Thrombosis UK

Awareness • Research • Care

National Thrombosis Survey

Report by Thrombosis UK

September 2021

In association with the Getting It Right First Time (GIRFT) programme

GIRFT

GETTING IT RIGHT FIRST TIME

Contents

Foreword

I am delighted to present this report on the first thrombosis national survey, undertaken by Thrombosis UK in collaboration with the Getting It Right First Time (GIRFT) programme. It is being circulated to all NHS Trusts in England to present the high-level results from the survey. Individual Trust results and feedback have been sent separately to the Trusts which participated in the survey.

The thrombosis survey was set up to audit Hospital-Associated Venous Thromboembolism (HA-VTE) and determine how current thromboprophylaxis practice could be improved. The aim of this approach was to provide valuable information regarding where HA-VTE is occurring, identify common themes in failure of HA-VTE prevention and in combination with HES data, identify accurate rates of HA-VTE.

Thrombosis UK campaigned for many years for a VTE prevention programme in England to mandate VTE risk assessment for all patients admitted into hospital. This was started in 2010 and since that time there has been a 20.8%[1] reduction in post discharge VTE associated deaths. However, while data shows improvement, understanding how we can further reduce events, deaths and safeguard patients has been challenging.

Understanding how thromboprophylaxis is managed across all hospital settings and learning where improvements are needed is a significant advancement in the prevention of hospital associated thrombosis. Working with GIRFT has enabled the first in-depth analysis which has:

1. identified common challenges;
2. highlighted higher risk areas or cohorts;
3. and will inform local and national training needs at many levels.

We need to go further in safeguarding from avoidable thrombotic events and in identifying procedure, training and management policies this survey has helped us to identify the next steps we need to support if we are to succeed in:

- reducing hospital associated thrombosis events and deaths;
- improving patient safety;
- reducing avoidable costs to the healthcare system.

Prevention of HA-VTE is complex and we have much more to learn; this thrombosis survey has been invaluable in examining effective practice from across the country. We look forward to supporting training to implement the learning from this survey.

[1] NHS Digital published data 2020

Jo Jerrome

CEO of Thrombosis UK

Thrombosis UK was established in 2002. It is dedicated to improving awareness, understanding and knowledge of thrombosis. The charity works with patients, carers, healthcare professionals and all those who involved in advancing prevention and management of blood clots.

GIRFT thrombosis survey

The Getting It Right First Time (GIRFT) programme is pleased to support Thrombosis UK in engaging with NHS Trusts to examine hospital-associated thrombosisembolism (HA-VTE). We have used GIRFT's established methodology to gather and analyse data on the rates of hospital-associated VTE and to assess local practice in the prevention of VTE among patients.

The national survey was launched in October 2019 and was initially intended to run for six months to March 2020. However, with the arrival of the global coronavirus pandemic, we extended the survey until August 2020 in order to capture data around the link between increased venous thromboembolism (VTE) associated with COVID-19. This offered a unique opportunity to capture data on the increase in COVID-related thrombosis nationally. It is thought that 30% of patients who fall severely ill with COVID-19 develop thrombosis, which may contribute to death rates.

The survey questions were developed by professor of thrombosis Professor Roopen Arya and consultant haematologist Dr Lara Roberts, both of King's College Hospital NHS Foundation Trust, in collaboration with Thrombosis UK, and have been reviewed by a panel of experts from professional bodies. The Royal College of Surgeons and the Royal College of Physicians, and the National VTE (venous thromboembolism) Exemplar Centres Network also fully support the work.

Overall, 96 Trusts participated and we are extremely grateful to all the individuals tasked with responding and submitting their Trust data – they are duly acknowledged by name at the end of this report. We hope that the findings and recommended actions presented by Thrombosis UK provide further impetus for everyone involved in preventing avoidable thrombotic events to work together to improve learning, training, treatment, care and better outcomes for patients.

Professor Tim Briggs CBE

GIRFT Programme Chair and National Director of Clinical Improvement for the NHS

Professor Tim Briggs is a consultant orthopaedic surgeon at the Royal National Orthopaedic Hospital NHS Trust. He led the first review of orthopaedic surgery that became the pilot for the GIRFT programme, which he now chairs.

Getting It Right First Time (GIRFT) is part of an aligned set of programmes within NHS England and NHS Improvement. It undertakes clinically-led reviews of specialties, combining wide-ranging data analysis with the input and professional knowledge of senior clinicians to examine how things are currently being done and how they could be improved.

Report authors and clinical leads

Dr Lara Roberts

Dr Lara Roberts is a Consultant Haematologist and the Venous Thromboembolism (VTE) lead at King's College Hospital. She established the programme for root cause analysis of hospital-associated VTE at King's and continues to oversee VTE prevention practice across sites. She is a committee member of the British Society of Haematology Obstetric Haematology Special Interest Group and the Speciality Lead for the South London Clinical Research Network non-malignant haematology group.

Professor Beverley Hunt OBE

Professor Beverley Hunt OBE is a Professor of Thrombosis & Haemostasis at Guy's & St Thomas' Hospital. She is also founder and Medical Director of Thrombosis UK and campaigned for many years to get mandated VTE risk assessment in NHS England. She is currently chair of the steering committee of World Thrombosis Day (WTD). Prior to the COVID-19 pandemic she was working on behalf of WTD with the WHO to improve prevention of hospital-associated VTE globally. She is also Founder and co-chair of the British Society for Haematology Obstetric Haematology Group.

She is passionate about improving thrombosis prevention and currently is working on two grants from NIHR to research other ways of delivering this.

Professor Roopen Arya

Professor Roopen Arya is a Professor of Thrombosis and Haemostasis and Clinical Director of Haematological Medicine at King's College Hospital. He was the clinical lead for the national VTE prevention programme in England; he established and directs the national VTE Exemplar Centre network. He is a national and international expert in thrombosis and anticoagulation. He leads an active research group at King's College Hospital with numerous publications pertaining to VTE prevention.

GIRFT Thrombosis Survey team

Professor Tim Briggs CBE - GIRFT Chair and National Director of Clinical Improvement for the NHS
Allison Beal – Senior Advisor to GIRFT Chair Prof Tim Briggs and GIRFT MD Rachel Yates
Anne-Marie Ridgeon - Project Manager (GIRFT)
Bryan Ward - Head of Technology Solutions, Business Reform Limited
Marco De Caro - Analytics, Edge Health
Christian Moroy - Analytics, Edge Health

Recommendations

We recommend that:

1) Hospitals without an individual working in HA-VTE prevention post (nearly 30% of hospitals) assign / develop such a role to oversee this vital patient safety issue. Trusts may be directed to VTE Exemplar Centres to provide guidance regarding development of such roles.

2) Hospitals routinely identify HA-VTE to comply with patient safety good practice / standards.

3) Hospitals develop local strategies to improve provision of written and verbal patient information regarding HA-VTE risk. The National VTE exemplar centre network and Thrombosis UK can provide support.

4) Hospitals review their use of antiembolism stockings in medical and obstetric patients given the lack of evidence and lack of NICE recommendation for use in these patient groups. Trusts with significant inappropriate use should be directed to the national guidelines and VTE Exemplar Centre network who can help share best practice. This also represents a significant cost saving which could be re-invested in advancing other aspects of VTE prevention care based on local needs.

5) Hospitals develop local quality improvement projects targeting missed doses of anticoagulant thromboprophylaxis. Omissions were frequent (8.1% of VTE prevention submissions and 20% of all HA-VTE) – this is a recurring medication safety theme, which can form a focus for quality improvement projects to reduce HA-VTE.

6) Review of the NICE quality standard with the aim of retaining the patient information quality standards and developing a new quality standard aimed at reducing unnecessary missed doses.

7) Development of a 'buddy' system for Trusts not meeting the 95% VTE risk assessment rate with a VTE Exemplar Centre to share best practice, providing mentorship and encouragement.

8) Hospitals review their rate of HA-VTE and compare to other sites. If this is low compared to other sites, they should consider whether this reflects incomplete submission of data to GIRFT and if not, consider whether their method for identifying HA-VTE is robust. Efforts should be made to identify all episodes including those occurring following hospital discharge. Hospitals using radiology reports in combination with other methodologies identified higher numbers of HA-VTE.

9) GIRFT to explore the role of coding in enabling centralised monitoring of HA-VTE. The current NIHR study VTEAMs is also exploring whether use of coding could enable centralised monitoring of HA-VTE and we await these results.

Recommendations cont'd

We recommend that:

10) Hospitals review (and develop action plans to address) common contributing factors to potentially preventable HA-VTEs. These events were frequent (13%) with wide ranging underlying contributing factors across the scope of VTE prevention care.

11) Data collection on VTE risk assessment is reinstated, having been paused by NHS digital following Q3 2019/20 due to the COVID-19 pandemic. Data submission will be reinstated as a continued driver of good practice, enabling benchmarking and facilitating compliance with the NHS Standard Contract.

12) Thrombosis UK to develop research recommendations with the support of GIRFT, to submit to NIHR to address areas of uncertainty in VTE prevention identified in the survey such as improving understanding of patient refusal of thromboprophylaxis, suboptimal thromboprophylaxis delivery and thromboprophylaxis failure.

13) Hospitals follow NICE COVID-19 living guidelines section on thromboprophylaxis[1]. COVID-19 pneumonia results in a hypercoagulable state and is associated with a high burden of HA-VTE despite use of standard prophylactic measures. Rates of VTE (which included immunothrombosis) are seven-fold higher than rates of non-COVID-19 medical patients, as highlighted by this survey.

14) Thrombosis UK to consider working with GIRFT to develop the Thrombosis Survey in 2022 to assess the impact of interventions implemented locally and fully evaluate its impact.

References

[1] https://www.nice.org.uk/guidance/ng191

Introduction

In 2010 the national Venous Thromboembolism (VTE) Prevention Programme was introduced in England, providing a systematic approach to prevention of hospital associated venous thromboembolism (HA-VTE)[1]. The definition of HA-VTE is any VTE occurring during hospital admission or within 90 days of discharge. This system mandated documented VTE risk assessment with central submission of VTE risk assessment rates for all hospitalised patients. At launch, this was associated with a financial penalty if less than 90% of patients were risk assessed; with a subsequent increase in target to 95%. Those at risk of HA-VTE should be provided with thromboprophylaxis according to NICE guidelines (NG 89). In the 12 months following its introduction, there was a 9% reduction in overall VTE deaths, with a 20.8% reduction in post-discharge VTE deaths in 2018 (compared to 2007)[2].

Despite this progress, with the removal of the financial incentive there has been a fall-off in VTE risk assessment rates with 28% (42/151) of NHS hospitals not reaching the recommended 95% threshold in Q3 of 2019/20[3]. Additionally, NHS litigation demonstrates more than half of claims over the last five years relate to lack of VTE risk assessment/thromboprophylaxis (refer to p46). At a national level, there has been no attempt to evaluate other aspects of the NICE quality standard including the provision of thromboprophylaxis in response to risk assessment and the provision of patient information regarding their risk of VTE. Furthermore, the cornerstone of the VTE programme, less publicised than the risk assessment target, is the requirement within the NHS contract for acute Trusts, for each hospital to undertake root cause analysis of all cases of HA-VTE[4] . Such cases are usually identified by linking positive imaging for DVT and PE to hospitalisation as per the definition of HA-VTE. The details of the VTE prevention care provided are reviewed to identify omissions in thromboprophylaxis and if the HA-VTE might be "potentially preventable". Root cause analysis of all HA-VTE has been occurring for many years now but to date this has not been collated nationally and thus system-wide learning from such quality failures is lacking.

Aims

The thrombosis survey aimed to address these areas by assessing:

1. Variation in the organisational approach to VTE prevention
2. Provision of appropriate thromboprophylaxis (mechanical and anticoagulant)
3. Provision of patient information regarding VTE
4. The numbers of cases of HA-VTE per annum in each hospital
5. The clinical areas where HA-VTE occurs, identifying whether HA-VTE has occurred after medical or surgical admission and the type of surgical admission.
6. Did HA-VTE occur after day case admission?
7. What proportion of HA-VTE cases are deemed potentially preventable?
8. What themes can be identified within cases with potentially preventable HA-VTE?

References

[1] Roberts LN, Durkin M, Arya R. Annotation: Developing a national programme for VTE prevention. British Journal of Haematology 2017;178:162-170.

[2] Catterick D, Hunt BJ. Impact of the national venous thromboembolism risk assessment tool in secondary care in England: retrospective population-based database study. Blood Coagul Fibrinolysis. 2014;25:571–576

[3] https://digital.nhs.uk/data-and-information/data-collections-and-data-sets/data-collections/venous-thromboembolism-vte-risk-assessment-collection

[4] https://www.england.nhs.uk/wp-content/uploads/2015/08/nhscontrct-partics-v1.pdf

Findings

Participants

Overall, 96 (67%) Trusts completed at least one survey, of 144 invited. Therefore, the data presented cannot be considered representative of the whole NHS. Participating NHS sites are illustrated in the map below. Additionally 71 Independent Sector hospitals completed at least one part of the survey and four hospitals from Wales participated. The data from Wales and the independent sector providers is not further presented here. The table illustrates NHS participation across the three surveys; 103 unique NHS units participated in total (97 as Trusts with seven as sites).

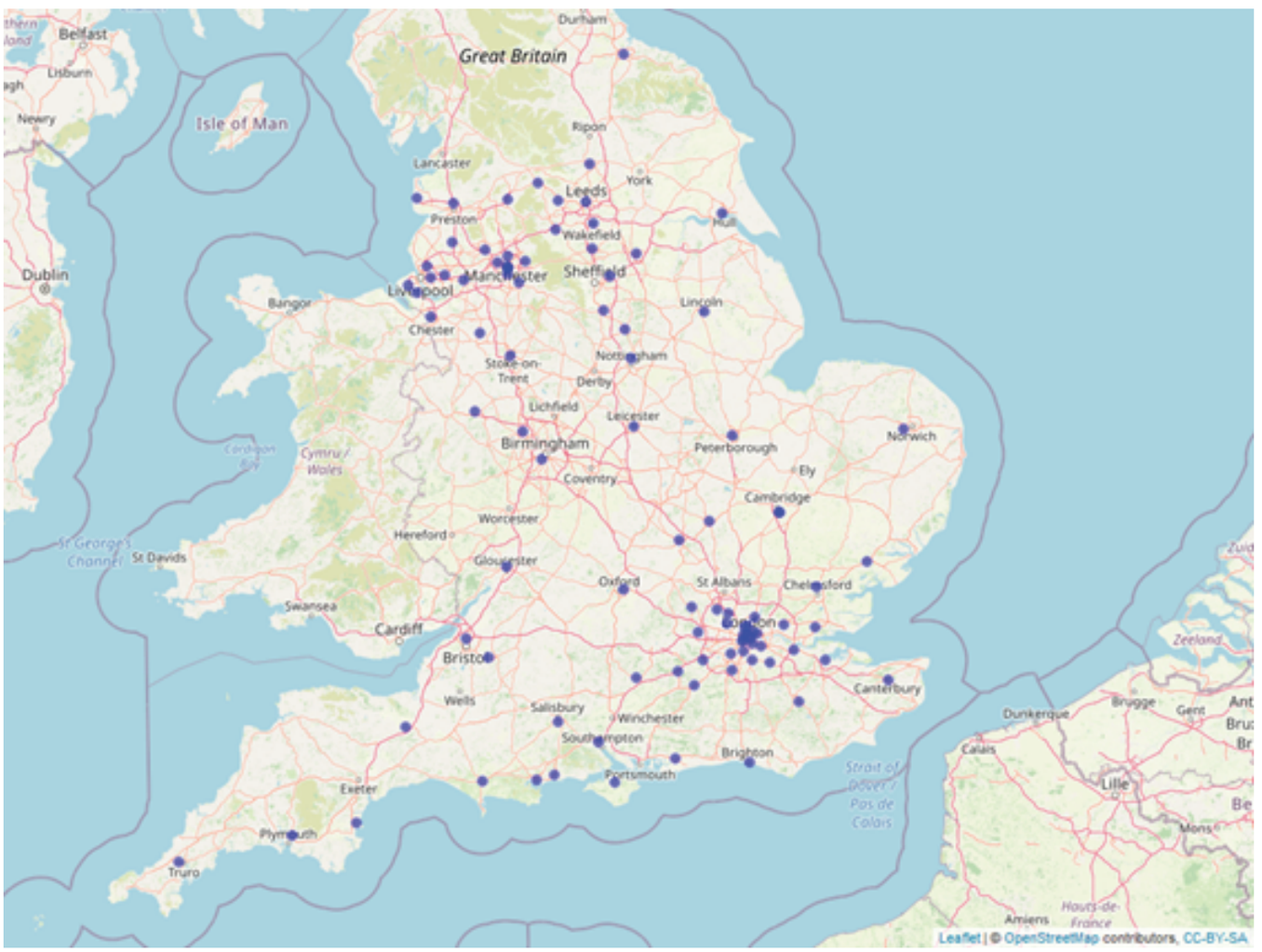


FIGURE 1: Map of participating NHS unit locations

All units	All Components	Survey 1	Survey 2	Survey 3
Number of units completed	77	98	98	84
Proportion of units completed	74.8%	95.2%	95.2%	81.6%

Table 1: Response rates across all units for each survey component

Survey 1 – VTE prevention organisational survey

Background

The NHS standard contract[1] specifies that all hospitalised patients should have a documented VTE risk assessment on admission and that data on completion of risk assessment should be reported centrally to NHS Digital on a quarterly basis (data submissions currently paused due to the COVID-19 pandemic), with a standard of 95%. NICE has produced both guidance and quality standards[2] on VTE prevention outlining best practice. There is no overall picture of VTE prevention practice and supporting resource throughout England and this survey aims to establish this. The potential benefits of having a VTE prevention role are further explored.

Findings

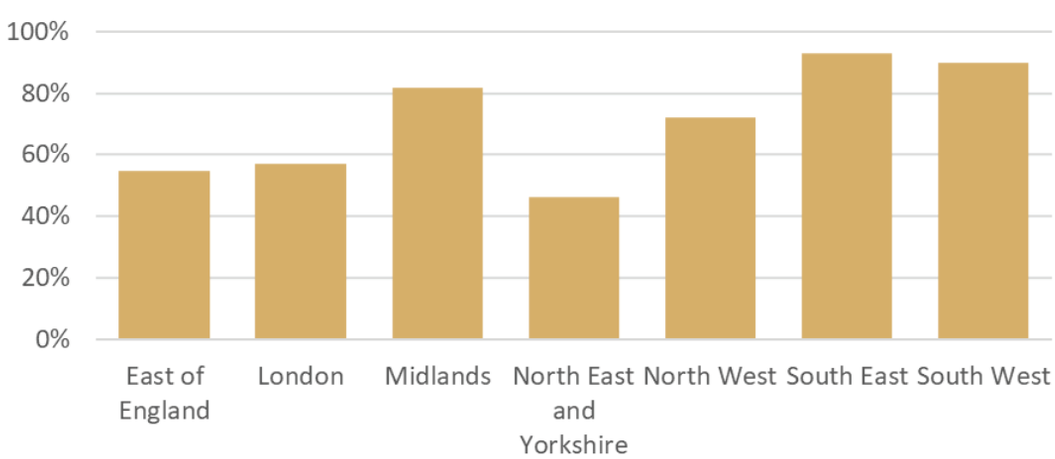
Organisational approach:

- Out of 144 invited, 98 sites commenced this survey.
- Two sites did not answer any questions.
- Some sites completed this survey more than once, in this case, the most recent data entry was used for analysis.
- Summary data is provided in the table below with further details of individual components including regional variation illustrated.

	Units responding yes, n (%)
Units with VTE prevention role	68 (69)
Units that routinely identify HA-VTE	88 (90)
Units using the national VTE risk assessment tool	85 (87)
Units using of weight-based dosing for anticoagulant thromboprophylaxis	78 (80)
Units conducting whole leg scans for DVT diagnosis	63 (64)

Table 2:

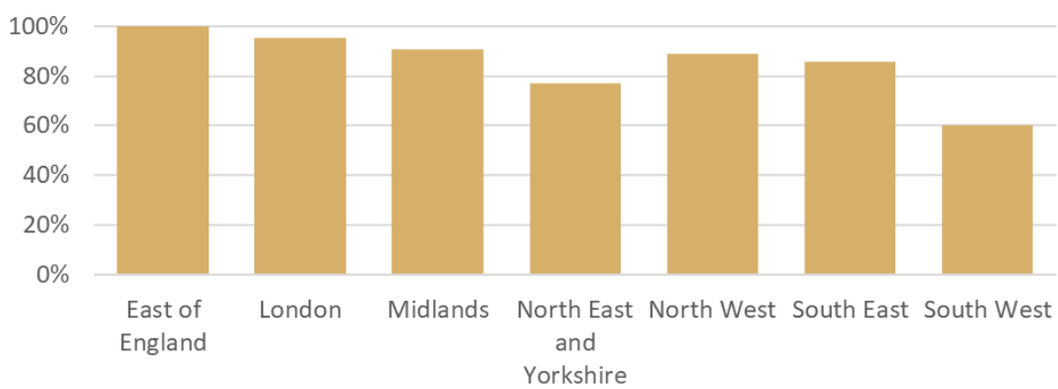
FIGURE 2: Units with VTE prevention role



1. Units using the national VTE risk assessment tool

- Out of 144 invited, 98 sites commenced this survey.
- Of note, of the 11 respondents who responded that they did not use the national tool, nine (82%) used a local tool based on the national tool with the remaining two units using an in-house risk assessment tool.
- Two units did not respond to this question.
- No unit reported the use of an alternate published risk assessment tool.

FIGURE 3: Units using the national VTE risk assessment tool



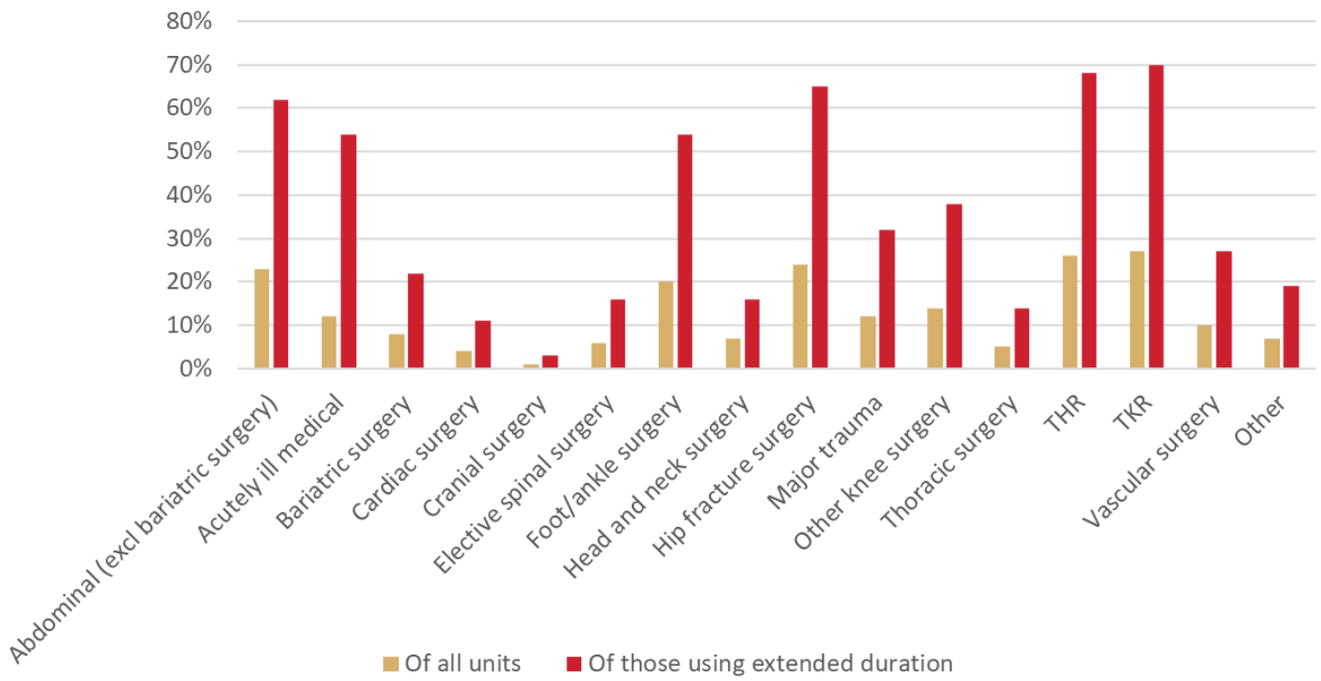
2. Use of thromboprophylaxis for a minimum of seven days

- Do you offer a minimum seven days thromboprophylaxis for any groups of medical/surgical patients?

The NG89 recommends all medical and surgical patients receive a minimum of seven days thromboprophylaxis based on randomised clinical trials providing six to 14 days of thromboprophylaxis for selected high risk populations during a time with longer length of stay. Changes in both surgical and medical management have led to a generally shorter length of stay, and so the approach recommended is not known to be effective, particularly for patients discharged within seven days. A number of groups have therefore contested this recommendation and this survey aimed to evaluate implementation[3,4,5]. There is stronger evidence for some patient groups eg those undergoing hip and knee replacement to receive longer duration of anticoagulation. Sites responding 'yes' were asked to indicate the patient groups offered a minimum of seven days thromboprophylaxis.

- Overall, 61 (62%) sites responded 'no' to this question. (It is likely that some hospitals responding 'no' do use extended prophylaxis for some subgroups (e.g. major orthopaedic surgery) as the patient groups were not visible unless a 'yes' response was entered). We therefore present the data as a proportion of all respondents and of those, responding 'yes'.

FIGURE 4: Use of thromboprophylaxis for a minimum of 7 days



The proportion of hospitals providing extended thromboprophylaxis following procedures where this is recommended by NICE guidance (e.g. hip and knee replacement) was lower than anticipated.

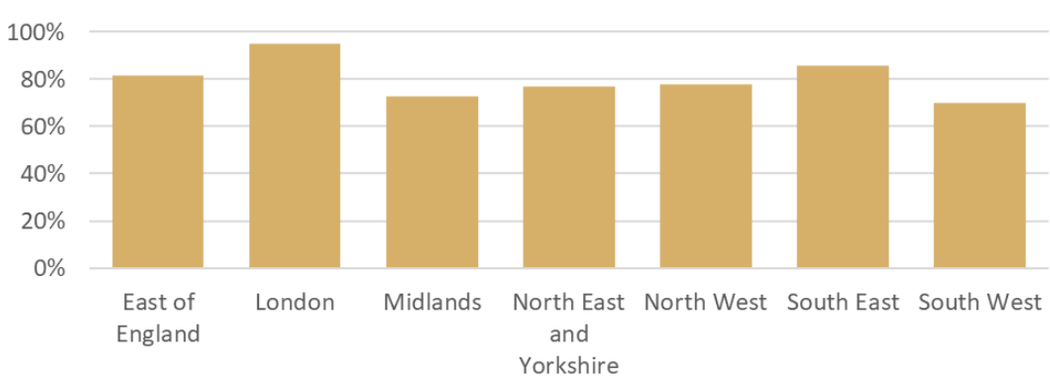
It is not clear if this is due to incomplete data submission or a reflection of actual practice.

The low rate of uptake of extended thromboprophylaxis for acutely ill medical patients overall was expected given the response to the NICE guidance.

3. Do you use weight based dosing for thromboprophylaxis?

Whilst NICE makes no recommendation regarding use of weight based thromboprophylaxis, we wished to establish national practice.
82% of participants reported use of weight-based thromboprophylaxis dosing, with regional variation in use of shown below.

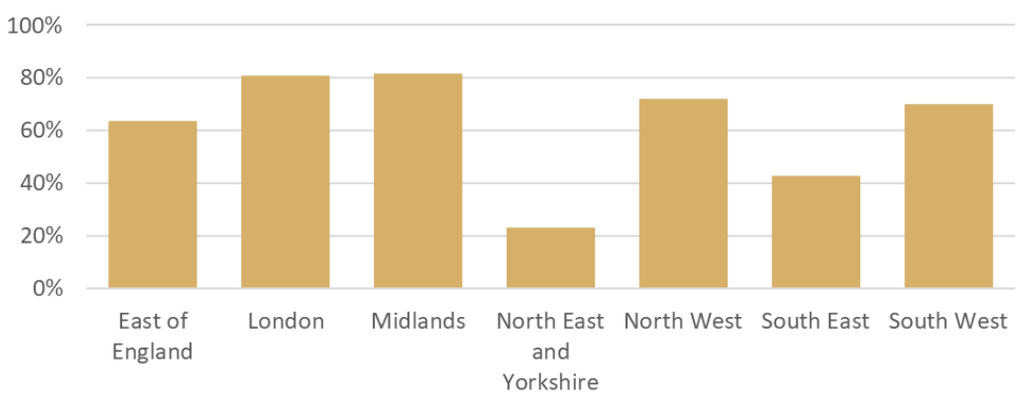
FIGURE 5: Units using weight-based dosing for anticoagulant thromboprophylaxis



4. Do you use whole leg Doppler scans for DVT diagnosis?

NICE guidance[6] on management of VTE recommends use of proximal Doppler leg scanning only (and rescanning patients with high clinical suspicion at one week) as this was cost effective.
Many centres continue to use whole leg scans to avoid the need for rescanning (in areas with limited resource). Additionally, as distal DVT can cause symptoms and potentially long term complications such as post-thrombotic syndrome, most clinicians treat distal DVTs as they would proximal events.
Given identification of distal DVT may influence HA-VTE rates, we wished to establish practice among participants.
70% of participants use whole leg Doppler scans for routine diagnosis of DVT with regional variation in use as shown below.

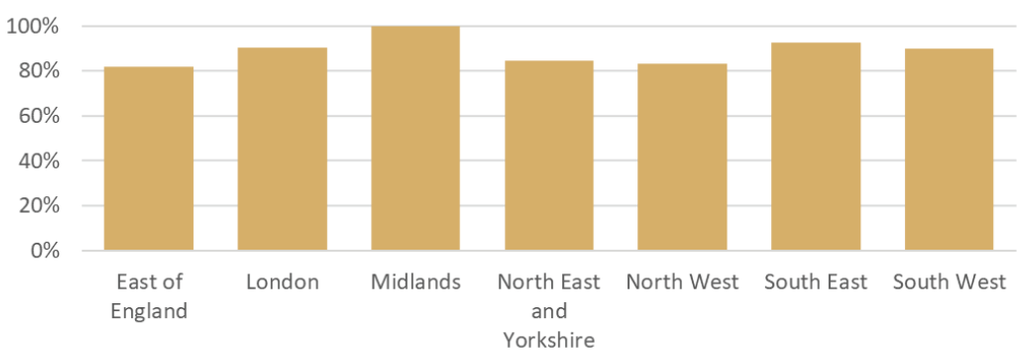
FIGURE 6: Units that conduct whole leg scans for DVT diagnosis



5. Do you routinely identify HA-VTE?

The NHS contract for acute hospitals stipulates hospitals should identify and investigate episodes of HA-VTE.
89% of participants reported routinely identifying HA-VTE with regional variation as shown below.

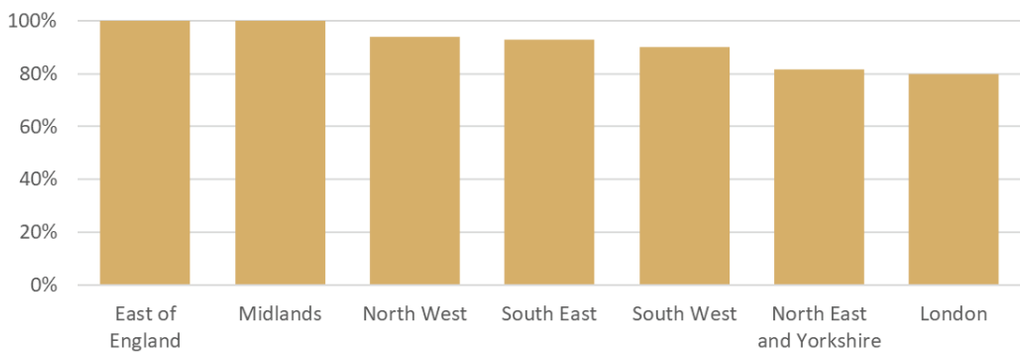
FIGURE 7: Units that routinely identify HA-VTE



6. Do you routinely investigate all HA-VTE?

90% of participants (n=84) reported routinely investigating all HA-VTE with a further two sites investigating some events (reported as 10% and 75%).
Four sites did not investigate HA-VTE and three did not respond to this question. Regional variation is illustrated below.

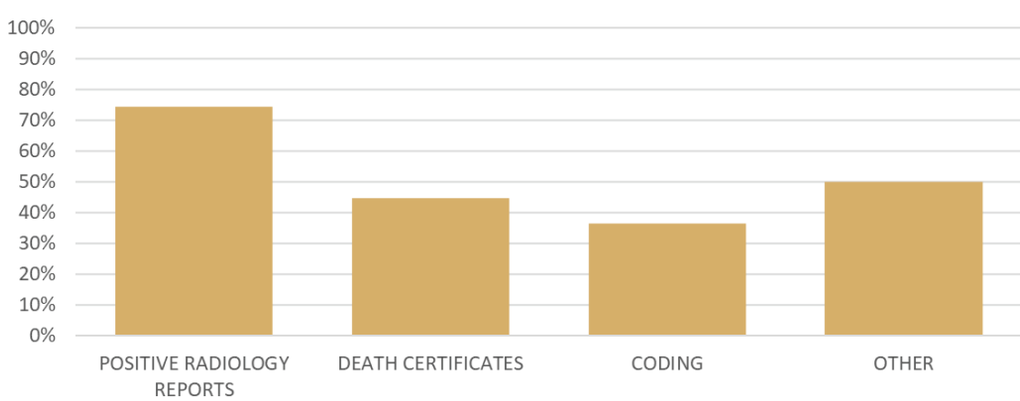
FIGURE 8: Proportion of units that investigate HA-VTE



7. How is HA-VTE identified?

The majority of units utilised greater than one method to identify HA-VTE (59%, 44/74 respondents). Radiology reports were frequently used, with other methods illustrated below. Of the 30 centres using only one method, nine of these used 'other' methodology, which included clinical team reporting, adverse incident reporting and anticoagulation referrals. This methodology is unlikely to identify all (or even a majority) of HA-VTE cases.
The remaining units utilised either radiology reports or coding. Hospitals including radiology reports as the means to identify HA-VTE submitted a higher number of HA-VTE cases (median 52, IQR 12 -87 vs 20, 11 – 56 in those not using radiology reports).

FIGURE 9: Proportion of methods used to identify HAT



References

[1] https://www.england.nhs.uk/publication/full-length-nhs-standard-contract-2020-21-particulars-service-conditions-general-conditions/
[2] https://www.nice.org.uk/guidance/ng89, https://www.nice.org.uk/Guidance/QS29
[3] Shapiro S, Everington T, Roberts L, Arya R. Venous thromboembolism. Clin Med (Lond). 2019 May;19(3):262.
[4] Lester W, Gomez K, Shapiro S, Dabhi K, Laffan M. NICE NG89 recommendations for extended pharmacological thromboprophylaxis - is it justified and is it cost effective: a rebuttal from the British Society for Haematology. Br J Haematol. 2019 Sep;186(5):790-791
[5] Thomas W, Sleep T, McNeil AF, Wallis S. What is the cost of implementing updated NICE guidance (2018) on venous thromboembolism prophylaxis post hospital discharge for medical patients? Clin Med (Lond). 2019 Sep;19(5):427
[6] https://www.nice.org.uk/guidance/NG158

Recommendations

Recommendations	Actions	Owners	Timescale
1. Hospitals without an existing VTE prevention role should develop this role	a. Develop a local VTE prevention role. This could be incorporated into an existing nurse/pharmacist role b. Sample job descriptions are available via the VTE exemplar network	Providers	Within 12 months of the publication of this report
2. Quality improvement programme centred on HA-VTE should be routine practice	a. This should be a key responsibility of the VTE prevention role b. Support in development can be provided via the VTE exemplar network c. Review of radiology reports of VTE diagnostic imaging should be included in the HA-VTE strategy	Providers	Within 12 months of the publication of this report

Table 3:

Impact of VTE exemplar centre status on organisational resource/approach

Twenty-two (22%) units were VTE exemplar centres. Of these exemplars, 80% (20/25 Trusts) participated in the survey (compared to 67% participation rate overall).
We further examined whether VTE exemplar centre status was associated with differences in organisational approach. This is presented in Table 4 below.

VTE exemplar centres were more likely to participate, have a VTE prevention role in post, use weight based thromboprophylaxis and routinely investigate HA-VTE. Hospitals with VTE exemplar centre status were less likely to routinely offer seven days or more thromboprophylaxis for medical/surgical patients.

	VTE exemplar centre	Non VTE exemplar centre
Participation, n (%)	20 (80)*	76 (64)
VTE prevention role, n (%)	21 (96)	47 (62)
7 days TP, n (%)	4 (18)	32 (44)
Weight based TP, n (%)	20 (90)	58 (76)
Whole leg DVT scans, n (%)	17 (77)	46 (61)
Routinely investigate HA-VTE, n (%)	22 (100)	66 (87)
Use radiology reports to identify HA-VTE, n (%)	16 (73)	39 (59)

Table 4: VTE exemplar centre status and organisational approach ***20 Trusts comprising 22 units with VTE exemplar centre status participated**

Survey 2 – VTE prevention organisational survey

Background

This section of the survey aimed to build on a previous feasibility study[1] of a national clinical audit of VTE prevention. The questions utilised were based on this work and align with the Quality Standard for VTE prevention[2]. Additional questions were added to evaluate new NICE recommendations to deliver anticoagulant prophylaxis within 14 hours of admission (when indicated) and to evaluate delivery of thromboprophylaxis (i.e. absence of missed doses) as this has been highlighted as an additional issue from work in the United States[3].

Participants were invited to submit four entries per month pertaining to each of the following patient groups. Submitted patients must have been identified as high risk of VTE.

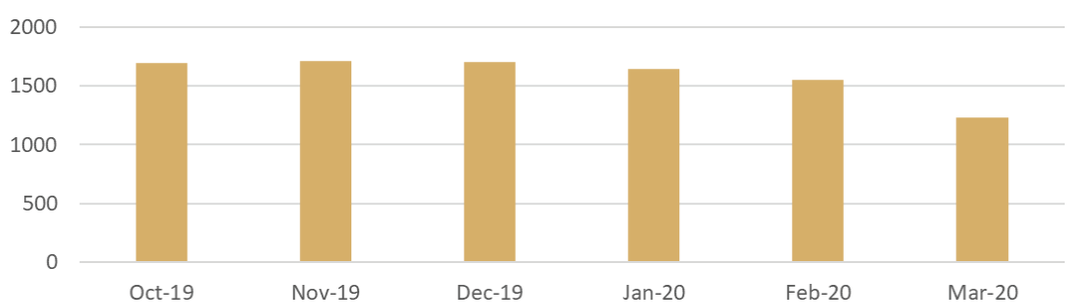
- Medical patients (admitted under the care of a physician).
- Surgical patients (admitted under the care of a surgeon).
- Critical care patients (admitted to a critical care setting at the time of audit).
- Maternity patients (admitted under the care of midwifery or obstetrics).
- Other patients (For example, Liver, Stroke, Neurosurgery, Renal).

This would result in the submission of 20 surveys monthly for six months (i.e. 120 surveys per hospital over the survey period). For hospitals treating only a subset of patients, they were advised to submit 20 surveys each month in total reflecting their local case-mix.

Findings

- A total of 98 participants submitted at least one data entry to this survey. Of these, 43 sites submitted the requested 120 (or more) entries. Overall, the mean number of submissions was 76 (range 3 – 137), with a total of 9,553 data entries.
- It appears COVID impacted on contributions to this survey, with the number of data entries for March ~30% lower than previous months (see Fig 10 below)
- Of hospitals participating in survey 2, 27% reported a VTE risk assessment rate of <95% in Q3 2019/20 (similar to the proportion not reaching this target overall).

FIGURE 10: Monthly case submission numbers



The breakdown of data entries by admission type is shown below:

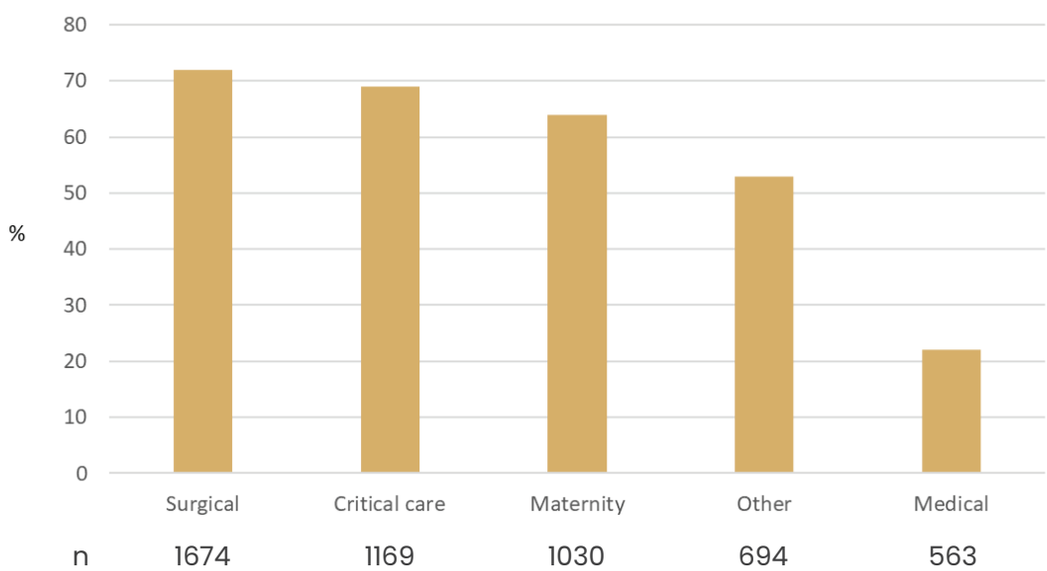
Admission type	n (%)
Medical	2538 (26.5)
Surgical	2348 (24.5)
Critical care	1719 (18.0)
Maternity	1632 (17.0)
Other	1318 (13.9)

Table 5:

1. Use of mechanical thromboprophylaxis

Mechanical thromboprophylaxis was indicated for 5,130 (54%) of submitted cases with breakdown by admission type shown below.

FIGURE 11:



References

[1] Arya et al. Feasibility study for national clinical audit of venous thromboembolism prevention in hospital – final report 2017

[2] https://www.nice.org.uk/guidance/qs3

[3] Shermock KM, Lau BD, Haut ER, Hobson DB, Ganetsky VS, Kraus PS, Efird LE, Lehmann CU, Pinto BL, Ross PA, Streiff MB. Patterns of non-administration of ordered doses of venous thromboembolism prophylaxis: implications for novel intervention strategies. PLoS One. 2013 Jun 14;8(6):e66311.

There was regional variation in this as illustrated in the charts below :

FIGURE 12: Proportion of all patients with mechanical prophylaxis indicated

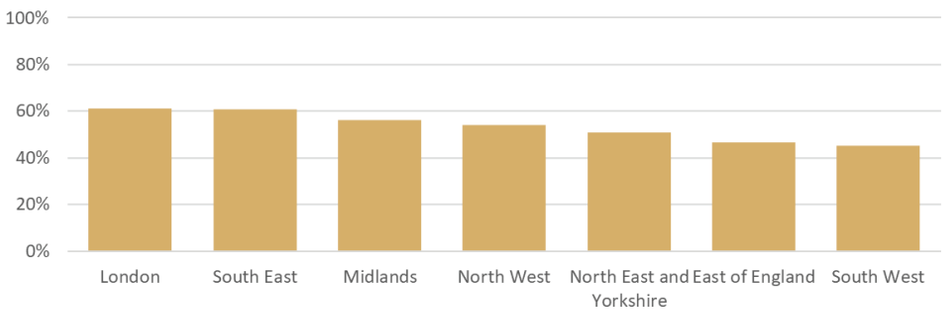


FIGURE 13: Surgical

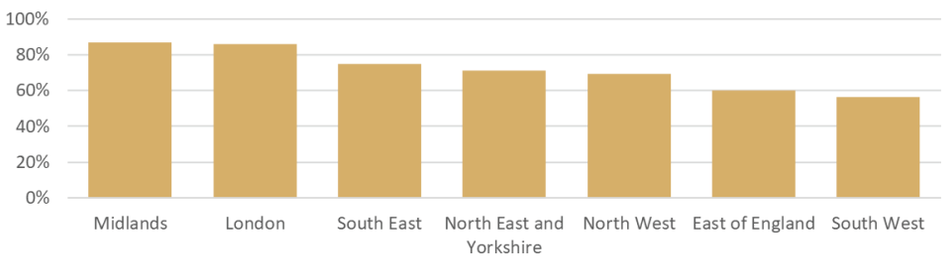


FIGURE 14: Critical care

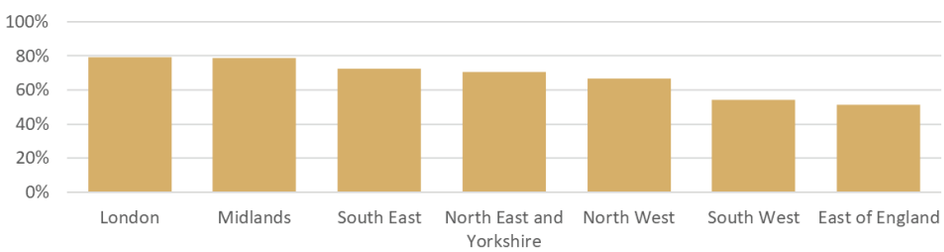


FIGURE 15: Maternity

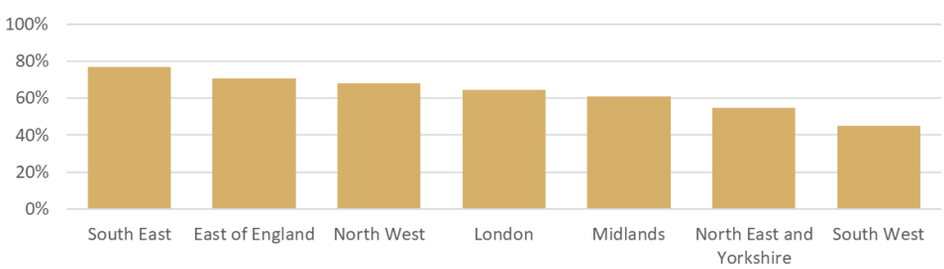
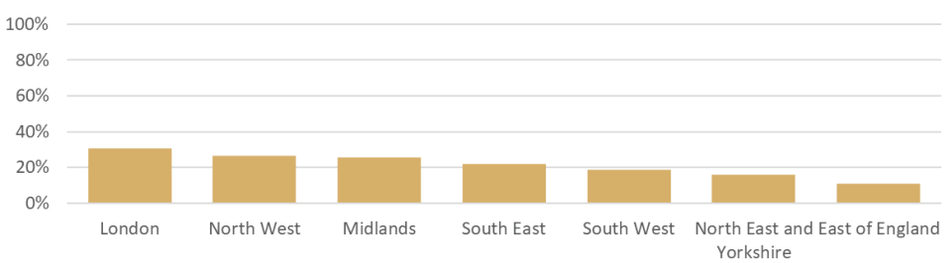


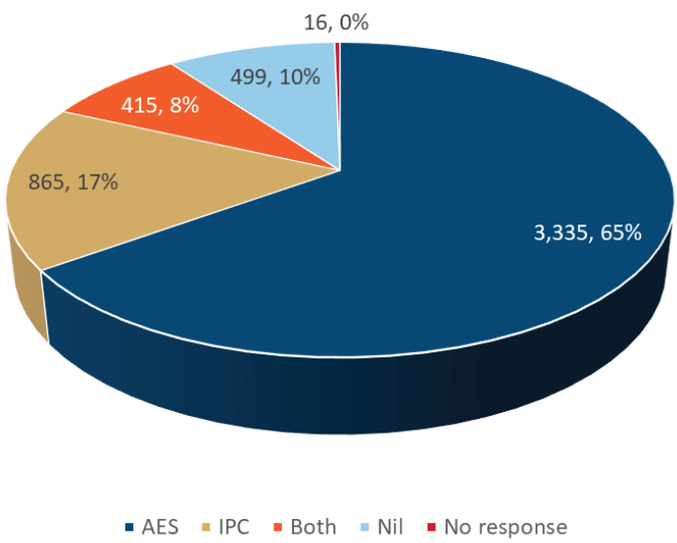
FIGURE 16: Medical



Of note, the updated NICE guidance (NG89) did not specifically recommend the use of mechanical prophylaxis in medical/obstetric patients due to a lack of evidence. In addition to regional variation, there was inter-site variation with 16 sites identifying no medical patients with an indication for mechanical prophylaxis (total medical patient submissions/site ranging from 1 to 30). Similarly, four sites identified no maternity patients with an indication for mechanical prophylaxis (total obstetric patient submissions/site ranging from 16 - 30). This suggests potential overuse of mechanical prophylaxis in these patient groups.

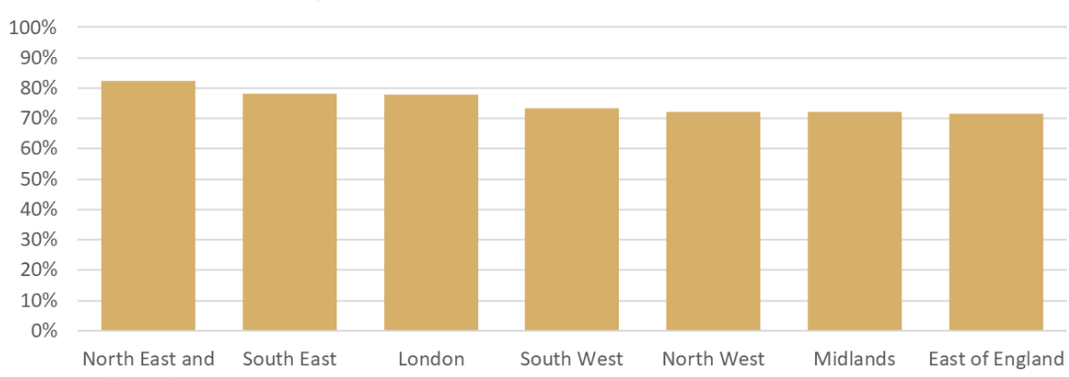
- Of those with a reported indication for mechanical prophylaxis, the majority received anti-embolism stockings (AES) alone with breakdown illustrated below:

FIGURE 17: Type of mechanical prophylaxis prescribed



- Of patients prescribed AES (n=3750), 74% had evidence of being fitted as per NICE guidance. The response 'unable to determine' was frequent (n=566, 15%), with the remainder either indicating AES were not fitted as per NICE (n=192, 5%) or with no response (n=201, 5%). Regional variation is shown in the Figure below.
- A similar proportion of patients prescribed AES (81%, n=3045) had evidence of monitoring as per NICE guidance. 16% were not monitored as per NICE (missing data; n=102, 3%).
- Of patients prescribed AES, the majority were wearing them at the time of audit (86%, n=3218). 454 (12%) patients were not wearing (missing data; n=78, 2%).

FIGURE 18: Proportion of patients with an antiembolism stocking fitted as per NICE guidance



2. Use of pharmacological thromboprophylaxis

- 7,399 (78%) patients were 'low risk of bleeding' and were eligible for pharmacological thromboprophylaxis.
- The majority of these patients (n=6544, 88%) were prescribed pharmacological thromboprophylaxis in line with NICE guidance. There was significant inter-site variation from 40 -100% overall and within patient groups.

Admission type	Overall, n (%)	Inter-site variation (range)
Critical care	1241 (91)	50 – 100%
Maternity	1151 (89)	20 – 100%
Medical	1730 (85)	37 – 100%
Surgical	1723 (90)	48 – 100%

Table 6:

Regional variation in prescription is highlighted in the chart below:

FIGURE 19: Proportion of patients with pharmacological prophylaxis prescribed in line with NICE/local guidance

- 4,953 (67%) patients received or were due to receive pharmacological thromboprophylaxis within 14h of admission.
  - There was variation by participating sites with the proportion of patients meeting this metric ranging from 1 – 100%.
  - There was also variation by patient group as shown below:

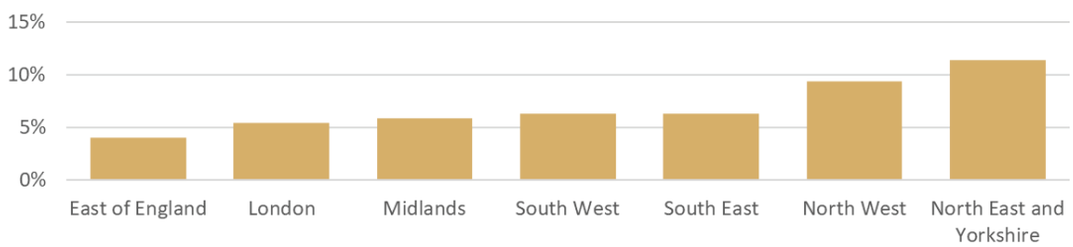
Admission type	Cases receiving within 14h, n (%)	Inter-site variation (Min – Max)
Critical care	70	0 – 100%
Maternity	60	0 – 100%
Medical	65	0 – 100%
Other	61	0 – 100%
Surgical	63	0 – 100%

Table 7:

Missed doses (clinically inappropriate or due to patient refusal)

- 532 (of 6,544 with prophylaxis prescribed, 8.1%) patients had doses of anticoagulant prophylaxis missed due to patient refusal/without a clinical reason.
- The median number of patients with missed doses per reporting hospital was 4 (range 1- 54).
- The median number of doses missed per patient was 1 (range 1 -50).
- There was little variation in number of patients/doses omitted by patient subgroup (data not shown).

FIGURE 20: Proportion of sampled patients with missed doses of anticoagulant prophylaxis due to patient refusal or that were not clinically appropriate



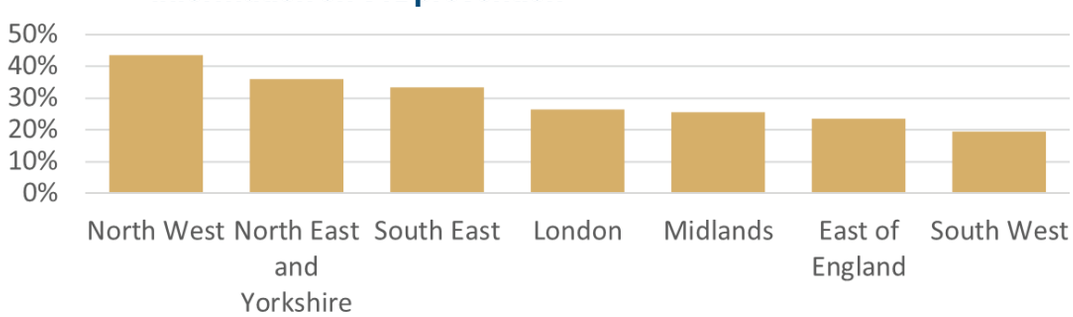
3. Provision of written information to the patient &/or carer

30.8% of cases (n=2859) submitted received written information regarding VTE.
Provision of patient information by admission type is shown in the Table below. Inter-site variation was broad across all admission types (from 0 -100%). Regional variation in written information provision is shown in Fig 21.

Admission type	Provision of	
	Written information (%)	Verbal information (%)
Medical	19	30
Surgical	31	41
Critical Care	17	29
Maternity	30	55
Other	23	34

Table 8:

FIGURE 21: Proportion of sampled patients (or their carer) provided with written information on VTE prevention



4. Provision of verbal information

37% (n=3565) of audited cases had evidence of verbal provision of information of VTE prevention.
The most frequent response to this query was 'unable to determine: (n= 4092, 43%). Breakdown by patient type is summarised in the above Table.

Recommendations

Recommendations	Actions	Owners	Timescale
3) Improve provision of written and verbal patient information	a) Hospitals should ensure patient information regarding VTE prevention is available and part of routine admission /discharge processes	Providers	Within 12 months of the publication of this report
	b) Continued patient education /awareness events regarding hospitalisation as a risk factor for VTE	Thrombosis UK	Within 12 months of the publication of this report
4) Review use of mechanical thromboprophylaxis in non-surgical patients	a) Hospitals to review VTE prevention guidance with regard to use of anti-embolism stockings in medical and obstetric patients	Providers	Within 12 months of the publication of this report
	b) Cost savings from reduced use be re-invested to support other aspects of VTE prevention care highlighted by GIRFT survey		
5) Review prevalence of missed thromboprophylaxis doses	a) Ensure there is a local policy for management of omissions of critical medicines	Providers	Within 12 months of the publication of this report
	b) Develop a local quality improvement programme to reduce inappropriate missed doses of thromboprophylaxis		
	c) Explore impact of electronic prescribing and administration on missed doses/electronic solutions to address in a future thrombosis survey	Thrombosis UK to work with GIRFT	December 2022
6) Develop a 'buddy' system for Trusts with VTE risk assessment rates below 95%	a) VTE Exemplar Centre Network to provide support and mentorship to achieve VTE risk assessment target	Providers/ VTE Exemplar Centre Network	Within 12 months of the publication of this report

Table 9:

Survey 3 – Hospital Associated Venous Thromboembolism

Background

A key component to identifying areas for improvement is the root cause analysis of hospital associated venous thromboembolism (HA-VTE). This previously featured in the NHS Standard contract[1]. This root cause analysis process is now being replaced by 'systems based patient safety incident investigation'[2].

HA-VTE is defined as any episode of VTE diagnosed as an inpatient or within 90 days of hospitalisation (this includes events occurring following day surgery performed with regional/general anaesthesia but excludes events associated with medical admissions of <12 hours, surgery performed under local anaesthesia and admissions for investigation of suspected VTE).

Such cases are usually identified by linking positive imaging for DVT and PE to hospitalisation as per the definition of HA-VTE (although other methodology is in use as described above). The details of the care of each patient are reviewed to identify omissions in thromboprophylaxis and if the HA-VTE might be deemed as 'potentially preventable'.

Potentially preventable events may be associated with inadequate thromboprophylaxis (excluding those with an isolated single dose omission/single incorrect dose for weight).

Additionally, where a contraindication to anticoagulant prophylaxis is present, an event may be considered potentially preventable when mechanical prophylaxis is indicated and not provided e.g. acute stroke with paresis not offered intermittent pneumatic compression or trauma patient with persisting bleeding risk factors not offered mechanical prophylaxis. The practice of root cause analysis of all HA-VTEs has been occurring for many years now but to date this has not been collated and thus system-wide learning is lacking.

The thrombosis survey aimed to address these areas by assessing:

- The rate of HA-VTE in each hospital over the reporting period and regional variation of this.
- The clinical areas where HA-VTE occurs, identifying whether HA-VTE has occurred after medical, obstetric or surgical admission and the type of surgical admission.
- Did HA-VTE occur after day case admission?
- What proportion of HA-VTE cases are deemed potentially preventable?
- What themes can be identified within cases with potentially preventable HA-VTE?

References

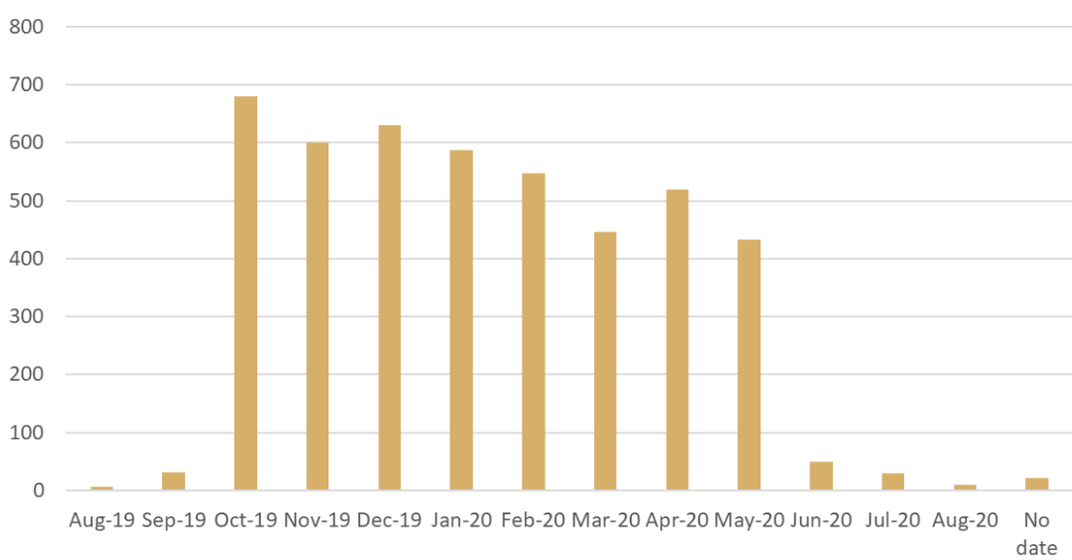
[1] NHS Standard Contract Particulars. https://www.england.nhs.uk/wp-content/uploads/2015/08/nhscontrct-partics-v1.pdf

[2] NHS England » Patient Safety Incident Response Framework

Findings

- 84 sites participated in this survey submitting 1 to 277 cases per site. The advent of COVID appears to have impacted on continued contribution to this survey.
- The number of HA-VTE cases submitted was highest for Oct – Dec 2019 with a ~25% reduction in case numbers for Mar – May (see Fig 22 below).
- We therefore present rates of HA-VTE for both the whole period and the period Oct-Dec 2019 when reporting rates were higher.
- Whilst hospitals were asked to submit HA-VTE from Oct 2019 – May 2020 (post extension), a number of cases (n=117, 2.5%) were submitted outside this date range with a small number submitted without a date for HA-VTE (n=26, 0.5%); see Figure below. For the latter group, the admission dates suggest they are likely to have occurred within the reporting period. We have retained all cases in the analysis presented.

FIGURE 22: Number of HA-VTE cases submitted



1. Organisational resource and relationship to HA-VTE survey contribution

- Of the 68 centres with a VTE prevention role, 57 (83%) contributed HA-VTE data compared to 24/30 (80%) without a VTE prevention role.

  Sites with a VTE prevention role, contributed a greater number of HA-VTE cases (median 55, range 2-277 per site compared to median 15, range 1-124 per site without a VTE prevention role).

  VTE Exemplar centres (n=21) contributed more HA-VTE cases than non-Exemplar sites (median 81, range 2-170 compared to median 23, range 1 -277).

  Of the 80 sites using weight-based thromboprophylaxis 64 (80%) contributed to the HA-VTE survey with a median number of cases of 43 (IQR 14 - 96).

  Of the 20 sites not using weight-based thromboprophylaxis, 10 (50%) contributed to the HA-VTE survey with a median number of cases/site of 73 (IQR 37 – 122).

Of the 62 sites using whole leg scans for DVT diagnosis, 53 (85%) contributed to the HA-VTE survey with a median number of cases/site of 41 (range 1-277).

Of the 36 sites not using whole leg scans, 28 (78%) contributed to the HA-VTE survey with a median 23 cases/site (range 1-165).

Of 87 sites who routinely investigate HA-VTE, 71 (82%) contributed to survey 3.
Ten (of 11) sites who do not routinely investigate HA-VTE also contributed.
Those who routinely investigate HA-VTE contributed more cases (median 41, range 1-277 compared to median 19, range 1 to 103).

Of 55 sites using radiology reports as part of HA-VTE identification strategy, 50 (91%) contributed to survey 3. These sites contributed a median of 51 cases (range 1-277) compared to a median of 21 (range 1 -170) in those not using radiology reports (n=31).

2. Summary of VTE HA-VTE events

- 84 hospital sites submitted cases to this survey with a total of 4595 episodes of HA-VTE submitted (including 466 episodes associated with admission due to COVID-19 pneumonia). The number reported varied widely by site with a median number of entries of 36 (range 1 -277).

3. Rate of HA-VTE

- Rates of HA-VTE were calculated from data submitted by 79 (94%) contributing sites as HES data was unavailable for the remaining five sites.

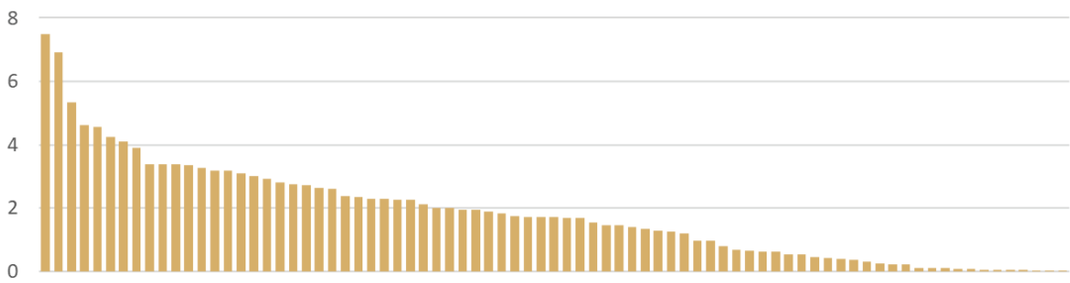
  The overall rate of HA-VTE (Oct 2019 – May 2020) was 1.15 per 1000 admissions. We noted 31% of all admissions were day cases; as the risk of HA-VTE is known to be lower with such admissions, further analyses were stratified as non-day case or day case admission.

  The rate of HA-VTE (Oct 2019 – May 2020) excluding day case admissions was 2.0 per 1000 admissions. This corresponded to a median rate across sites of 1.70 per 1000 admissions (IQR 0.49 – 2.74 per 1000 admissions). There was wide variation between sites as illustrated in the Figure below.

  As case numbers submitted were very low at some centres, we further calculated rates for hospitals providing data for at least 50 cases of HA-VTE over the reporting period. HES data was available for 33/36 hospitals submitting at least 50 cases.

  The median rate of HA-VTE across these hospitals was 2.32 (IQR 1.73 -3.26) per 1000 admissions.

FIGURE 23: Rate per 1,000 admissions of reported HAT patients per uni between 1st October and 31 May 2020 (Non day case)



As case submission numbers reduced over the study period, we also calculated a HA-VTE rate for Oct – Dec 2019 (the period with highest case numbers submitted excluding day cases) of 1.6 per 1000 admissions (IQR 0.43 – 2.7). Restricting it by case numbers >50, significantly reduced the number of hospitals (n=10 with 50 or more cases); the median rate of HA-VTE from these centres was 2.5 (IQR 1.9 - 3.0) per 1000 admissions.

4. HA-VTE characteristics

	Overall	Surgical	Medical	Obstetric
N	4595	1606	2896	89
Male, n (%)	2221 (48)	752 (47)	1466 (51)	n/a
Mean age (SD), years	68.5 (17)	66.8 (17)	70.5 (16)	31.8∞ (9)
Source, n (%) Radiology Clinical team Bereavement/death certificate External hospital Other	 3659 (80) 306 (7) 36 (0.7) 15 (0.3) 579 (13)			
Type of VTE, n (%) PE Proximal DVT Distal DVT UL DVT	 32576 (60) 1137 (25) 657 (14) 225 (5)	 830 (52) 401 (25) 309 (19) 66 (4)	 1692 (58) 712 (25) 335 (12) 157 (5)	 52 (58) 22 (25) 13 (15) 2 (2)
Fatal PE, n (%) (completed for 2293)	133 (2.9)	42 (2.6)	91 (3.1)	0
Death within 30d, n (%) (unknown for 139)	572 (12.4)	119 (7.4)	453 (15.6)	0
Symptomatic, n (%) unknown	4015 (88) 198	1415 (88) 74	2513 (87) 116	83 (93) 3
Median time to event (IQR), days	21 (9-49)	21 (9-48)	22 (8-51)	16 (5-29)
Surgery in index adm, n (%) data for 4584	1439 (31)	1302 (81)	95 (3)	40 (45)
Number of admissions, n (%) 0 1 2 3 4 5 unknown	 547 (12) 3237 (70) 646 (14) 132 (3) 22 (0.5) 10 (0.2) 1			
Median LOS (IQR)*, days	9 (4-21)	9 (3-20)	10 (5-23)	3 (2-4)
Location, n (%) Inpatient Outpatient Unknown	 3360 (73) 1159 (25) 75 (16)	 1040 (65) 523 (33) 43 (3)	 2277(79) 586 (20) 33 (1)	 40 (45) 49 (55) -
Post discharge, n (%)	2491 (54)	953 (59)	1473 (51)	64 (72)
% readmitted Days post discharge Post dc TP indicated Post dc TP not prescribed when indicated	1211 (49) 26 580 (23) 48 (1.9)	367 (39) 25 413 (43) 27 (2.8)	828 (56) 28 130 (8.8) 19 (1.3)	16 (25) 19.5 43 (67) 2 (3.1)

*time to event from first admission date and length of stay (LOS) for first admissions where patients have multiple admissions;
∞ 6 patients aged>45y

Table 10:

5. VTE risk assessment

	Overall	Surgical	Medical	Obstetric
N	4595	1606	2896	89
VTE risk assessment on admission , n (%)				
Correct	3882 (84)	1374 (86)	2436 (84)	72 (80)
Incorrect	373 (8)	119 (7)	253 (9)	1 (1)
Not done	283 (6)	105 (7)	164 (6)	14 (16)
Incomplete	57 (1)	8 (0.5)	43 (1)	2 (2)
VTE re-assessment, n (%)				
Correct	1898 (41)	656 (41)	1189 (41)	53 (60)
Incorrect	145 (3)	36 (2)	108 (4)	1 (1)
Not done	2494 (54)	906 (56)	1555 (54)	33 (37)
Incomplete	58 (1)	8 (0.5)	44 (2)	2 (2)
VTE/bleeding risk summary, n (%)				
VTE risk high, low bleeding risk	3130 (68)	1072 (67)	2015 (70)	43 (48)
VTE risk high, high bleeding	1058 (23)	395 (25)	647 (22)	16 (18)
Low VTE risk	344 (3)	130 (8)	186 (6)	28 (31)
VTE risk incomplete	63 (1)	9 (1)	48 (2)	2 (2)

Table 11:

Provision of thromboprophylaxis

	Overall	Surgical	Medical	Obstetric
N	4595	1606	2896	89
Prescribed TP	3760 (82)	1326 (83)	2305# (80)	55 (62)
Nil prescribed	839 (18)	267 (17)	543 (19)	29 (33)
Nil prescribed when indicated	134 (2.9)	34 (2.1)	95 (3.3)	5 (5.6)
None for part of admission(s)	46 (0.5)	10 (0.5)	36 (1)	0
Multiple agents	201 (4)	67 (4)	129 (4)	0
Unknown	70 (2)	13 (1)	48 (2)	5 (6)
Delay in prescription, n (%)				
Delay >14h	748 (16)	358 (27)	687 (30)	15 (27)
Delay >24h	345 (8)	153 (12)	269 (12)	12 (21)
Delay not clin appropriate	453 (10)	143 (11)	461 (20)	8 (15)
>24h inappr delay	191 (4)	56 (4)	169 (7)	2 (4)
Missed doses, n (%)	937 (20)	330 (25)	594 (26)	13 (24)
1 missed dose	325 (7)	123 (9)	196 (9)	6 (11)
2 or more (max 16)	608 (13)	207 (16)	395 (17)	6 (11)
Missed without clinical reason	359 (8)	100 (8)	253 (11)	5 (11)
Appropriate dose for weight, n(%)				
No, n (%)	132 (3)	47 (3)	83 (3)	2 (2)
Median, range inappropriate doses	3 (0-82)^	3 (1-40)	5 (0-82)^	n/a
No/incorrect weight documented, n (%)	31 (23)	10 (21)	21 (25)	0
No reason for dose reduction, n (%)	106 (80)	35 (74)	71 (86)	0
TP stopped prior to discharge, n (%)	913 (20)	305 (19)	605 (21)	3 (3)
Inappropriate cessation, n (%)	34 (4)	11 (4)	23 (4)	0
Post discharge TP indicated, n (%)	855 (19)	503 (31)	310 (11)	42 (47)
Not prescribed	56 (7)	31 (6)	23 (7)	2 (5)
Clinically inappropriate	46 (5)	30 (6)	21 (7)	2 (5)
Mechanical TP, n (%)				
AES	1158 (25)	676 (42)	443 (15)	39 (44)
IPC	396 (9)	193 (12)	200 (7)	3 (3)
Both	215 (5)	185 (12)	28 (1)	2 (2)
Nil	2754 (60)	538 (33)	2176 (75)	40 (45)
Unknown	76 (2)	14 (1)	49 (2)	5 (6)
Not used when indicated	263 (5.7)	71 (4.4)	186 (6.4)	6 (6.7)

¥ data reported as entered (mechanical prophylaxis no longer recommended in medical/obstetric patients);'
#7 prescribed aspirin; ^7 patients had 0 doses selected

Table 12:

Underlying theme

	Overall	Surgical	Medical	Obstetric
N	4595	1606	2896	89
Thromboprophylaxis failure	2078 (45)	814 (51)	1227 (44)	37 (42)
Inadequate thromboprophylaxis	600 (13)	185 (12)	403 (14)	12 (13)
Contraindication to thromboprophylaxis	741 (16)	242 (15)	494 (17)	5 (6)
Line associated	140 (3)	32 (2)	106 (4)	2 (2)
Unexpected	768 (17)	261 (16)	481 (17)	26 (29)
Unable to investigate	154 (3)	36 (2)	116 (4)	1 (1)
Incomplete	118 (3)	36 (2)	69 (2)	6 (7)
Potentially preventable	595 (13)	198 (12)	385 (13)	12 (13)
Not potentially preventable	3863 (84)	1396 (87)	2423 (84)	71 (80)
Incomplete	141 (3)	39 (2)	88 (3)	6 (7)

Table 13:

6. Clinical areas where Hospital Associated Thrombosis (HAT) occurs

In hospitals linked to HES data, HAT was associated with:

- Medical admission in 2835 (58.9%)
- Surgical admission in 1596 (37.4%)
- Obstetric admission in 89 (2.1%).

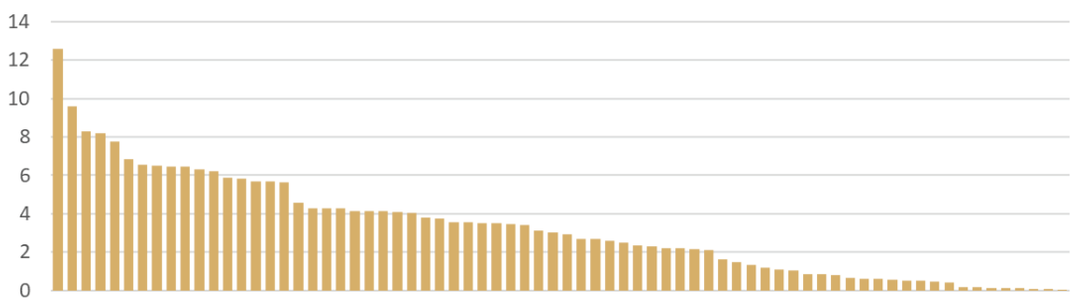
The majority of patients (n=3228, 70%) had a single episode of hospitalisation.
Of the 547 patients with '0' admissions recorded, 15 were likely to have had VTE on admission (diagnosis within 48 hours of admission or PE/DVT documented as reason for admission).

	Overall rate/1000 admissions (IQR)*
Medical	3.0 (0.86 – 4.4)
Surgical	1.5 (0.81 – 2.7)
Obstetric	0.69 (0.54 – 1.5)

* excluding day case admissions

Table 14:

FIGURE 24: Medical admissions excluding day cases



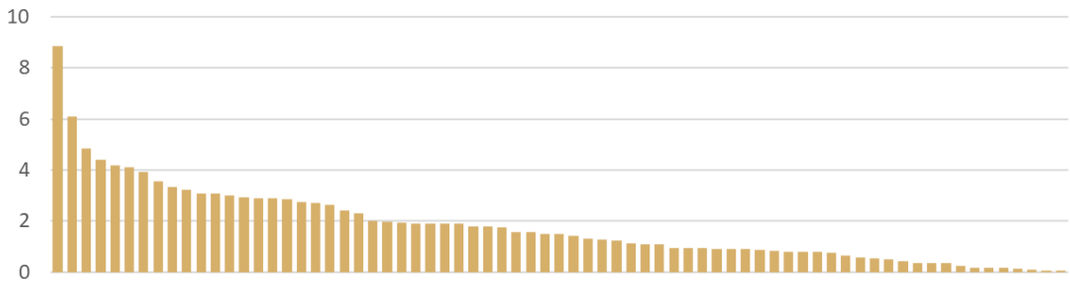
Common reasons for admission were identified from free text search of the 'reason for admission' (of admission 1, where >1 admission recorded) and likely underestimates all possible combinations. Of note, the reason for admission for 67 (1.5%) HAT episodes included DVT or PE (raising the question as to whether the event was truly HAT). 13 admissions had no reason recorded. Admissions associated with COVID-19 are discussed separately (see below).

Reason for admission includes	n (%)
Non-COVID-19 pneumonia*	340
Cancer^	297
Fall	223
Sepsis	161
Pain (chest/abdo/back etc)	140
COAD/COPD	109
Stroke/CVA/infarct	140
Bleed/haemorrhage	95
AKI	83
UTI	64
Cellulitis	42
DKA, hypo/hyperglycemia	15

* contains CAP, pneumonia, LRTI or chest infection (not COVID); ^contains Ca, Malign, Carcin, Cancer, leuk, lymphoma, myeloma; NB some patients have more than 1 diagnosis listed

Table 15:

FIGURE 25: Surgical admissions excluding day cases



- HA-VTE in association with surgical procedures:
  - 81% (n=1302) of surgical admissions had a surgical procedure
  - 95 medical patients also underwent at least one surgical procedure
  - 1198 patients had surgery during admission (including 77 medical patients)
  - 128 patients had more than one surgical procedure prior to HAT:
    - 2 surgical procedures, n= 103 (including 6 medical patients)
    - 3 surgical procedures, n=16 (including 3 medical patients)
    - 4 surgical procedures, n=5 (including 2 medical patients)
    - 5 surgical procedures, n=4 (including 1 medical patient)
    - The number of surgical procedures was not provided for 65 patients

Type of first surgical procedure	N
Hip fracture surgery	224~
Gastroenterological (non-bariatric) surgery	182*
Total knee replacement	146^
Total hip replacement	91^
Foot/ankle orthopaedic surgery	76^
Cranial surgery	79
Urological surgery	71+
Non-arthroplasty knee surgery	62
Gynaecological surgery	54^
Major trauma surgery	31
Cardiac surgery	27
Spinal injury surgery	22
Upper limb orthopaedic surgery	24^
Thoracic surgery	22^
Elective spinal surgery	18
Open vasc/endovasc repair	17^
ENT surgery	16^
Varicose vein surgery	12^
LL amputation	5
Oral/maxillofacial surgery	4
Bariatric surgery	3
Other	257
Incomplete	9^

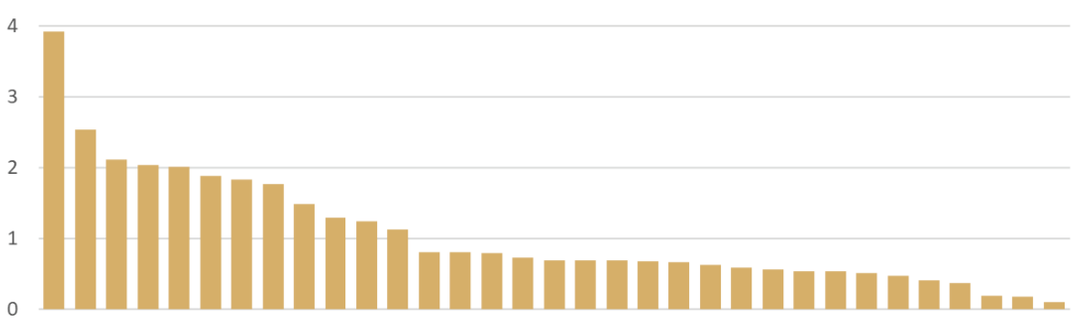
Table 16:

* includes 20 medical patients, ~ includes 12 medical patients, + 8 medical patients, ^includes up to 4 medical patients

- It was beyond the scope of this survey to estimate rates of HA-VTE associated with specific surgical procedures.
- Five medical patients listed as undergoing cardiac surgery not included in the above (three pacemaker insertions and 2 PCI).

- Obstetric admissions
  - 35 hospitals submitted HA-VTE associated with an obstetric admission. The median rate was 0.82 (0.53 – 1.3). One outlier was excluded following review of the raw data (reason for admission was ovarian cancer). A further three events occurred in women >45 years of age with non-obstetric reasons for admission.
  - 15 clearly antenatal admissions (e.g. pre-eclampsia).
  - 54 clearly post delivery (including four stillbirths, 18 Caesarean sections).
  - Four admissions with VTE (not clear that these are truly HAT).

FIGURE 26: Obstetric

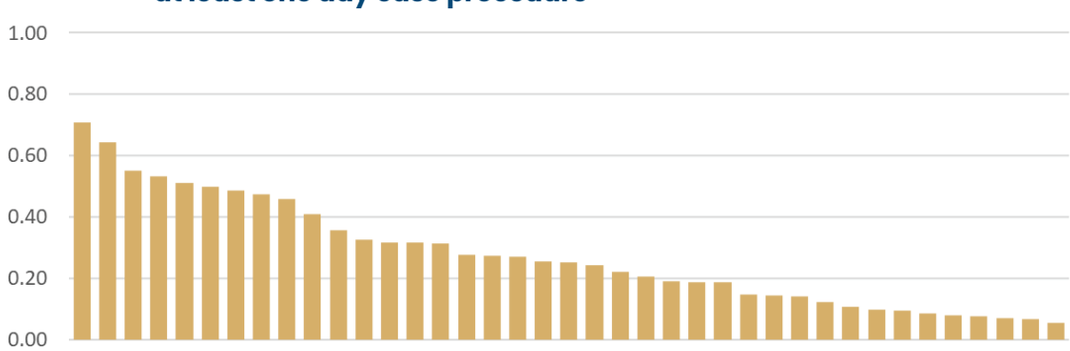


7. HAT and day surgical case admissions

Of the 1,606 submissions associated with a surgical admission:

- 102 (6%) HAT events occurred following a day case procedure.
  HA-VTE was reported following a day case surgical procedure by 42 sites (three did not link to HES data).
- The median rate of HAT associated with day surgery was 0.25 per 1,000 day case admissions (IQR, 0.13 – 0.38; see Figure 27 below). An outlier was excluded as review of raw data revealed the HA-VTE occurred during a nine-day admission (i.e. not a day case procedure).
- Of note, a further 23 patients reported with HA-VTE were admitted overnight or longer.
  - 24 episodes associated with orthopaedic surgery.
    - 13 knee arthroscopy/ACL repair.
    - six foot/ankle surgery.
    - five other.
  - Nine post gastroenterological surgery (four cholecystectomy, three hernia repair, two endoscopic procedures).
  - 37 classified as other including six knee arthoscopies, 11 breast surgeries, eight other orthopaedic procedures.
  - 14 urological procedures.
  - 10 episodes associated with varicose vein surgery.
- There were six medical admissions reported as associated with a day case procedure (two pacemaker insertions, two liver biopsies, one pleural drainage and one varicose vein surgery). Three patients were admitted overnight or longer, with three discharged on the same day as admitted.

FIGURE 27: Rate per 1,000 of surgical patients that were admitted for at least one day case procedure



- 42 (41%) patients received some form of thromboprophylaxis including 36 LMWH, two DOAC and three aspirin.
  - 20 received post-discharge thromboprophylaxis (indicated in an additional three patients but not prescribed).
- 60 (59%) patients received mechanical prophylaxis including 46 with AES, nine IPC and five both IPC and AES.
- 19 (19%) events were considered potentially preventable (although accompanying comments suggest a degree of uncertainty in the majority of these cases).

8. Proportion of potentially preventable HA-VTE

- Potentially preventable HA-VTE was reported in 339 (15.1%) medical patients, 195 (14.1%) surgical admissions and 12 (5.2%) obstetric cases.
- 71% of these events (n=422) were associated with inadequate thromboprophylaxis. The remainder were attributed to thromboprophylaxis failure (n=56), contraindication to prophylaxis (n=31), unable to investigate (n=46), unexpected (n=34) or line associated (n=6).
- This analysis focuses on potentially preventable events associated with inadequate thromboprophylaxis (n=422) and is presented in both the Table and Figures below.

	Overall	Surgical	Medical	Obstetric
N (%)	422 (9)	140 (9)	274 (9)	8 (9)
Fatal PE, n (%)	12 (3)	3 (2)	9 (3)	0
Site, n (%) PE Prox DVT Distal DVT UL DVT	 250 (59) 100 (24) 61 (14) 11 (3)	 79 (56) 32 (23) 25 (18) 4 (3)	 164 (60) 68 (25) 35 (13) 7 (3)	 7 (88) 0 1 (12) 0
Timing, n (%) Pre Post discharge	 199 (47) 223 (53)	 63 (45) 77 (55)	 132 (48) 142 (52)	 4 (50) 4 (50)
Risk asst, n (%) Not done/incorrect No/incorrect reassessment	 120 (28) 262 (62)	 42 (30) 89 (64)	 76 (18) 170 (40)	 2 (25) 3 (38)
Mechanical prophylaxis, n (%) Not used when indicated	 84 (20)	 30 (21)	 53 (19)	 1 (13)
No TP prescribed when indicated, n (%)	86 (20)	30 (21)	55 (20)	1 (13)
Inappropriate delay in TP prescription, n (%)	**122 (29)**	**31 (22)**	**88 (32)**	**3 (38)**
Missed doses, n (%) Without clinical reason	 156 (37) 89 (21)	 45 (32) 28 (20)	 108 (39) 62 (23)	 3 (38) 2 (25)
Wrong dose for weight, n (%)	51 (12)	17 (12)	33 (12)	1 (13)
TP stopped early, n (%) Without clinical reason, n (%)	 91 (22) 15 (4)	 24 (17) 6 (4)	 167 (24) 9 (3)	 0
Post discharge TP not prescribed when indicated, n (%)	34 (8)	21 (15)	12 (4)	1 (13)

Table 17:

- The proportion of patients without a correct VTE risk assessment was higher in those with potentially preventable HA-VTE.
- This may have contributed to failure to prescribe thromboprophylaxis and delays in prophylaxis prescriptions.
- Missed doses were more prevalent in those with potentially preventable HA-VTE compared to those without and compared to patients surveyed in survey 2.
- Lack of post discharge thromboprophylaxis was frequent following surgical admissions with subsequent potentially preventable HA-VTE.

FIGURE 28: Contributors to potentially preventable HA-VTE

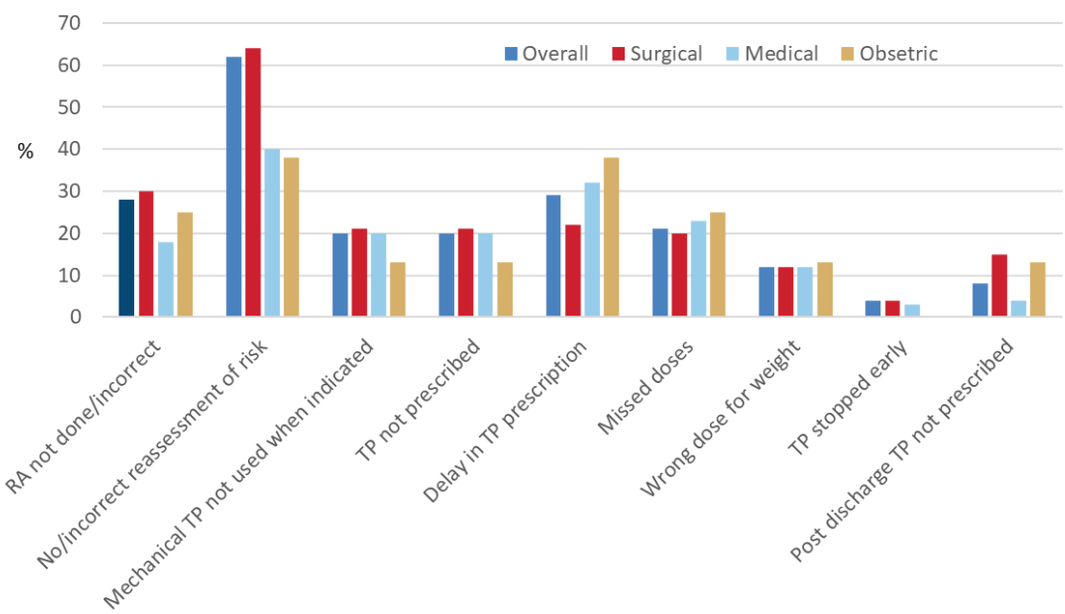
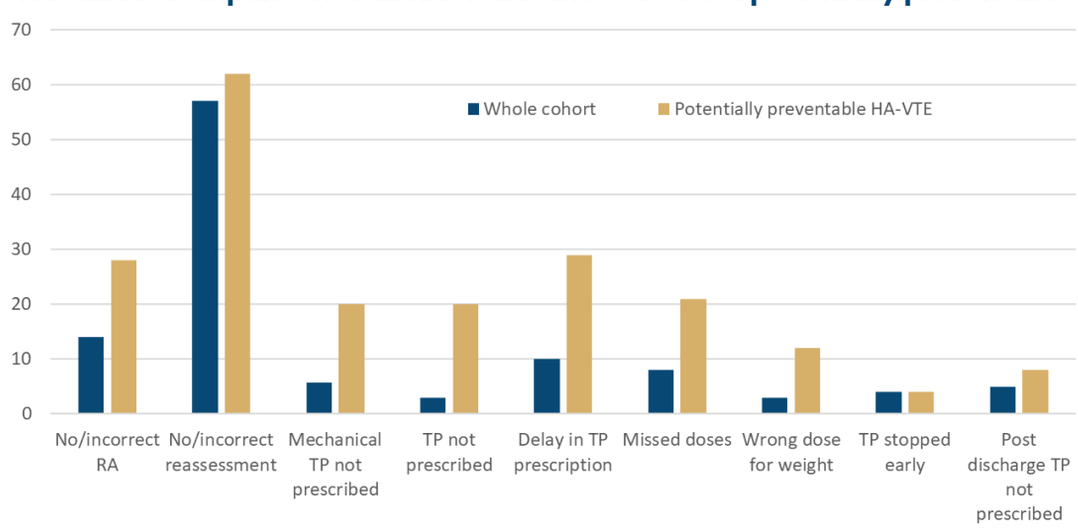


FIGURE 29: Comparison of all HA-VTE to those deemed potentially preventable



- There is significant variation between sites in the proportion deemed potentially preventable (median 11.5%, IQR 3.8 -25.0%). This is highlighted further in the Figures below. There was also variation by type of admission

FIGURE 30: Proportion of HA-VTE considered potentially preventable by unit

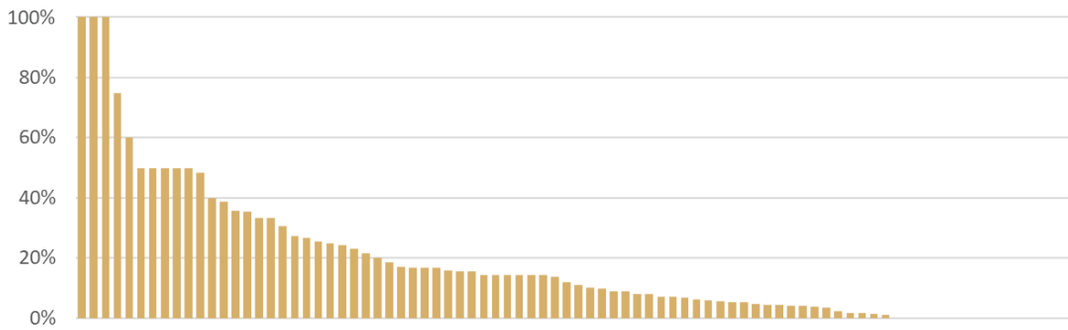


FIGURE 31: Proportion of HA-VTE considered potentially preventable in medical patients by unit

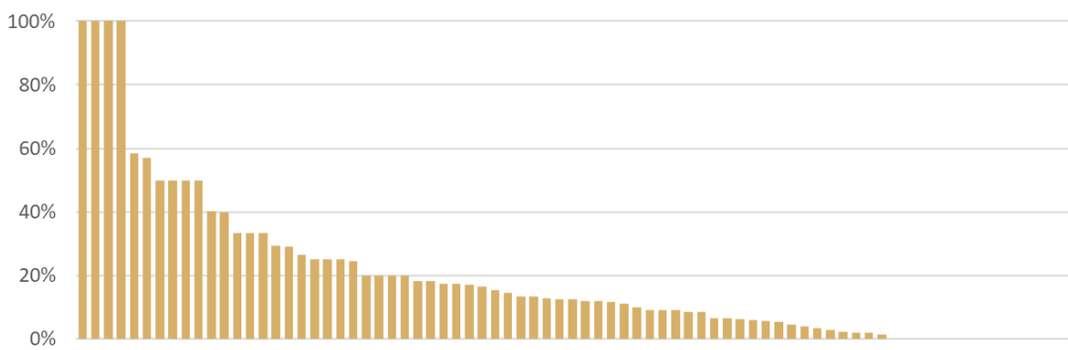


FIGURE 32: Proportion of HA-VTE considered potentially preventable in surgical patients by unit

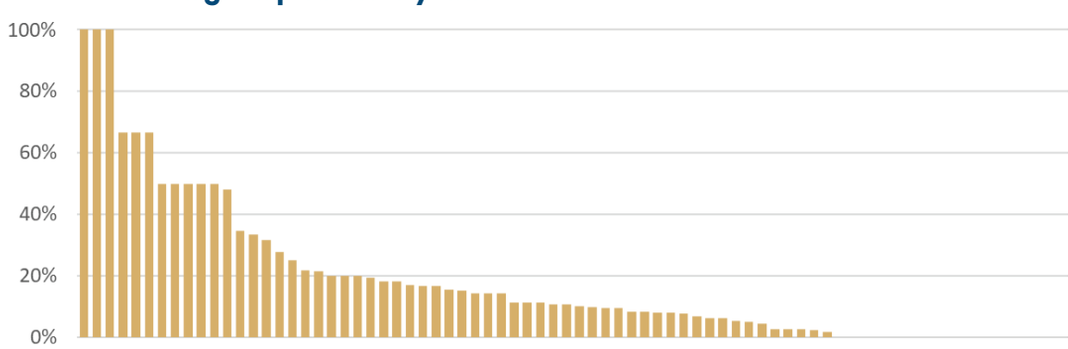


FIGURE 33: Proportion of HA-VTE associated with obstetric admission considered potentially preventable by unit

9. Unexpected cases
    - 768 (17%) considered unexpected by participant. This is likely to reflect use of this underlying theme outside the scope specified in the guidance notes, which defined unexpected HA-VTE occurring in a patient without VTE risk factors. Of this patient group, only 128 (17%) were identified as low VTE risk (3% of whole cohort).
        - Within low VTE risk, there was still evidence of misuse of this category with small numbers of patients undergoing major orthopaedic and spinal surgery considered low VTE risk and potential for misclassification of medical patients (unable to independently evaluate as we did not request information regarding patient's mobility).
    - 54 unexpected HA-VTE events associated with surgical admission and low VTE risk.
        - 29 occurred following day surgical procedures.
    - 60 unexpected HA-VTE events associated with medical admission and low VTE risk, 8 of these had a cancer diagnosis and 12 had an infectious reason for admission.
    - 14 obstetric HA-VTE cases were considered unexpected (with low VTE risk).
      Two had confirmed/suspected VTE as the 'reason for admission'; and are therefore unlikely to be HA-VTE.

Recommendations

Recommendations	Actions	Owners	Timescale
8) Improve identification /investigation of HA-VTE	a) Review local HA-VTE rate, where this falls below the median consider whether this is due to suboptimal contribution to the GIRFT survey or inadequate case finding	Providers	Within 12 months of the publication of this report
	b) Where case finding is inadequate, review local strategy and incorporate review of radiology reports	Providers	Within 12 months of the publication of this report
9) Explore the role of coding in enabling centralised monitoring of HA-VTE	a) Consider the use of additional data sources to try to confirm conditions suspected present on admission e.g. emergency department dataset and review use of the 'hospital-acquired' code in the context of VTE	Thrombosis UK to work with GIRFT	August 2022
10) Reduce omissions in VTE prevention care	a) Local review of underlying themes associated with HA-VTE with targeted quality improvement plan to address	Providers	Within 12 months of the publication of this report
11) Central collation of VTE-RA rates	a) Un-pause central collation and publication of VTE risk assessment data	NHS Digital	Within 6 months of the publication of this report
12) Submit research recommendations to NIHR to address areas of uncertainty in VTE prevention	a) GIRFT to submit proposed research questions to NIHR aimed at improving understanding of patient refusal of thromboprophylaxis, suboptimal thromboprophylaxis delivery and thromboprophylaxis failure	Thrombosis UK to work with GIRFT	Within 12 months of the publication of this report

Table 18:

HAT cases with COVID-19

Background

Towards the end of the survey period, the COVID-19 pandemic reached the UK and most likely impacted on continued participation in the thrombosis survey due to changes in working/redeployment to manage the surge in admissions (as illustrated above). Additionally, it became evident that COVID-19 pneumonia was associated with a hypercoagulable state and was frequently complicated by VTE[1]. In light of this, a decision was taken to further extend the survey to enable data capture of these events (and to allow more time for hospitals to contribute their data following the COVID peak). This section was completed by a subset of hospitals but provides further detail regarding HAT rates and the VTE prevention care provided in the COVID cohort. The number of COVID-19 admissions at participating sites was extracted from NHS Digital.[2]

Findings

- 40 hospitals contributed COVID-19-specific HA-VTE data following the additional request for data on 1st June 2020.
- The range of HAT cases submitted was from 1 to 65 per Trust, with a median number of seven cases per contributing hospital.
- There were a total of 461 patients with additional COVID-19-specific data entered (associated with 550 hospital admissions).

Table 19: Number of admissions associated with HA-VTE and COVID-19

Admissions (n)	Number (%) of patients with COVID specific data entered
0*	73 (16)
1	321 (70)
2	53 (11)
3	10 (2)
4	2 (0.4)
5	2 (0.4)

* 5 diagnoses were within 2 days of admission and unlikely HA-VTE. The remainder occurred during a first admission

References

[1] Nopp S, Moik F, Jilma B, Pabinger I, Ay C. Risk of venous thromboembolism in patients with COVID-19: A systematic review and meta-analysis. Res Pract Thromb Haemost. 2020 Sep 25;4(7):1178–91

[2] https://www.england.nhs.uk/statistics/statistical-work-areas/covid-19-hospital-activity/

The overall rate of HA-VTE from contributing hospitals was 15.6 per 1000 COVID-19 admissions (including both confirmed/suspected COVID admissions).

The range across reporting sites was 1.4 to 79 per 1000 admissions.

The median patient age was 66 years (range 19-95 years).

67% were male.

Ethnicity was reported as:

- White, 59%;
- Black 12%,
- Asian 8%;
- Other 6%;
- Mixed 1% and
- Unknown 14%.

The presence of the following comorbidities was requested; obesity, hypertension, diabetes and chronic kidney disease.

- 174 (39%) patients had none of these comorbidities.
- 167 had hypertension; 114 diabetes; 85 obesity and 51 chronic kidney disease.

A single comorbidity was present in 38%,

- Two comorbidities in 16%;
- Three in 5%

A total of 177 (38%) patients with subsequent HAT had a critical care admission (unknown for n=7).

Compared to the rate of HA-VTE associated with a medical admission (Oct – Dec 2019; 2.1 per 1000 admissions), this was significantly higher (OR 7.8, 95% CI 7.0 – 8.8; P<0.001).

- This is likely to be an underestimate of the associated risk as on free text searching medical admissions

The majority of admissions associated with COVID-19 were medical (92.4%) with the remainder surgical.

- No HA-VTE cases associated with an obstetric admission were submitted.
- HA-VTE manifested as:
  - PE in 337 (73%)
  - proximal DVT in 63 (14%)
  - distal DVT (8%)
  - upper limb in 26 (0.6%).

Presentation as "PE" was significantly more common compared to medical admissions submitted over the survey period (58%, P<0.001) (although in retrospect we were counting in situ thrombosis known as immunothrombosis as PE, as well as true PE).

The majority of patients had confirmed COVID-19 (75%) with the remainder clinically suspected.

The time to HA-VTE from COVID-19 swab date was available for 433 patients.

- median time to HA-VTE was 11 days (range 0 – 170 days)
- 46 patients had HA-VTE diagnosed prior to COVID swab (range 1 – 42 days prior)
    - on review of the raw data, it was clear that this related to either incorrect date entry or delayed COVID swabbing for 16 cases.
    - for the remaining 30 cases it was not possible to discern whether this relates to incorrect data entry or whether HA-VTE was unrelated to subsequent COVID-19 infection).
- The admission status of 4 patients was reported as unknown at time of HA-VTE event (these may be patients repatriated to other hospitals).

Of the remainder, the HA-VTE event was reported as being diagnosed post re-admission or in outpatients following discharge of the first admission in 136 (30%).

- 120 of these events were reported as symptomatic.
- Both HA-VTE and COVID-19 was diagnosed in a readmission of 12/136 (ie first admission unrelated to COVID-19).
- Eighteen patients had a HA-VTE event prior to the recorded discharge date.
- Of the 116 patients with a first discharge date preceding HA-VTE event (and <90 days post discharge), the median time to HA-VTE was 26 days (range 0-77 days).

Almost all patients were considered high VTE risk (n= 446, 97%), with 63 (14%) also considered to have high bleeding risk.

The majority of patients received standard dose thromboprophylaxis (n=272, 59%).

- No thromboprophylaxis was offered to 32 (8%) of patients,
- with 28 (6%) receiving subcutaneous UFH,
- 37 (8%) intermediate dose LMWH,
- 39 (9%) therapeutic LMWH,
- 14 (3%) DOAC,
- 12 (3%) unfractionated heparin infusion.
- Details of dosing was not provided for 29 patients who were prescribed LMWH (n=21),
- DOAC (n=2), UFH (n=1), VKA (n=1), fondaparinux (n=2) and 2 unknown.

HA-VTE was attributed to:

- thromboprophylaxis failure in 54.7%;
- inadequate thromboprophylaxis in 11.5%,
- contraindication to thromboprophylaxis in 12.5%;
- line associated in 3.7% and
- unexpected in 14.8%
- 3.2% of these events were not fully investigated and no theme assigned.

The unexpected category was intended for those with low VTE risk;

- on review of the 62 individual records assigned this category only 1 patient had a truly unexpected event following minor surgery.
- The remainder were associated with either thromboprophylaxis failure or a contraindication to anticoagulant prophylaxis.
- Three patients were diagnosed with VTE within 24h of admission and are unlikely to be related to hospitalization.

Of 461 patients with HA-VTE associated with COVID, 49 (10.6%) were considered by the submitting hospital to be potentially preventable (23 of 40 Trusts had at least one HA-VTE associated with COVID-19 deemed potentially preventable).

Of these:

- Eight patients (treated in six hospitals) were not prescribed thromboprophylaxis.
- Seventeen patients (treated in 11 hospitals) had a delay in thromboprophylaxis prescription.
- Seventeen patients (treated in 12 hospitals) had missed doses without a clinical reason/patient refusal.
- Eight patients (treated in seven hospitals) received the wrong dose for body weight.
- Two patients (treated in two hospitals) did not receive post discharge thromboprophylaxis when indicated.

Recommendations

Recommendations	Actions	Owners	Timescale
13) Prevention of HA-VTE associated with COVID remains a priority research area	a) Follow NICE COVID-19 living guidance on thromboprophylaxis	Providers	Within 6m of publication and ongoing
	b) Participate in multi-platform research studies where possible (RECOVERY, REMAP-CAP)	Providers	Within 6m of publication and ongoing

Table 20:

Independent sector providers

Participants

Ten independent sector providers were invited, of which one declined. Overall, 75 unique independent sector hospitals contributed to the thrombosis survey.

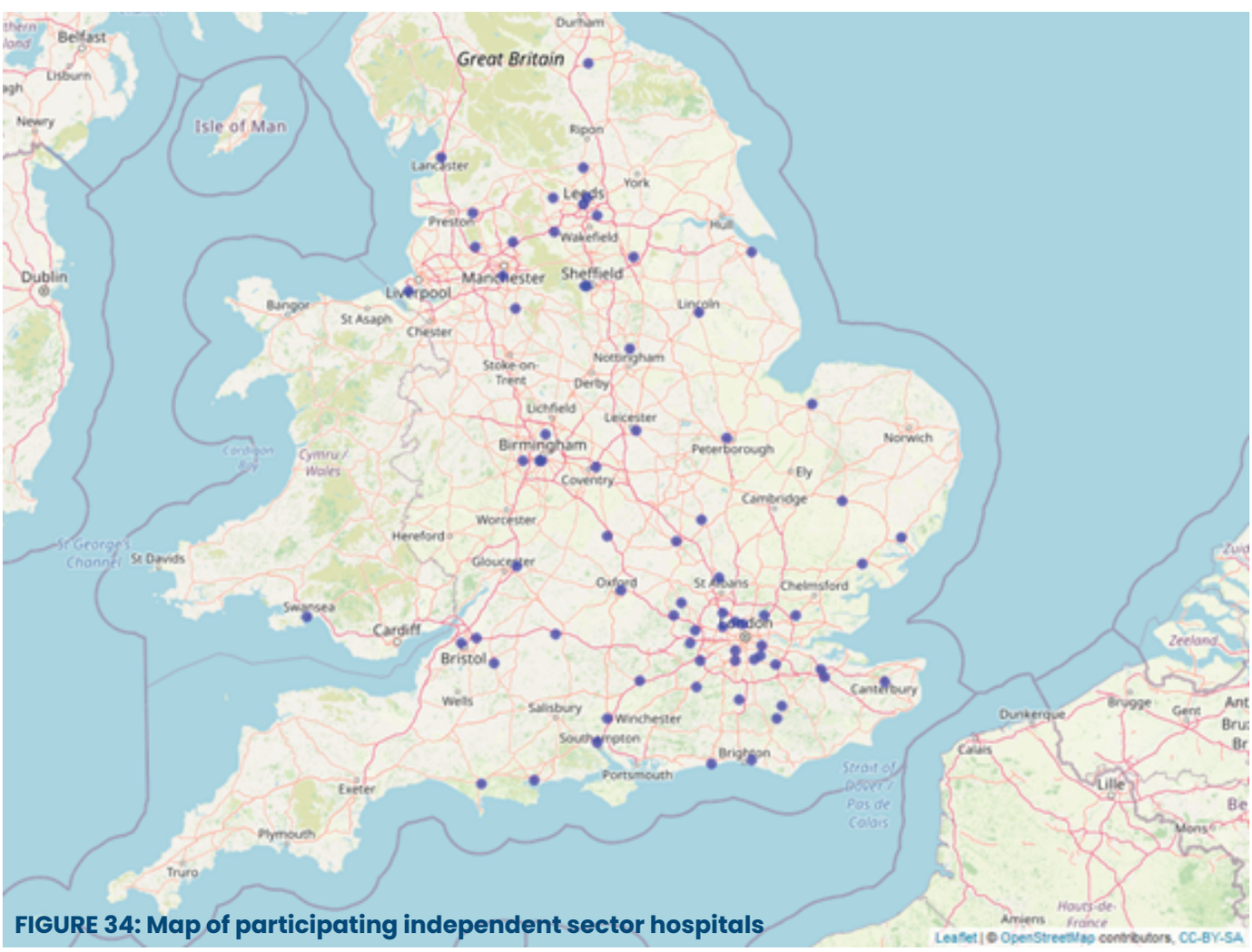


FIGURE 34: Map of participating independent sector hospitals

	All	Part 1	Part 2	Part 3
Participants, n (%)	65 (87)	68 (91)	72 (96)	24 (35)

Table 21: Number (%) of Independent sector hospitals completing each part of the survey

Survey 1 – VTE prevention organisational survey (independent sector providers)

- 68 hospitals completed this survey.
- Summary data is provided in the table below.

	Hospitals responding yes, n (%)
Hospitals with a VTE prevention role	41 (60)
Hospitals that routinely identify HA-VTE	54 (79)
Hospitals using the national VTE risk assessment tool	65 (96)
Hospitals using weight-based dosing for anticoagulant thromboprophylaxis	49 (72)
Hospitals conducting whole leg scans for DVT diagnosis	51 (75)

Table 22:

Survey 2 – VTE prevention practice (independent sector providers)

- 72 hospitals participated.
- Overall the mean number of submissions per hospital was 25 (range 1- 282) with a total of 7,088 data entries.
- Breakdown by admission type is shown below.

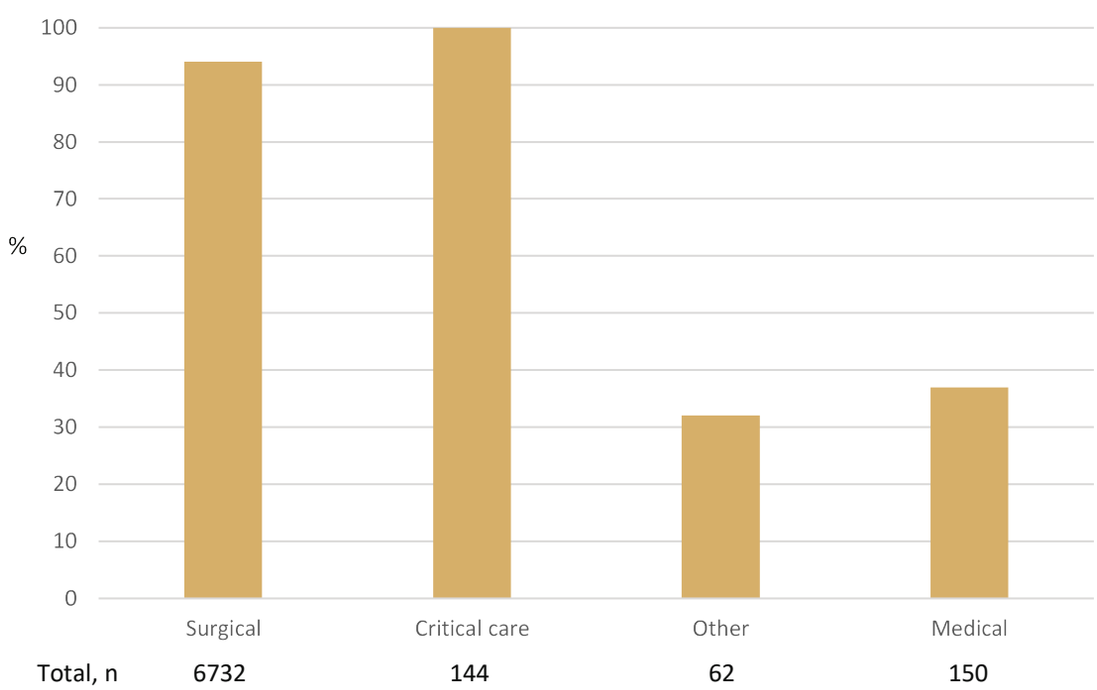
Admission type	n (%)
Medical	150 (2)
Surgical	6732 (95)
Critical care	144 (2)
Maternity	0
Other	62 (1)

Table 23:

1. Use of mechanical thromboprophylaxis

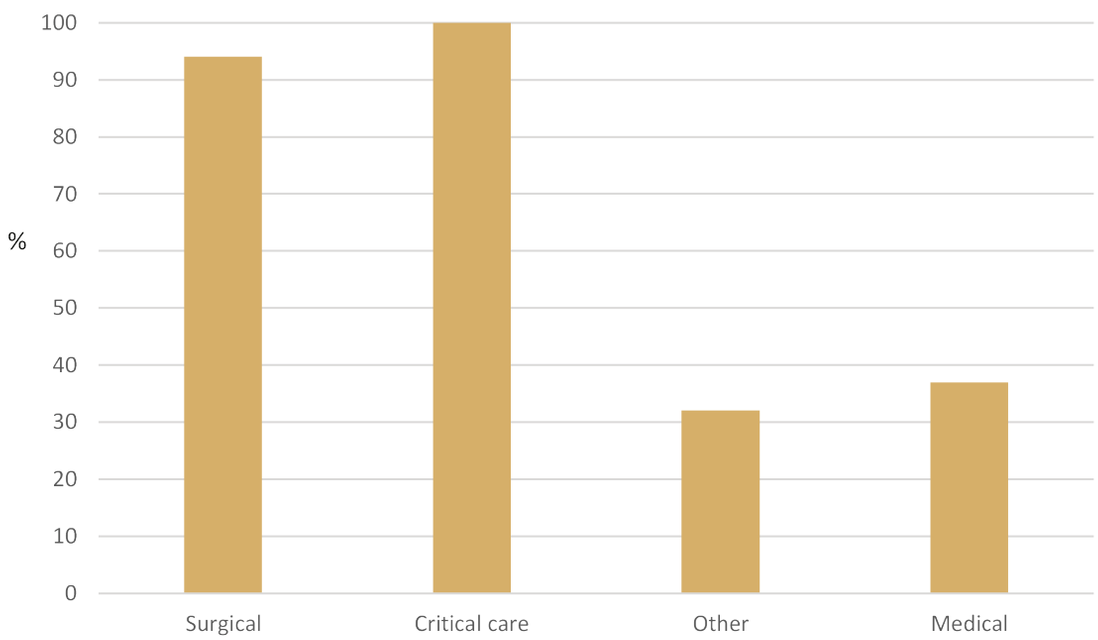
Mechanical thromboprophylaxis was indicated for 6,559 (93%) of surveyed patients with breakdown by patient group as shown.

FIGURE 35:



- Of patients prescribed AES (n=5164), 87% had evidence of being fitted as per NICE guidance. Variation by admission type is shown below.

FIGURE 36:



	Surgical	Critical care	Other	Medical
Total, n	6732	144	62	150

2. Use of pharmacological thromboprophylaxis

- 4,311 (61%) patients were 'low risk of bleeding' and were eligible for anticoagulant thromboprophylaxis.
- The majority of these patients (3,613, 84%) were prescribed pharmacological thromboprophylaxis in line with NICE guidance. There was significant inter-hospital variation from 0-100% overall and by patient group.

Admission type	n (%)	Inter-hospital variation, range
Surgical	3516 (85)	0 - 100
Critical care	35 (90)	82 – 100
Medical	53 (44)	0 – 100
Other	9 (33)	0 – 50

Table 24:

- Of patients eligible to receive thromboprophylaxis within 14h of admission, this was administered (or due to be administered) in 91% (n=3058) of patients.
  - All medical, surgical and other admission types met this metric (100%).
  - This metric excludes patients with a contraindication to pharmacological thromboprophylaxis.

Admission type	n (%)	Inter-hospital variation, range
Surgical	2973 (91)	34 - 100
Critical care	26 (100)	n/a
Medical	54 (100)	n/a
Other	5 (100)	n/a

Table 25:

- Missed doses (clinically inappropriate or due to patient refusal)
  - 187 of 4311 cases (4%) with pharmacological thromboprophylaxis prescribed had missed doses.
  - All dose omissions occurred during surgical admissions with no missed doses reported for other admission types.
  - Inter-hospital variation in proportion of patients with missed doses ranged from 0 68%.

3. Provision of written information

- 94% of cases submitted (6673/7088) received written information regarding VTE prevention.
- 80% of cases submitted (5465/7088) received verbal information regarding VTE prevention.
- There was wide inter-hospital variation from 0 -100% for both written and verbal information provision.

Survey 3 – Hospital Associated Venous Thromboembolism

- 24 hospitals contributed 70 episodes of HA-VTE.
- The median number of cases per hospital was two (range 1 -13).
- Due to the low number of events reported, further analysis was not performed.

Litigation – Hospital Associated Venous Thromboembolism (HA-VTE) related clinical negligence claims[1]

Variation in average litigation costs

Data obtained from NHS Resolution reveals the clinical negligence claim costs related to HAT as detailed in Table 26.

Overall, there is small variation in claims numbers, with a 22% increase in number of claims between 2016/17 to 2017/18. The total claim costs peaked at £25 million in 2017/18, representing a 115% increase from the previous financial year, 2016/17. In the financial year 2019/20, the number of claims increased by 12%, with an increase in total claim costs by 4% (approx. £1 million).

		% change in no. of claims	Total claim costs	% change in claim costs
2015/16	122		16 mil	
2016/17	116	-5%	12 mil	-28%
2017/18	141	22%	25 mil	115%
2018/19	124	-12%	16 mil	-37%
2019/20	139	12%	17 mil	4%
Grand Total	**642**		**86 mil**	

Table 26: Volume and cost of medical negligence claims related to hospital acquired thrombosis notified to NHS Resolution 2015/16 to 2019/20

Variation in average litigation costs

Claims trends and causes

Causes	No. of claims	% of total claims
Lack of VTE assessment and/or prophylaxis	327	51%
Failure/ Delay in diagnosis/ treatment	189	29%
Medication error	55	9%
Procedure related	23	4%

Table 27: Most frequent causes for litigation in clinical negligence claims related to HAT from 2015/16 to 2019/20

Using the NHS Resolution data, common causes for litigation were identified. The most frequent cause of litigation (51%) was lack of venous thromboembolism (VTE) assessment and/ or prophylaxis, followed by failure/ delay in diagnosis/ treatment of VTE (29%). Medication related claims include patients' not having their pre-operative anticoagulant medication continued post-op or inappropriate dosing of anticoagulant medication. Procedure related claims include provoked thrombus from procedures such as insertion of central venous catheters. It is important to note that more than one cause can be assigned to each claim.

These are the claims identified but this, while being the most accurate calculation, is also an under estimation. The detail on claims available in the dataset from NHS Resolution is limited as it is designed as a claims handling system and not a registry nor a method for clinical education. The summative details are often based on the initial letter of claim and although the costs are updated through the lifespan of a claim we cannot be certain the clinical details or cause of the claim is updated with the same degree of accuracy.

Acknowledgements

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We would like to express our thanks to the participants of the project as without their contribution the work would not be possible.

Hospital	Name	Role
Ashford and St Peter's Hospitals NHS Foundation Trust	Rebecca Simpson (nee Bushby)	Lead Nurse VTE Prevention
Aspen Healthcare	Dipak Vaidya	Group Chief Pharmacist
Barnsley Hospital NHS Foundation Trust	James Griffiths	Consultant Emergency Medicine, Clinical Director CBU 1 (Medicine & Urgent Care)
Bedford Hospital, Bedfordshire Hospital NHS Trust	Dr.Saba Khan	Senior Clinical Fellow in Haematology
Blackpool Teaching Hospitals NHS Foundation Trust	Mr Amit Shah	Orthopaedic and Trauma Consultant & VTE Lead
Blackpool Teaching Hospitals NHS Foundation Trust	Mrs Cherith Haythornthwaite	Clinical Improvement & Effectiveness Manager & Deputy VTE Lead
BMI Bath Clinic, BMI Healthcare part of Circle Health Group	Sandra Carr	Quality and Risk Manager
BMI Blackheath Hospital	Marie Annor Pobee	Snr Registered Nurse
BMI Blackheath Hospital	Des Hoffmann	Clinical Service Manager
BMI Chiltern Hospital	Esther Carmichael	Registered Nurse
BMI Goring Hall Hospital	Gary McHardy	Director of Clinical Services
BMI Hendon Hospital	M. A. Jacinta Carroll	Director of Clinical Services
BMI Huddersfield Hospital	Jane Almond,	Director of Clinical Services
BMI Shirley Oaks	Molly Bartlett	Clinical Services Manager Surgical
BMI Shirley Oaks	Christine Etherington	Director of Clinical Services
BMI The Beardwood, Gisburne Park & Lancaster Hospitals.	Susan Walsh	Director of Clinical Services
BMI The Beaumont Hospital	Isobel Kearney	Director of Clinical services
BMI The Beaumont Hospital – Bolton	Isobel Kearney	Director of Clinical Services
BMI The Chaucer Hospital	Alison Chapman RN	VTE Champion
BMI The Lancaster Hospital	Joseph Lambert	Pharmacy Lead
BMI The Saxon Clinic	Sally Amos	Director of Clinical Services,
BMI The Winterbourne	Louise Griffiths	Clinical Services Manager Ward, Outpatients & Pre-Assessment
BMI Woodlands Hospital	Jill Neasham	Director of Clinical Services
BMI Woodlands Hospital	Tanya Robinson	Quality and Risk Manager
Bolton Hospital NHS FT	Wendy Morrison	DVT specialist nurse, VTE trust champion
Bolton Hospital NHS FT	Beatrice Fox	Consultant Nurse, Emergency and Acute Medicine
Bolton Hospital NHS FT	Arun Kallat	Clinical Lead VTE
Brighton and Sussex University Hospital Health Trust	Ms Sally Orr	
Brighton and Sussex University Hospitals NHS Trust	Ms Harriet Hayllar, RGN, BSC	Senior Thrombosis & Anticoagulant Clinical Nurse Specialist
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Calderdale & Huddersfield NHS Foundation Trust	Dr F Shamsudin	
Calderdale and Huddersfield NHS Foundation Trust	Wendy Sunter	Anticoagulant and Thrombosis Pharmacist
Cambridge University Hospitals NHS Foundation Trust	Christina Sleep	Lead Clinical Nurse Specialist
Cambridge University Hospitals NHS Foundation Trust	Dr Will Thomas	
Chelsea and Westminster Hospital NHS Foundation Trust	Sheena Patel	Lead Pharmacist – Anticoagulation and Medication Safety/Clinical Governance
Chelsea and Westminster Hospital NHS Foundation Trust	Dr Andrew Godfrey	Consultant Haematologist
Chelsea and Westminster Hospital NHS Foundation Trust	Dr Natasha Wiles	Consultant Haematologist
Chelsea and Westminster Hospital NHS Foundation Trust	Dr Roger Chinn	Medical Director
Chelsea and Westminster Hospital NHS Foundation Trust	Dr Natasha Wiles	Consultant Haematologist
Countess of Chester Hospital NHS Foundation Trust	Arun Balakrishnan	Consultant Vascular Surgeon
Dartford and Gravesham NHS Trust	Joanne Seymour	Clinical Governance Midwifery Manager, Darrent Valley Hospital
Dartford and Gravesham NHS Trust	Lauren Philpott	Clinical Simulation Facilitator
Dartford and Gravesham NHS Trust	Jo Seymour	Midwifery Governance Lead
Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust	Dr Sarah Chatharoo	SpR Diabetes and Endocrinology
Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust	Dr Yaser Wahid CT2	
Doncaster Bassetlaw teaching hospitals	Dr Pankaj Chaturvedi	Consultant Endocrinologist and trust VTE lead
Dorset County Hospital	Dr. Arjunan	Consultant Nephrologist
East Lancashire Hospitals NHS Trust	Karen Feeney	Quality Governance Facilitator
East Lancashire Hospitals NHS Trust	Dr Uma Krishnamoorthy	Associate Medical Director, Consultant Gynecologist and Thrombosis Committee Chair

Acknowledgements – cont'd

Hospital	Name	Role
East Lancashire Hospitals NHS Trust	Andrew Costello	Head of Clinical Audit & Effectiveness
Epsom and St Helier NHS Trust	Dr Emily Bart-Smith	Consultant Haematologist, Lead for VTE Prevention
Fairfield General Hospital, Bury, Northern Care Alliance	Dr Narayanamoorthi Saravanan	Consultant Physician Stroke/Geriatrics
Guys and St Thomas' Foundation Trust.	Mrs Zahra Mahir	Specialist Haematology Pharmacist
Hampshire Hospitals NHS Foundation Trust	Tracy May	Thrombosis Coordinator
Harrogate and District NHS Foundation Trust	Dr Emma Harris	Consultant Haematologist
Imperial College NHS Trust	Dr Christopher Baker	PhD FRCP
KIMS hospital, Maidstone	June Ripley	Specialist nurse Q &G and VTE lead
Kingston Hospital	Sangeeta Atwal	Consultant Haematologist
Lancashire Teaching Hospitals Trust	Charlotte Connell	Quality Assurance Facilitator
Lancashire Teaching Hospitals Trust	Kathryn Dickinson	Quality Assurance Matron
Leeds Teaching Hospitals NHS Trust	David Berridge	Deputy Chief Medical Officer
Lewisham and Greenwich NHS Trust	Dr Tullie Yeghen,	consultant haematologist
Maidstone and Tunbridge Wells NHS Trust	Olufunsho Tutu Otenaike	VTE Patient Safety Lead
Medway NHS Foundation Trust	Dr Sukhpal Bijral	Consultant Anaesthetist, Chair Hospital Transfusion & Thrombosis Group
Mid Cheshire Hospitals Foundation Trust	Julie Taylor	Clinical Audit & Effectiveness Officer
Mid Cheshire Hospitals Foundation Trust	Dr Shirley Hammersley	Associate Medical Director
Milton Keynes University Hospital	Dr Sarah Davis	Haematology Consultant.
Musgrove Park hospital	Dr Jackie Ruell	
Norfolk and Norwich University Hospital NHS foundation Trust	Liz Lorie	Anticoagulation and thromboprophylaxis nurse specialist
Norfolk and Norwich University Hospital NHS foundation Trust	Emma Sanders	Anticoagulation Nurse Specialist, VTE Clinic
North Cumbria Integrated Care NHS Foundation Trust	Dr Clive Graham	Associate Medical Director
North West Anglia NHS Foundation Trust	Dr Leila Khalil	Haematology consultant
Northumbria NHS Foundation Trust	Paul Shepherd	Clinical Nurse Specialist in Anticoagulant Care
Nottingham University Hospitals NHS Trust	Dr Gill Swallow	Consultant Haematologist
Nuffield Health, Cheltenham Hospital	Anne Bullingham	Quality Improvement Co-ordinator
Nuffield Health, Ipswich Hospital	Sam Bower	Matron,
Nuffield Health, Leeds Hospital	Charlotte Kendrick	Clinical Services Manager, Critical Care Unit Manager
Nuffield Health, The Manor Hospital, Oxford	Ilse Kruger	Clinical Governance Lead
Oxford University Hospitals NHS Foundation Trust	Penney Clarke	Senior VTE Prevention Nurse
Oxford University Hospitals NHS Foundation Trust	Charlotte Matejtschuk	VTE Prevention Specialist Nurse
Oxford University Hospitals NHS Foundation Trust	Angelin Jebamani	VTE Prevention Specialist Nurse
Oxford University Hospitals NHS Foundation Trust	Roger Magallano	VTE Prevention Specialist Nurse
Oxford University Hospitals NHS Foundation Trust	Sarah Havord	VTE Prevention Specialist Nurse
Oxford University Hospitals NHS Foundation Trust	Dr Claire Davies	Consultant Haematologist- Lead for VTE Prevention
Oxford University Hospitals NHS Foundation Trust	VTE Prevention Nursing Team	
Pennine Acute Hospitals NHS Trust	Shirley Naylor	Clinical Audit & Effectiveness Manager
Pennine Acute Hospitals NHS Trust	Michelle Howard	Lead VTE Nurse,
Practice Plus Group, Emersons Green Hospital	Stephane Jaglin	Pharmacy Manager & Thrombosis Lead
Queen Elizabeth Hospital	Mr Kristof Nemeth	
Ramsay Health Care UK	Sue Harvey	Clinical Performance Manager
Royal Cornwall Hospitals NHS Trust	Mr Andrew McSorley	Lead Anticoagulation Nurse
Royal National Orthopaedic Hospital	Dr Vijayaraghavan Ramesh	Consultant Anaesthetist
Royal Papworth Hospital NHS Foundation Trust	Julie Quigley	Nurse Consultant
Royal Papworth Hospital NHS Foundation Trust	Wayne Hurst	Head of Nursing (VTE Lead)
Royal Surrey NHS Foundation Trust.	Dr Matthew Rogers	
Royal Wolverhampton NHS trust	Sarah Cotterill	VTE Clinical Nurse Specialist
Salford Royal NHS Foundation Trust	Daniel Horner	Thrombosis committee chair and Consultant in Emergency and Critical Care Medicine
Salisbury NHS Foundation Trust	Nicola McQuaid	Lead Anticoagulation and Thrombosis Nurse Practitioner
Shrewsbury and Telford Hospital NHS Trust	Sally Allen	Head of Clinical Audit

Acknowledgements – cont'd

Hospital	Name	Role
Shrewsbury and Telford NHS Trust	Dr John Jones	Deputy Medical Director
South Tees Hospitals NHS Foundation Trust	Dr Jamie Maddox	
Spire Healthcare, Bushey Hospital	Grace Gardener	Senior Sister
Spire Healthcare, Leeds Hospital	Helen Lavine	Ward Sister & VTE Lead
Spire Healthcare, Manchester Hospital	VTE Working Group	
Spire Healthcare, Methley Park Hospital	Elaine Rowland	Clinical Governance and Risk Manager,
Spire Healthcare, Murrayfield Hospital	Carolyn Warren	Hospital Clinical Education Lead and VTE Lead
Spire Healthcare, Spire Leicester Hospital	Naveeda Knopp MRPharms	Pharmacist, Pre assessment lead
Spire Southampton Hospital	Karen Becheley-Price	VTE lead
Stockport NHS Foundation Trust	Andy Gillett	VTE Specialist Nurse
Stockport NHS Foundation Trust	Dr Chaminda Jayawarna	Acute Physician,
Stockport NHS Foundation Trust.	Dr Mona Kamran	Consultant Obstetrician and Gynaecologist
Surrey & Sussex Healthcare NHS Trust	Cornel Dragan	Consultant Haematologist, Thrombosis Lead
The Clatterbridge Cancer Centre	Marina Asaad PA-R	Physician Associate
The Clatterbridge Cancer Centre NHS Foundation Trust	Mrs M McKay	
The Clatterbridge Cancer Centre NHS Foundation Trust	Dr C Brammer	
The Clatterbridge Cancer Centre NHS Foundation Trust	Mrs C Smith	
The Hillingdon Hospital NHS Foundation Trust	Dr Akila Danga	Consultant Haematologist
The Hillingdon Hospital NHS Foundation Trust	Dr Suzanne Maynard	Haematology Registrar
The Hillingdon Hospital NHS Foundation Trust	Dr Camerin Macleod	Foundation Trainee
The James Cook University Hospital.	Nichola J Taylor	Anticoagulation Nurse Specialist
The James Cook University Hospital.	Maggie Finlayson	Anticoagulation Nurse Specialist
The James Cook University Hospital.	Catherine Sunter	Anticoagulation Specialist Pharmacist
The Rotherham Foundation Trust	Louise Barclay (RGN)	Lead Nurse, Anticoagulation
The Royal Orthopaedic Hospital	Karen Hughes	Interim Head of Nursing- Division 1
The Yorkshire Clinic, Ramsay Health Care UK	Jan Matin	Head of Clinical Services
Torbay and South Devon NHS Foundation Trust	Cath Parnell	Executive Support Manager
Torbay and South Devon NHS Foundation Trust	Steve Carr	Patient Safety and Experience Lead
University College London NHS Foundation Trust	Carolyn Gates	Thrombosis and Anticoagulation pharmacist,
University College London NHS Foundation Trust	John-Paul Westwood	Consultant Haematologist,
University Hospital Southampton Foundation Trust	Tracy Graham	Anticoagulation and Thrombophilia Clinical Nurse Specialist
University Hospital Southampton NHS Foundation Trust	Judith Effeny	Anticoagulation and Thrombosis Nurse Specialist
University Hospital Southampton NHS Foundation Trust	Tracy Graham	Anticoagulation and Thrombosis Nurse Specialist
University Hospitals Birmingham.	Dr Anand Lokare	Consultant Haematologist,
University Hospitals Dorset	Dr Craig Prescott	Consultant Acute Physician
Warrington and Halton Teaching Hospitals NHS foundation Trust	Kaley Whelan	Patient Safety Improvement Nurse
Warrington and Halton Teaching Hospitals NHS foundation Trust	Mrs Sharon Wright	Patient Safety Improvement Nurse
Washington Hospital, Spire Healthcare	Richard SmithSpire	Director of Clinical Services & Victoria May
Watford General Hospital	Kate Mavingire	Pre-Operative Assessment & VTE Lead
West Herts Hospitals Trust	Dr Gail Abrahamson	Thrombosis Prevention Clinical Nurse Specialist (CNS)
West Suffolk Hospital NHS Trust	Kate Talbot	Consultant Haematologist
Whittington Health NHS Trust	Dr. Emma Drasar	DVT and Anticoagulation Clinical Nurse Specialist
Whittington Health NHS Trust	Ian Man	Consultant Haematologist
Whittington Health NHS Trust	Dr. Zara Sayar	Anticoagulant Pharmacist
Wirral University Teaching Hospital	Nigel Donnachie	Consultant Haematologist
Wirral University Teaching Hospital NHS Foundation Trust	Miss Rose Finley	Consultant Trauma and Orthopaedic Surgeon
Wrexham Maelor hospital	Lisa Pemberton	Nurse Consultant (Trauma & Orthopaedics)
		VTE Thromboprophylaxis specialist nurse

Appendix

GIRFT Thrombosis Survey 2019 - 2020 General Guidance Notes

Contents

GIRFT Thrombosis Survey General Guidance Notes

The purpose of the survey:

1. Identify the number of cases of HAT (Hospital Acquired Thrombosis) for a period of six months in each hospital.
2. Identify the clinical areas where HAT occurs, identifying whether HAT has occurred after medical or surgical admission and the type of surgical admission.
3. Determine the proportion of HAT cases are deemed potentially preventable.
4. Identify common themes within cases with potentially preventable HAT.
5. Assess local practice in the prevention of HAT.
6. Provide data for participating Trusts / hospitals to benchmark themselves against the national average and to drive better scrutiny and investigation of HAT and their causes.

Overview of requirements:

- This is a prospective survey.
- The data collection will run from 1st October 2019 till 31st March 2020.
- Participants are to collect the data from the 1st October 2019 till 31st March 2020 throughout the survey period and submit the data through an online portal. The portal requires answering a set of questions with drop down menu options and some free text boxes.
- The portal will remain open until June 2020 to enable submission of HAT data where local processes lead to a delay in investigation, please note only events diagnosed between 1st October 2019 to 31st March 2020 should be uploaded.
- Throughout the survey period, the VTE Lead is responsible for checking the submissions periodically and ensuring that the minimum of 20 VTE prevention data records per month are being submitted along with recording all additional data for any diagnosis of HAT (please refer to the next section for more details).
- Training for data collection on the portal will be provided by the IT Company, Business Reform Ltd and supported by the Thrombosis Project Team.

The GIRFT Thrombosis Survey

The GIRFT Thrombosis survey consists of three parts:

- **Part 1: Organisation survey** – these are general questions about your organisation to be answered once only at the beginning of the survey period by the VTE Lead or similar.
- **Part 2: VTE Prevention survey** – for patients that have been risk assessed as high risk for VTE we are requesting that you submit a minimum of 4 entries per month for each of the following categories:
  - Medical patients (admitted under the care of a physician)
  - Surgical patients (admitted under the care of a surgeon)
  - Critical care patients (admitted to a critical care setting at the time of audit)
  - Maternity patients (admitted under the care of midwifery or obstetrics)
  - Other patients. (For example, Liver, Stroke, Neurosurgery, Renal)

  This will give a total of at least 20 submissions per month (one per patient). You can submit as many additional records as you wish but we require a minimum of 20 (4 per category) for the purpose of the analysis. Where not all patient groups are treated at your hospital, please complete 20 submissions across the breadth of the hospital practice.
- **Part 3: Hospital Acquired Thrombosis Survey** – all patients presenting with HAT between 1st October 2019 and 31st March 2020 should be included in the survey and the root-cause data recorded on the portal. In particular, this survey captures data related to the original admission (also "index admission") predisposing to hospital acquired thrombosis.

Data Collection Methods

We appreciate different patient pathways might lead to a variety of methods in identifying HAT cases and we encourage Trusts / hospitals to develop a method that will allow them to accurately identify all HAT cases in their units. Existing arrangements for the routine collection of HAT data may already be in place within hospitals. HAT could be identified in participating Trusts / hospitals by front line clinicians, with data then collected and submitted via the Online Portal to the GIRFT Thrombosis Project Team prospectively.

Data collection specifics

- The VTE Lead will have 'administrator access' to the surveys for their Trust / hospital and oversee all data collection within their Trust / hospital. They will receive monthly progress reports indicating the number of surveys being completed.
- The clinicians / participants will have 'user access' to the portal questions and will input their data with guidance and support from the VTE Lead, Business Reform Ltd and the GIRFT Thrombosis Project Team.
- Any problems should be addressed to the GIRFT Thrombosis Team at **a.ridgeon@nhs.net**

Sign off policy

- Data collection should be signed off at Trust / hospital level by the VTE Lead.

Frequently Asked Questions

What is GIRFT?

Getting It Right First Time (GIRFT) is a national programme designed to improve surgical and medical care by reducing unwarranted variations. By tracking variations in the way services are delivered, and by sharing best practice between hospitals, GIRFT helps to identify changes that will improve care and patient outcomes, as well as delivering efficiencies such as the reduction of unnecessary procedures and cost savings.

How can you take part in the 2019 survey?

Inform the GIRFT Thrombosis Survey project team of your VTE Lead and enrol other clinicians or participants onto the survey portal. Training will be provided for all users of the portal and further assistance will be available should you require it.

How will my Trust / hospital benefit from participating?

- Each Trust / hospital will receive an individual Trust data pack with national benchmarks.
- Overall results and good practice will be shared nationally.
- Participating in the survey should be an opportunity to better understand a Trust's HAT rates, to review and improve local practice, and to report on this to the management and board.

What period will the survey cover?

This year, the survey will be over a period of six months from 1st October 2019 to 31st March 2020.

How did you develop the questions and agree the procedures?

The survey questions have been developed by Professor Roopen Arya and Dr Lara Roberts in consultation with Thrombosis UK and /or reviewed by experts or professional bodies.

Who will individual Trust / hospital Thrombosis survey data packs be shared with?

The purpose of the survey data packs presented to Trusts / hospitals is to provide insight to help inform clinical decision-making. For information governance reasons, these packs cannot be routinely shared by GIRFT outside of the hospital they apply to. However, where the data and insight raises a need for a hospital and its clinical teams to work with other partners such as commissioner colleagues, the GIRFT programme would encourage Trusts / hospitals to share their data packs as they feel appropriate.

Will the independent sector providers be participating?

The independent sector providers are keen to participate.

Running the Survey

Who needs to be involved in my Trust / hospital?	• A VTE Lead is appointed in each Trust / hospital. • The VTE Lead will 'recruit' participants as required to assist in the data collection. • The VTE Lead will have an 'admin' level login for the Thrombosis portal and they will authorise / issue other logins for their Trust / hospital.
What guidance and training will be available?	• Detailed guidance including a user guide for the portal will be available – this will be supported by an on-line video explaining how to complete the portal questions. We will also offer live WebEx sessions to participants that will recorded and be available for playback as and when required. • A helpline number and email will also be provided for help with the portal and the survey as well as a live chat facility on the portal.
How is the data collected?	• Each participant will have a login to the online portal and will be required to complete data and information for the VTE prevention survey. All HAT cases identified must also be recorded on the survey. No patient identifiable data will be collected by the Thrombosis Project Team.
Clinicians / Participants	• Each site should be already carrying out regular audit of VTE prevention practice and investigating episodes of HAT. We are requesting that this information is recorded on the GIRFT Thrombosis Survey portal for the purpose of analysis. The VTE prevention survey should take a matter of minutes per patient once the user is familiar with it.

Table 28:

Thrombosis Survey Roles & Responsibilities

Lead	Responsibilities
GIRFT Thrombosis Survey Project Team	• Request the Trust / site VTE Lead contact details for each Trust / site via the GIRFT hubs. • Enrol the leads onto the portal. • Provide ongoing support for the VTE Leads and Medical Directors if required. • Encourage 100% participation.
Medical Director of each Trust / hospital	• Ensure adequate provisions to support and undertake the survey. • Identify the VTE Lead and inform the GIRFT Implementation Managers (or nominated person). • Encourage 100% participation.
VTE Lead	• Act as the key liaison point at their site for the Thrombosis Survey. • To familiarise themselves with the Thrombosis Survey process. • Oversee the Thrombosis Survey in their Trust / hospital and ensure the data is being collected and submitted on time and following the agreed protocols. • Agree the local process and resource for collecting the data. • Identify who will be responsible for the data collection. • Encourage 100% participation. • Support participants in collecting and submitting data. • Ensure that effective quality control is in place before the data is submitted. • Ensure the data is submitted on time and in the correct format.
Clinicians / Participants	• Ensure accurate data collection and submission, on time and following the agreed protocols. • Keep the VTE Lead informed.

Table 29:

Timeline

Phase 1 August 2019 early September	• GIRFT Hubs to request that Medical Directors appoint a VTE Lead who will oversee the survey throughout their Trust / hospital. • The GIRFT Hubs will establish the name of the VTE Lead for each Trust / hospital and communicate this to the Thrombosis Project Manager. The GIRFT Hub Leads / Implementation Managers should then identify any non-participating Trusts / hospitals. This information will be passed on to the Thrombosis Project Manager. • The Thrombosis Project Team – provide methodology, guidance and support to the GIRFT Hub Lead, Implementation Managers and GIRFT Clinical Leads. .
Phase 2 Late September / October 2019	• The GIRFT Thrombosis Hub Lead is responsible for ensuring that the VTE Lead is fully aware of what is required for the survey. There will be WebEx sessions available for training in the data collection method as well as a short video and a support mailbox both for technical queries and general queries. • The VTE Lead will be fully trained with support from the GIRFT Hub Lead and the Thrombosis Project Team on data collection and they will ensure that the data collector / clinician who will be inputting data is familiar with the system that will be used.
Phase 3 October 2019 to March 2020	• Act as The VTE Lead will ensure the timely submission of data. GIRFT Project Team to be kept informed of any lack of data and problems with the data entry. • GIRFT Hub Lead / Implementation Manager to provide ongoing support and encouragement throughout data collection period. • GIRFT Thrombosis Project Team to monitor for lack of data and be made aware of any problems.
Phase 4 April 2020 to May 2020	• Complete all HAT data entry records and ensure timely submission.
Phase 5 May 2020 to June 2020	• GIRFT Thrombosis Project Team analyse all data from all trusts / hospitals. • Produce Trust / hospital specific data packs. • Produce National Report.

Table 30:

The GIRFT Thrombosis Survey Portal

Enrolment

The Thrombosis Project Team should be given the email address of the VTE Lead from each site. This will enable them to enrol the participants onto the portal. Business Reform will send an enrolment link via a 'welcome email' to the VTE Lead where they will use the log in details they were sent to access the portal. The VTE Lead will have 'admin level' access in order to oversee the survey in their hospital. The home page will have shortcut links for the VTE Lead to 'add users' or 'edit users'.

Training

There are three planned WebEx training sessions. These WebEx training sessions will be for approximately 15 minutes followed by an interactive question and answer facility. The links to the WebEx sessions are on the home page with details of the time and date. The VTE Lead should select one of these training sessions and once selected it will automatically generate a calendar invite. If the VTE Lead is not available for any of the scheduled dates, the recorded versions will be available to play back at any time.

Technical support is available via a telephone call or an online chat facility will be available. Your Hub lead / Implementation Manager along with the Thrombosis Project team will also be available for support should you need it.

Participants

The VTE Lead will grant access for each clinician / participant to the portal.

The VTE Lead should identify any other participants who will input the data and enrol them onto the survey, this can be found on the home page of the portal. Select add user and enter their email address, this will generate a welcome email with instructions on how to log into the portal and input data.

It is the responsibility of the VTE Lead to ensure that the participants are fully aware of how to log in to the portal and how to input the data. The VTE Lead can either train the clinicians / participants in person or direct them to the recorded WebEx sessions and the short video provided by Business Reform.

Editing and saving a record

When entering the data for a record there is the ability to save it for editing purposes at a later date / time if all the information is not to hand at the time of input. Please make a note of the survey ID number in order to edit the record at a later stage.

The survey records will be held in an encrypted state in the Microsoft365 cloud until the survey is complete. At this point, the data will be transferred to secure servers with RNOH (Royal National Orthopaedic Hospital) and all records deleted from the Microsoft365 cloud environment. The survey will not leave the secure RNOH IT environment and will be destroyed within 5 years of the completion of the survey. No patient identifiable values will be published, and NHS Digital's small number suppression guidance will be followed.

Because the data held will be anonymised, no patient consent is required. Because this data will not be used for research purposes, no ethical approval is required.

The GIRFT Thrombosis Survey Methodology

The full survey consists of three parts (i.e. sub-surveys. each is outlined below).

Part 1: Organisation survey

- This survey assesses local VTE prevention resources and support.
- Please base your responses on current practice.

Questions and guidance for part 1:

1. **Do you have a VTE prevention role that is currently occupied? Yes/No**
   This is usually a nurse or pharmacist leading on VTE prevention practice across the hospital.

2. **Do you use the National VTE risk assessment tool? Yes/no.**
   This refers to the original VTE risk assessment tool proposed in the 2010 NICE guidance for VTE prevention. If you use an alternate tool, please provide the details of the tool (s) utilised at your hospital.

3. **Do you perform whole leg DVT scans (for DVT diagnosis)? Yes/No.**
   This will aid in providing a comparable average HAT rate, as rates of HAT in hospitals performing whole leg DVT scans will be higher (due to the detection of distal DVT).

4. **Do you provide a minimum of 7 days thromboprophylaxis for any groups of medical/surgical patients at high risk of VTE?**
   The updated NICE NG 89 recommended provision of a minimum of 7 days thromboprophylaxis for most medical/surgical patients. We are aware many hospitals have (partially) derogated from this recommendation. If you use for selected patient groups, please select all groups for which you have implemented this recommendation.

5. **Do you use weight-based thromboprophylaxis? Yes/No**
   Whilst this was not recommended in the NICE NG 89, we are aware some hospitals utilise weight based LMWH dosing for thromboprophylaxis. This will aid in providing a comparable average for potentially preventable HAT as there may be more events attributed to wrong dose for weight.

6. **Do you routinely investigate hospital-associated thrombosis? Yes/No**

7. **If previous is yes, how do you identify HAT?**
   Please select all methods utilised.

8. **Do you investigate all episodes of HAT?**

9. **If previous is no, what proportion do you investigate?**
   Suggest base response on proportion investigated in 2018.

Part 2: VTE prevention survey

- This is a prospective survey.
- Sampling methodology – choose patients who have been risk assessed and identified as high risk for VTE. Randomly select 4 patients from medicine, surgery, maternity, critical care and 'other' patient group each month (over 6-month period).
- The scope of this survey does not cover the discharge process or include collecting patient feedback.
- Please note that clicking the save button will close the survey, if you have further data to enter please ensure you have made a note of the survey ID to complete later.
- Once you have entered all the relevant data, select the tick box 'Have you answered all the required questions to complete this survey?' This will then mark the survey as complete on your dashboard.

Questions and guidance for part 2:

1. **Document on the form whether mechanical prophylaxis is indicated Yes/no.**
   The sampling methodology should have ensured only patients who have been identified as high risk and been prescribed mechanical or anticoagulant prophylaxis are included. If Yes, please select the type of mechanical prophylaxis. If you select antiembolism stockings or both, please complete 1a/1b. If intermittent pneumatic compression or no mechanical prophylaxis indicated, please move to question 2.

   1a. Document on the form whether the patient has been fitted with anti-embolism stockings in line with NICE guidance Yes/no.
   - Ensure that patients who need anti-embolism stockings have their legs measured and that the correct size of stocking is provided. Anti-embolism stockings should be fitted, and patients shown how to use them by staff trained in their use. [2010]
   - Ensure that patients who develop oedema or postoperative swelling have their legs re-measured and anti-embolism stockings refitted. [2010]
   - If arterial disease is suspected, seek expert opinion before fitting anti-embolism stockings. [2010]

     Contradictions
     - Suspected or proven peripheral arterial disease.
     - Peripheral arterial bypass grafting.
     - Peripheral neuropathy or other causes of sensory impairment.
     - Any local conditions in which stockings may cause damage, for example fragile 'tissue paper' skin, dermatitis, gangrene or recent skin graft.
     - Known allergy to material of manufacture.
     - Cardiac failure.
     - Severe leg oedema or pulmonary oedema from congestive heart failure.
     - Unusual leg size or shape.
     - Major limb deformity preventing correct fit.
     - Patients admitted for stroke.

     Use caution and clinical judgement when applying anti embolism stockings over venous ulcers or wounds. [2010]

   1b. Is the patient wearing them? (Y / N)

1c. Document on the form whether the anti-embolism stockings are being monitored in line with NICE guidance Yes/no – see below for NICE guidance

- Remove anti embolism stockings daily for hygiene purposes and to inspect skin condition. In patients with a significant reduction in mobility, poor skin integrity or any sensory loss, inspect the skin two or three times per day, particularly over the heels and bony prominences. [2010]
- Discontinue 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 patient experiences pain or discomfort. If suitable, offer a foot impulse or intermittent pneumatic compression device as an alternative. [2010]
- Show patients how to use anti embolism stockings correctly and ensure they understand that this will reduce their risk of developing VTE. [2010]
- Monitor the use of anti embolism stockings and offer assistance if they are not being worn correctly. [2010]

2. **Document if the patient has been identified as at risk of bleeding or if there is a contraindication to pharmacological thromboprophylaxis Yes/no – see below for NICE guidance**
   Base the choice of pharmacological VTE agents on local policies and individual patient factors, including clinical condition (such as severe renal impairment or established renal failure) and patient preferences.

3. **Document if the patient has been prescribed pharmacological thromboprophylaxis in line with NICE guidance Yes/no – see below for NICE guidance**
   Base the choice of pharmacological VTE agents on local policies and individual patient factors, including clinical condition (such as severe renal impairment or established renal failure) and patient preferences.

3a. Is pharmacological thromboprophylaxis prescribed in line with NICE guidance, or as per the local hospital's guidance? Yes/no.

- This is to ascertain whether the patient has been risk assessed promptly in line with NICE guidance. If no, please select the most appropriate reason why thromboprophylaxis not received within 14 hours from the next drop down and go to Question 3a. If yes, go to 3b.

3b. Did the patient receive or is the patient due to receive pharmacological thromboprophylaxis within the first 14 hours of admission? Yes/no.

- If no, please move to the next drop down 'Why did the patient not receive within the 14 hours?' and select the most appropriate reason. If yes, proceed to 3c.

3c. If any doses omitted, how many were due to patient refusal or were not clinically appropriate?

- This is to ascertain if thromboprophylaxis is given as prescribed. Do not record doses not given due to a contraindication or where clinical reasoning is appropriately documented.

3d. If Document if the patient has received written information on VTE prevention Yes/no.

- The scope of this study does not include ascertaining patient feedback. In this case, only document Y if this is indicated within the patient's notes or if the information is by the patient's bedside and provide these details in the next drop down.

3e. Document if the patient has received verbal information of VTE prevention Yes/no.

- The scope of this study does not include ascertaining patient feedback. In this case, only document Y if this is indicated within the patient's notes.

Part 3: Hospital acquired thrombosis survey

- Please complete for each individual episode of hospital-acquired thrombosis with an index admission at your hospital. This is prospective data collection for any HAT diagnosed 1st October 2019 to 31st March 2020 (the index admission may be prior to 1st October).
- HAT is defined as any episode of VTE diagnosed within 90 days of hospitalisation (this includes events occurring following day surgery performed with regional/general anaesthesia but excludes events associated with medical admissions of <12 hours, surgery performed under local anaesthesia and admissions for investigation of suspected VTE).
- If you identify an episode of HAT associated with admission to another hospital, please provide the details to the VTE prevention lead in the index hospital (the GIRFT project team may be able to direct you if not known).
- This survey consists of five sections, each outlined in detail below.
- Please note that clicking the save button will close the survey, if you have further data to enter please ensure you have made a note of the survey ID to complete later.
- Once you have entered all the relevant data, go to the overall conclusion tab and select the tick box 'Have you answered all the required questions to complete this survey?'. This will then mark the survey as complete on your dashboard.

Questions and guidance for part 3 (in five sub-sections):

Section 1 (admission/VTE details)

1. **Number of admissions in the previous 90 days:**
   Provide the number of hospital admissions (meeting criteria above), this will populate further fields to provide the details of each admission and the associated VTE/bleeding risk.

2. **Source of HAT info:**
   Was HAT identified from radiology reports, reported by the clinical team, autopsy/bereavement records, another hospital or other? If other, please provide source as free text.

3. **Exam name:**
   Provide the diagnostic method utilised. If not listed, please select other and provide further details. If another form of imaging was utilised or the diagnosis was made at another hospital and is therefore unknown, pls select other and provide further details in the freetext box.

4. **Event date:**
   Provide the date of VTE diagnosis.

5. **VTE Type:**
   Provide the details re site of VTE; if multiple sites, please select most clinically significant site e.g. if both DVT and PE, select PE.

6. **If PE selected for previous question: Fatal PE?**
   Did the patient die from PE? Select unknown if PE diagnosis and follow-up arranged elsewhere.

7. **Symptomatic:**
   Was the imaging performed due to clinical suspicion of VTE? If not, select no. Please select unknown if uncertain, for example diagnosis made at another hospital.

8. **Patient location at diagnosis:**
   Was the patient admitted to hospital at the time of diagnosis?

9. **If inpatient selected for previous question:**
   Was the patient readmitted for suspected VTE or did VTE occur prior to hospital discharge (i.e. still admitted in index admission)?

10. **Type of admission:**
    Please select medical, surgical or obstetric as appropriate. Please consider an admission as medical if the responsible clinician is a physician, surgical if the responsible clinician is a surgeon and obstetric if the woman is pregnant and admitted under either obstetrics or midwifery.

11. **Date of admission for index admission:**
    Please provide date of index admission. These fields will replicate based on the number of admissions within 90 days; please provide dates for each admission.

12. **Date of discharge for index admission:**
    Please provide date of discharge from index admission (leave blank if not discharged prior to VTE diagnosis).

13. **Death within 30 days of VTE diagnosis:**
    Did the patient die within 30 days of VTE diagnosis? Yes/No/Unknown (if no longer under followup at your hospital).

14. **Surgery undergone during index admission:**
    Did the patient have surgery within the index admission? If yes, provide the number of surgical procedures.

15. **Surgery date during index admission:**
    Please provide the date for each surgical procedure.

16. **Surgery Type:**
    Please select type of surgery from dropdown list options:
    Bariatric Surgery, Cardiac Surgery, Cranial Surgery, Elective Spinal Surgery, ENT Surgery, Foot / Ankle Orthopaedic Surgery, Gastroenterological Surgery (not bariatric), Gynaecological Surgery, Hip Fracture Surgery, Lower Limb Amputation, Major Trauma Surgery, Non-arthroplasty Knee Surgery, Open Vascular Surgery / Endovascular aneurysm Repair, Oral & Maxillofacial Surgery, Spinal Injury Surgery, Thoracic Surgery, Total Hip Replacement, Total Knee Replacement, Upper Limb Orthopaedic Surgery, Urological Surgery, Varicose Vein Surgery or Other Please only select 'other' if surgery does not fit into any of the previous broad options.

Section 2 (VTE/bleeding risk factors)

This section will duplicate fields for each admission, please complete details corresponding to the admission dates entered in section 1.

17. **Risk assessment completed during index admission: Yes – correct/Yes - incorrect/no**
    Is there a documented risk assessment completed on the index admission. Select Yes – correct if overall summary VTE/bleeding (e.g. if some individual VTE risk factors not recorded but overall documented as high, consider correct).

18. **Reassessment complete during index admission: Yes/no**
    Is there documented evidence of re-assessment of VTE risk during the admission?

19. **Summary VTE risk during index admission**
    Based on your own retrospective VTE risk assessment, was the patient high or low risk for VTE at the time of index hospital admission? The NHS risk assessment tool VTE risk factors are available below; the presence of a single risk factor denotes high VTE risk. Use your local tool to risk assess if the NHS tool is not in use.

Patient related risk factor	Tick	Admission related risk factor	Tick
Active cancer or cancer treatment		Significantly reduced mobility for three days or more	
Age >60		Hip or knee replacement	
Dehydration		Hip fracture	
Known thrombophilia		Total Anaesthetic + surgery time > 90 minutes	
Obesity (BMI > 30kg/m^2)		Surgery involving pelvis or lower limb with anaestheitc + surgery time > 60 minutes	
One or more significant medical comorbidities (eg: heart desease; metabolic, endocrine or respiratory pathologies, acute infections, inflammatory conditions)		Acute surgical admission with inflammatory or intra-abdominal condition	
Personal history/first degreee relative with history of VTE		Critical care admission	
Use of hormone replacement therapy		Surgery with significant reduction in mobility	
Use of oestrogen-containing oral contraceptive therapy		Active cancer or cancer treatment	
Varicose veins with phlebitus			
Pregnancy or < 6 weeks postpartum			

Table 31:

Section 3 (Bleeding risk factors)

20. Summary bleeding risk during index admission:

Based on your own retrospective assessment, was the patient high or low risk for bleeding at the time of index hospital admission? The NHS risk assessment tool VTE risk factors are available below; the presence of a single risk factor denotes high bleeding risk. Use your local tool to risk assess if the NHS tool is not in use.

Patient related	Tick	Admission related	Tick
Active bleeding		Neurosurgery, spinal surgery or eye surgery	
Acquired bleeding disorder		Other proceedure with high bleeding risk	
Concurrent use of anticoagulants known to increase risk of bleeding		Lumbar puncture/epidural/spinal anaesthesia expected in the next 12hrs or within previous 4 hrs	
Acute stroke			
Platelets <75x10^9/l			
Uncontrolled hypertension (>230/120)			
Untreated inherited bleeding disorder (such as haemophilia and von Willebrand disease)			

Table 32:

Section 4 (Thromboprophylaxis provided)

21. Type of anticoagulant thromboprophylaxis given:

Please indicate the type of thromboprophylaxis given (LMWH includes enoxaparin, tinzaparin and dalteparin). Please only consider aspirin as thromboprophylaxis if started specifically for this purpose or if dose increased to 150mg for those taking prior to admission (e.g. post TKR/THR).
DOAC – direct oral anticoagulant e.g. apixaban, dabigatran, edoxaban and rivaroxaban.
UFH – unfractionated heparin. VKA – vitamin K antagonist.

22. Type of mechanical:

Please provide details of mechanical prophylaxis provided during index admission e.g. antiembolism stockings (AES), intermittent pneumatic compression device (IPC).

23. Mechanical prescribed appropriately:

Was mechanical prophylaxis (if indicated) prescribed in accordance with NICE / your local guidance?

24. Appropriate duration of mechanical TP:

Was mechanical TP prescribed for an appropriate duration as per your local guidance? Use 'not documented' option if there is evidence mechanical methods were used but you are unable to determine when prescribed/discontinued. Select no, if clear evidence mechanical prophylaxis discontinued inappropriately (i.e. without a contraindication).

25. **Appropriate duration of anticoagulant TP:**
Was chemical TP prescribed for an appropriate duration as per your local guidance?

26. **Was first dose anticoagulant prophylaxis prescribed and administered within 14h of admission?**
This measures whether prophylaxis was prescribed and administered as per NICE guidance when not contraindicated.

27. **If respond no to above: Time to administration of first dose of anticoagulant prophylaxis from admission?**
Provide time in hours from admission to first dose of anticoagulant prophylaxis.

28. **If previous question entered: Was the delay clinically appropriate?**
If there was a clinical reason for delaying initiation of prophylaxis (e.g. due to temporary contraindications such as planned emergency surgery, in labour), please record yes. If there was no documented/valid reason for delay, please record no.

29. **Were there any missed doses of anticoagulant prophylaxis?**
Select yes if any doses of anticoagulant prophylaxis omitted (even if omitted as contraindicated).

30. **If previous question yes: How many doses were missed in total?**
Record total number of doses missed including those due to contraindication.

31. **If previous question entered: How many missed for clinical reasons?**
Record the number of doses missed due to a contraindication (e.g. active bleeding / thrombocytopenia).

32. **If previous entered, what was exact reason?**
Record reason for omission, select all that apply.

33. **If previous (High risk procedure planned) was there a delay in planned procedure?**
If doses of anticoagulant prophylaxis were omitted in preparation for a high-risk procedure, was this delayed for any reason?

34. **If previous yes: Was this due to clinical reason or organisational factors?**
If the procedure was delayed, please indicate whether this was for clinical reasons (e.g. patient unfit for procedure) or organisational factors (e.g. lack of theatre availability).

35. **How many doses were omitted due to patient refusal?**
Please record the number of doses omitted due to patient refusal (if any).

36. **If previous >0: Is there evidence the medical team were made aware of this? Yes/no**

37. **How many doses omitted without evidence of a clinical reason/ patient refusal?**
How many doses of anticoagulant prophylaxis were not given without a valid documented clinical reason/patient refusal i.e. were inadvertently omitted or omitted for an inappropriate reason (e.g. LMWH omitted as nil by mouth).

38. **For organisations using weight-based dosing - Was anticoagulant prophylaxis prescribed at appropriate dose for weight?**
    Did the patient receive the appropriate dose of LMWH as per your local guidance for weight? If you do not use weight based dosing and the appropriate dose given, select yes.

39. **If previous no: how many doses were incorrect?**

40. **If not prescribed correctly, how many doses were incorrect?**

41. **Was weight documented correctly on admission?**

42. **Was there a documented clinical reason for dose adjustment?**
    E.g. renal impairment.

43. **Was anticoagulant prophylaxis discontinued prior to hospital discharge?**
    Was the thromboprophylaxis stopped whilst the patient remained admitted to hospital for any reason?

44. **If previous yes: Was discontinuation clinically appropriate?**
    E.g. stopped due to new contraindication, e.g. active bleeding.

45. **Was post discharge prophylaxis indicated?**
    This item is only relevant for patients with a VTE diagnosed post discharge from index admission. Was post discharge prophylaxis indicated post discharge as per your local guidance (or NICE if used), e.g. following TKR/THR (or for other patient groups where an extended duration is recommended locally).

46. **If previous yes: Was post-discharge prophylaxis prescribed for appropriate duration?**
    As per Local guidance (or NICE if used).

47. **If not prescribed as per guidance: Was there a clinical reason not to provide post-discharge prophylaxis?**
    E.g. contraindication to anticoagulant prophylaxis such as bleeding/thrombocytopenia.

Section 5 (overall conclusion)

Underlying theme
Based on your investigation, please select the theme which best describes the underlying cause of HAT from:

Thromboprophylaxis failure:
Patient high risk of VTE, low risk of bleeding. Prescribed and received appropriate anticoagulant prophylaxis for correct duration.

Inadequate thromboprophylaxis:
Patient high risk of VTE, low risk of bleeding with some omission in VTE prevention care e.g. no prophylaxis prescribed, missed doses (not due to contraindication), inadequate duration, inappropriate dose prescribed for weight as per local guidance.

Contraindication to prophylaxis:
Patient high risk of VTE & high risk of bleeding. May have received mechanical prophylaxis if indicated but anticoagulant prophylaxis not possible for at least part of admission due to bleeding risk factors.

Line associated:
Associated with indwelling central venous access.

Unexpected:
Patient with no VTE risk factors according to the VTE risk assessment tool in use, so no indication for thromboprophylaxis.

Unable to investigate:
Notes incomplete/unobtainable.

Potentially preventable:
Yes/no. Inadequate TP would generally be considered potentially preventable unless an isolated single dose omission/single incorrect dose for weight. Contraindication to prophylaxis may be considered potentially preventable when mechanical prophylaxis indicated and not provided e.g. acute stroke with paresis not offered intermittent pneumatic compression or trauma patient with persisting bleeding risk factors not offered mechanical prophylaxis.

‘COVID’ INFORMATION FOR THE GIRFT Thrombosis Survey May 2020

Guidance notes for new COVID tab on survey 3 (hospital associated thrombosis)

Venous thromboembolism has emerged as a potentially significant complication of COVID-19. In response, many centres have adjusted local thromboprophylaxis strategies in an attempt to reduce this risk. The GIRFT Thrombosis survey provides a unique opportunity to collate data nationally and examine the impact of alternate thromboprophylaxis strategies. We invite you to contribute to this dataset by continuing to enter data into the HAT survey for VTE events associated with hospitalisation occurring in April and May 2020. The database will remain open until end of August 2020 to facilitate further data entry. Participation remains entirely voluntary.

There is new tab ‘COVID’ on the hospital associated thrombosis survey. For entries going forward, we request that this tab also be completed. Where you can easily identify cases already entered associated with COVID, please also complete this tab. There is no need to retrospectively complete this for all previous entries unless you wish to do so.

1. **Did the patient have confirmed or clinically suspected COVID during the index admission?**
   If no selected, survey ends. Yes includes patients treated for COVID-19 based on clinic-radiological features in recognition of the false negative rate for swabbing. This does NOT include patients without clinical suspicion and a negative swab.

2. **Was COVID confirmed on swab / bronchoalveolar lavage?**
   Please confirm whether the diagnosis was confirmed on swab / bronchoalveolar lavage

3. **Date of suspected / confirmed COVID**
   Please select the date of positive COVID-19 swab or where negative, data clinical suspicion documented.

4. **Please select patient’s ethnicity**
   Select the patient’s ethnic group if recorded. If not known, please select unknown.

5. **Please select all known comorbidities below**
   Record any known comorbidities, you can select more than one option. If there are no comorbidities, please select none of the above. If you don’t have this data, please leave blank.

   Obesity is defined as body mass index >30kg/m^2.

6. Was the patient admitted to a critical care setting during their index admission?

Please select 'Yes' if admitted to intensive care / critical care for any part of the index admission. Please also select 'Yes' if therapy usually reserved for critical care settings was given in a ward based environment due to unavailability of critical care beds e.g. CPAP on the ward.

6a. What dosing regimen was used during the index admission?

This question will appear if you selected DOAC, LMWH or UFH to the first question on the 'Thromboprophylaxis' tab regarding anticoagulant agent used.

For LMWH:

- Standard dose - dosing was as per your usual (pre-COVID) thromboprophylaxis guidance.
- Intermediate dose – dosing higher than pre-COVID thromboprophylaxis was utilised (but not equivalent to a treatment dose) eg if usual dose is enoxaparin 40mg once daily but patient received 40mg bd.
- Therapeutic dose – full treatment dose LMWH

For UFH, please select the relevant regimen:

- 5000 units bd
- 5000 units tds
- Higher dose bd
- Therapeutic infusion

For DOAC, please select the relevant regimen:

- Rivaroxaban 10mg od
- Apixaban 2.5mg bd
- Therapeutic dose DOAC

7. For patients representing post discharge: Did the patient receive post discharge thromboprophylaxis?

Please select yes, if prescribed post discharge thromboprophylaxis

And indicate Which regimen was prescribed?

- prophylactic LMWH
- prophylactic rivaroxaban
- prophylactic apixaban
- Other

Please also indicate How many weeks post discharge prophylaxis were prescribed?
This will only enable a numeric entry.

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