6.7	7.6	8.5	9.3	10.2
People with VTIE who are not known to have cancer and who are treated with LMWH followed by either dabigatran or edoxaban	9.7	8.8	8.0	7.2	6.4	5.5
People with VTE who are not known to have cancer who are treated with LMWH with a VKA, followed by a VKA on its own	1.1	1.0	0.9	0.7	0.6	0.5
Total cost £m	**22.5**	**23.3**	**24.1**	**24.9**	**25.7**	**26.5**
Total resource impact (cost) for population of England (£m)		**0.8**	**1.6**	**2.4**	**3.2**	**4.0**

Benefits and savings

3.1.18 It is anticipated that where people move from technologies that need to be injected (LMWHs) to orally administered technologies (DOACs) there will be a reduction in district nursing time to administer treatment. This is not a cash releasing saving but is anticipated to free district nurse time for other purposes. Local organisations are advised to assess the impact of this locally.

3.1.19 There is no requirement for ongoing INR monitoring when being treated with DOACs which may lead to productivity benefits for primary or secondary care as a result of less monitoring appointments being required.

3.1.20 Less bleeding complications are expected from treatment with DOACs than treatment with LMWH and a VKA. The number of people effected by the change in bleeding complications is expected to be small and therefore the resulting resource impact is not expected to be significant.

3.1.21 There are also anticipated to be environmental benefits from transferring from LMWH to DOACs. It is anticipated there will be a reduction in plastic use such as syringes and sharps bins as a result of the move from injectable technologies.

3.2 **Offer people with active cancer and proximal DVT or PE anticoagulation treatment for 3 to 6 months (recommendation 1.3.15).**

Consider a direct-acting oral anticoagulant for people with active cancer and proximal DVT or PE (recommendation 1.3.17).

If a direct-acting oral anticoagulant is unsuitable consider LMWH alone or LMWH concurrently with a VKA for at least 5

days, or until the INR is at least 2.0 in 2 consecutive readings, followed by a VKA on its own (recommendation 1.3.18).

Background

3.2.1 In the previous NICE guideline, it was recommended that people with active cancer and VTE were offered low molecular weight heparin (LMWH).

3.2.2 LMWH on its own is commonly used in practice and is the only licensed option for people with VTE and active cancer. It is expensive and not cost effective, and the NICE committee members agreed that reducing its use would be beneficial in conserving NHS resources. However, they recognised that there are circumstances in which no other option is suitable so agreed that it could be considered when this is the case.

Assumptions made

3.2.3 Expert clinical opinion is that currently around 15% of people with VTE and active cancer (around 2,000) are treated with DOACs. This is split equally between apixaban and rivaroxaban. It is also estimated 5% of people (around 700) are treated with LMWH and a VKA (warfarin), while 80% of people (around 10,500) are treated with LMWH on its own.

3.2.4 Expert clinical opinion is that in future practice, 60% of people with VTE and active cancer (around 8,000) will be treated with DOACs. It is expected that 30% of people will be treated with apixaban and 30% will be treated with rivaroxaban. It is also expected that 5% of people (around 700) will be treated with LMWH and VKA (warfarin), and the remaining 35% of people (around 4,600) will be treated with LMWH on its own.

3.2.5 It is assumed that apixaban is administered as an initial dose of 10mg twice daily for 7 days and the maintenance dose is 5mg twice daily. Treatment duration is for 6 months.

3.2.6 It is assumed that rivaroxaban is administered as an initial dose of 15mg twice daily for 21 days and the maintenance dose is 20mg once daily. Treatment duration is for 6 months.

3.2.7 It is assumed that the LMWH that will be used will be either dalteparin sodium, tinzaparin sodium or enoxaparin sodium and the VKA will be warfarin. An average cost of dalteparin sodium, tinzaparin sodium and enoxaparin sodium has been used in the template.

3.2.8 Dosages are assumed to be 12,500 units of dalteparin sodium once daily, 175 units/kg of tinzaparin sodium once daily or 1mg/kg of enoxaparin sodium twice daily for 10 days. Each treatment is taken in combination with 5mg of warfarin for 10 days followed by warfarin on its own. Treatment duration is for 6 months.

3.2.9 Treatment with LMWH on its own uses the same dosages for dalteparin sodium, tinzaparin sodium and enoxaparin sodium as when taken with a VKA. Treatment duration is for 6 months.

3.2.10 The average weight of a person with active cancer is estimated to be 65kg (based on Health survey for England 2016 adjusted by 15% weight loss for cancer patients).

3.2.11 It is expected that drug treatments for people with cancer will be initiated and continued in secondary care. VAT is chargeable on drugs in secondary care.

3.2.12 Most people (85%) are expected to self-administer LMWH. Due to the funding for community services being based on a block contract, no extra administration costs have been estimated in the template for people who do not self-administer LMWH. Providers should be aware that there may be a local impact for any change in prescribing LMWH.

3.2.13 No extra costs have been estimated in the template for additional GP or clinical appointments as it is not expected that any extra staff will be needed as a result of these recommendations.

Table 6 Current and future practice for people who have VTE and active cancer.

Population	Current practice		Future practice	
	%	Number	%	Number
People with VTE and active cancer who are treated with apixaban.	7.5	980	30.0	3,935
People with VTE and active cancer who are treated with rivaroxaban.	7.5	980	30.0	3,935
People with VTE and active cancer who are treated with LMWH and a VKA followed by a VKA on its own.	5.0	660	5.0	660
People with VTE and active cancer who are treated with LMWH on its own.	80.0	10,500	35.0	4,590
	100	**13,120**	**100**	**13,120**

Costs

3.2.14 Table 7 summaries the costs of the treatment options.

Table 7 Cost of treatment options for people with active cancer

Treatment	Dosage	Reference	Cost (£)
People with VTE and active cancer who are treated with apixaban for 6 months.	Initial dose 10mg twice daily for 7 days. Maintenance dose 5mg twice daily.	NHS Electronic Drug Tariff Feb 2020	360.05
People with VTE and active cancer who are treated with rivaroxaban for 6 months.	Initial dose 15mg twice daily for 21 days. Maintenance dose 20mg once daily.	British National Formulary Feb 2020	366.30
People with VTE and active cancer who are treated with LMWH and VKA for 6 months.	12,500 units of dalteparin sodium once daily or 175 units/kg of tinzaparin sodium once daily or 1mg/kg of enoxaparin sodium twice daily in combination with VKA for 10 days, followed by VKA on its own.	NHS Electronic Drug Tariff, British National Formulary and Drugs and pharmaceutical electronic market information tool (eMIT) Feb 2020	69.84
People with VTE and active cancer who are treated with LMWH on its own for 6 months.	12,500 units of dalteparin sodium once daily or 175 units/kg of tinzaparin sodium once daily or 1mg/kg of enoxaparin sodium twice daily.	NHS Electronic Drug Tariff and British National Formulary Feb 2020	1,223

Resource impact

3.2.15 The resource impact of implementing recommendations 1.3.15, 1.3.17 and 1.3.18 is summarised in table 8. Cash savings are expected for secondary care prescribing budgets.

Table 8 Estimated annual cost (£m) of recommendation 1.3.15, 1.3.17 and 1.3.18

	Current practice	2019/20	2020/21	2021/22	2022/23	2023/24
Implementation rate		20%	40%	60%	80%	100%
Activity						
People with VTE and active cancer who are treated with apixaban	984	1,575	2,166	2,756	3,347	3,938
People with VTE and active cancer who are treated with rivaroxaban	984	1,575	2,166	2,756	3,347	3,938
People with VTE and active cancer who are treated with low molecular weight heparin (LMWH) and a vitamin K antagonist (VKA)	656	656	656	656	656	656
People with VTE and active cancer who are treated with LMWH on its own	10,501	9,319	8,138	6,957	5,775	4,594
Total activity	**13,120**	**13,120**	**13,120**	**13,120**	**13,120**	**13,120**
Cost £m						
People with VTE and active cancer who are treated with apixaban	0.4	0.7	0.9	1.2	1.4	1.7
People with VTE and active cancer who are treated with rivaroxaban	0.4	0.7	1.0	1.2	1.5	1.7
People with VTE and active cancer who are treated with low molecular weight heparin (LMWH) and a vitamin K antagonist (VKA)	0.1	0.1	0.1	0.1	0.1	0.1
People with VTE and active cancer who are treated with LMWH on its own	15.4	13.6	11.9	10.2	8.5	6.7
Total cost £m	**16.3**	**15.2**	**13.9**	**12.6**	**11.4**	**10.2**
Total resource impact (saving) for population of England (£m)		**-1.2**	**-2.4**	**-3.7**	**-4.9**	**-6.1**

Benefits and savings

3.2.16 It is anticipated that where people move from technologies that need to be injected (LMWHs) to orally administered technologies (DOACs) there will be a reduction in district nursing time to administer treatment. This is not a cash releasing saving but is

anticipated to free district nurse time for other purposes. Local organisations are advised to assess the impact of this locally.

3.2.17 There is no requirement for ongoing INR monitoring when being treated with DOACs which may lead to productivity benefits for primary or secondary care as a result of less monitoring appointments being required.

3.2.18 Less bleeding complications are expected from treatment with DOACs than treatment with LMWH and a VKA. The number of people effected by the change in bleeding complications is expected to be small and therefore the resulting resource impact is not expected to be significant.

3.2.19 There are also anticipated to be environmental benefits from transferring from LMWH to DOACs. It is anticipated there will be a reduction in plastic use such as syringes and sharps bins as a result of the move from injectable technologies.

3.3 **For people with unprovoked DVT or PE who are not known to have cancer, review the medical history and baseline blood test results including full blood count, renal and hepatic function, PT and APTT (prothrombin time and activated partial thromboplastin time), and offer a physical examination. (recommendation 1.8.1).**

Do not offer further investigations for cancer to people with unprovoked DVT or PE unless they have relevant clinical symptoms or signs (for further information see the NICE guideline on suspected cancer). (recommendation 1.8.2).

Background

3.3.1 People with a first unprovoked VTE and no signs or symptoms of cancer are currently assessed with a computed tomography (CT) scan of the abdomen and pelvis, and a mammogram for women.

However new evidence indicates that this does not reduce death from cancer in these people.

3.3.2 It is important that cancer is identified as early as possible to maximise the effectiveness of its treatment. However, cancer investigations can be costly, time consuming, invasive or pose a radiation risk and cause anxiety. Therefore, further investigations for cancer should not be offered to people without relevant signs or symptoms.

Assumptions made

3.3.3 According to, Martinez et al 2014, around 47% of all VTE events are unprovoked, effecting around 31,000 people, and may be an indicator of underlying cancer. The range of potential unprovoked VTE is tested in the sensitivity analysis.

3.3.4 Expert clinical opinion is that currently, everyone with an unprovoked VTE will have their medical history taken, baseline blood tests and have a physical examination. Around 67% of these people (around 21,000) will also currently have imaging screening to assess for cancer.

3.3.5 Expert clinical opinion is that in future practice everyone with an unprovoked VTE will continue to have their medical history taken, baseline blood tests and have a physical examination, and that around 6% of these people (around 2,000) will also have imaging screening to assess for cancer.

3.3.6 It is assumed that the CT scan needed to assess for cancer will be a CT scan of 2 areas, with contrast (RD24Z, 2019/20 National Tariff).

3.3.7 It is also assumed that women will receive a mammogram. To account for women receiving this, 56% of the cost of a mammogram has also been included in the model, based on Martinez et al, 2014.

3.3.8 It is assumed that a medical history, baseline blood tests and a physical examination, with or without further imaging screening, will be recorded as an outpatient follow up clinical haematology appointment (follow-up attendance - single professional, WF01A).

3.3.9 No resource impact has been included in the template for people being identified with cancer because this is outside the scope of this guideline.

Table 9 Current and future practice for assessment of cancer risk in people who have unprovoked VTE

Population	Current practice		Future practice	
	%	Number	%	Number
People who only have their medical history reviewed, baseline blood tests and a physical examination	33	10,200	94	29,000
People who have their medical history reviewed, baseline blood tests and a physical examination and also have further imaging to assess for cancer	67	20,600	6	1,800
	100	**30,800**	**100**	**30,800**

Costs

3.3.10 Table 10 summarises the NHS costs of investigation per person to be assessed for cancer when they have an unprovoked VTE.

Table 10 Cost of investigations – per person per year

Treatment	Description	Reference	Cost (£)
Imaging screening to assess for cancer	Outpatient follow-up, clinical haematology (WF01A), cost of a direct access CT scan (RD24) and a mammogram	2019/20 National Tariff	229.00
Medical history review, baseline blood tests and a physical examination	Outpatient follow up clinical haematology (WF01A)	2019/20 National Tariff	125.00

Resource impact

3.3.11 The resource impact of implementing recommendations 1.8.1 and 1.8.2 is summarised in table 11. Non-cash releasing savings for providers are expected as a result of a reduction in CT scans and mammograms following implementation of these recommendations.

Table 11 Estimated annual resource impact (£m) of implementing recommendations 1.8.1 and 1.8.2

	Current practice	2019/20	2020/21	2021/22	2022/23	2023/24
Implementation rate		20%	40%	60%	80%	100%
Activity						
People who have imaging screening to assess for cancer	20,666	16,903	13,140	9,377	5,614	1,851
People who do not have imaging screening to assess for cancer	10,179	13,942	17,705	21,468	25,232	28,995
Total activity	**30,800**	**30,800**	**30,800**	**30,800**	**30,800**	**30,800**
Cost £m						
People who have imaging screening to assess for cancer	4.7	3.9	3.0	2.1	1.3	0.4
People who do not have imaging screening to assess for cancer	1.3	1.7	2.2	2.7	3.1	3.6
Total cost £m	**6.0**	**5.6**	**5.2**	**4.8**	**4.4**	**4.0**
Total resource impact (non-cash saving) for population of England (£m)		**-0.4**	**-0.8**	**-1.2**	**-1.6**	**-2.0**

Benefits and savings

3.3.12 A reduction in the number of CT scans and mammograms for assessing the risk of cancer in people who have an unprovoked VTE will result in non-cash releasing savings for providers. It is expected that these recommendations will reduce waiting times for people receiving CT scans.

3.3.13 As a result of fewer people receiving CT scans there will also be a reduction in the number of people who will be exposed to radiation risk.

4 Resource impact over time

4.1 The estimated annual resource impact of implementing this guideline for the population of England based on the uptake in the resource impact assumptions is shown in table 12. The net resource impact from year 5 once steady state is reached is equivalent to a saving of around £7,300 per average 100,000 population (see table 13).

Table 12 Estimated budget impact (£m) of implementing the guideline for the population of England

	2020/21	2021/22	2022/23	2023/24	2024/25
Implementation rate of guideline	20%	40%	60%	80%	100%
Estimated cost for recommendation 1.3.8 (cash cost) (£m) **(a)**	0.8	1.6	2.4	3.2	4.0
Estimated savings for recommendations 1.3.15, 1.3.17 and 1.3.18 (cash saving) (£m) **(b)**	-1.2	-2.4	-3.7	-4.9	-6.1
Estimated savings for recommendations 1.8.1 and 1.8.2 (non-cash saving) (£m) **(c)**	-0.4	-0.8	-1.2	-1.6	-2.0
Total resource impact for the population of England (£m)	**-0.8**	**-1.6**	**-2.5**	**-3.3**	**-4.1**
Total cash saving (£m) **(a+b)**	-0.4	-0.8	-1.3	-1.7	-2.1
Total non-cash saving (£m) **(c)**	-0.4	-0.8	-1.2	-1.6	-2.0

Table 13 Estimated budget impact (£000) of implementing the guideline per average 100,000 population

	2020/21	2021/22	2022/23	2023/24	2024/25
Implementation rate of guideline	20%	40%	60%	80%	100%
Total cash saving (£000)	-0.8	-1.5	-2.3	-3.1	-3.8
Total non-cash saving (£000)	-0.7	-1.4	-2.1	-2.8	-3.5
Total resource impact per 100,000 population (£000)	**-1.5**	**-2.9**	**-4.4**	**-5.9**	**-7.3**

5 Implications for commissioners

5.1 Venous thromboembolism falls under programme budgeting category 10X problems of circulation.

5.2 A reduction in imaging scanning will result in a non-cash releasing saving for providers as it is expected that these recommendations will reduce waiting times for people receiving CT scans.

5.3 A move to treatment with direct-acting oral anticoagulants is expected to result in a cash saving to both primary and secondary care prescribing budgets.

6 Assumptions made

6.1 The resource impact template makes the following assumptions:

- Around 0.15% of the adult population, or around 65,600 people, have a VTE each year (NICE final scope).
- The percentage of VTE events that are unprovoked are estimated to be 47%, it is estimated that 53% will have provoked VTE (Epidemiology of first and recurrent venous thromboembolism (Martinez C. et al, 2014).
- Around 20% of people who have a VTE have cancer and 80% are not known to have cancer.

6.2 If a national tariff price or indicative price exists for an activity, this has been used as the unit cost. The resource impact template can be used to amend unit costs to account for any local market forces factor.

6.3 Using these prices ensures that the costs in the report are the cost to the clinical commissioning group of commissioning predicted changes in activity at the tariff price but may not represent the actual cost to individual trusts of delivering the activity.

7 Other Considerations

7.1 The resource impact detailed in this report is based on unit costs at the time of publication (March 2020).

The patents for the dabigatran and rivaroxaban are due to expire in 2023 (Specialist Pharmacy Service). It is expected that when these patents expire generic treatments will become available and this could lower the cost of treatment for VTE. If generic versions of dabigatran and rivaroxaban are available local organisations may wish to use different unit costs in the template to estimate the local cost.

7.2 The patents for apixaban and edoxaban are due to expire in 2026 and 2027 respectively (Specialist Pharmacy Service).

8 Sensitivity analysis

8.1 There are some assumptions in the model for which no empirical evidence exists, so we cannot be as certain about them. Appropriate minimum and maximum values of variables were used in the sensitivity analysis to assess which variables have the biggest impact on the net cost or saving. This enables users to identify the significant cost drivers.

Appendix A is a table listing all variables modified. The key conclusions are discussed below.

8.2 Varying the number of people with an unprovoked VTE who may be suspected of having cancer from 37% to 57% leads to an estimated saving of £3.7 million and £4.5 million respectively for the population of England.

8.3 Varying the number of people with an unprovoked VTE currently receiving further imaging from 57% to 77% leads to an estimated saving of between £3.8 million and £4.4 million for the population of England.

8.4 Varying the number of people who are not known to have cancer who are expected to be treated with apixaban or rivaroxaban in

future practice from 25% to 35% leads to an estimated saving of between £2.7 million and £5.4 million for the population of England.

8.5 Varying the number of people who are known to have active cancer who are expected to be treated with apixaban or rivaroxaban in future practice from 30% to 40% leads to an estimated saving of between £4.2 million and £3.9 million for the population of England.

Appendix A. Results of sensitivity analysis

Individual variable sensitivity

				Recurrent resource impact				
	Baseline value	**Minimum value**	**Maximum value**	**Baseline resource impact (£000s)**	**Minimum resource impact (£000s)**	**Maximum resource impact (£000s)**	**Change (£000s)**	**Sensitivity ratio**
People with an unprovoked VTE who may be suspected of having cancer.	47.0%	37.0%	57.0%	-4,071	-3,654	-4,487	-833	0.24
People who currently have imaging screening to assess for cancer.	67%	57%	77%	-4,071	-3,750	-4,391	-642	0.26
People with VTE and active cancer who are expected to be treated with apixaban and rivaroxaban in future practice.	35%	30%	40%	-4,071	-4,233	-3,908	326	0.14
People with VTE who are not known to have cancer who are expected to be treated with apixaban and rivaroxaban in future practice.	30%	25%	35%	-4,071	-2,716	-5,425	-2,709	1.00

About this resource impact report

This resource impact report accompanies the NICE guideline on venous thromboembolic diseases: diagnosis, management and thrombophilia testing and should be read in conjunction with it. See terms and conditions on the NICE website.