National Quality Improvement Project 2018/2019
VTE Risk in Lower Limb Immobilisation
Information Pack

Introduction

Temporary cast immobilisation of a leg in adults is associated with a 2-3% risk of deep venous thrombosis (DVT) and its potential consequences of long-term leg pain and swelling, pulmonary embolism (PE) and even death. Many experienced emergency physicians will have personal experience in dealing with patients who have developed those complications.

There is evidence from systematic reviews that thromboprophylaxis (TP) with low-molecular-weight heparins (LMWH) can reduce the risk of DVT by around 50% (Zee AA, 2017).

Internationally, pharmacological TP in this clinical scenario is not yet universally accepted. In the United States, the American College of Chest Physicians still suggests not to use thromboprophylaxis for patients with isolated lower-extremity injuries requiring leg immobilization (Falck-Ytter Y, 2012).

In the UK, the 2010 guideline 'Venous thromboembolism: reducing the risk' from the National Institute for Health and Clinical Excellence (NICE) recommended an assessment of the risk of venous thromboembolism (VTE) and bleeding, with consideration of TP using LMWH or unfractionated heparin (UFH) where appropriate, in patients with lower limb plaster casts but explicitly excluded 'people presenting to emergency departments (ED) without admission' (National Institute for Health and Clinical Excellence, 2010).

Earlier this year, NICE published its replacement guideline 'Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism' and this latest document now includes 'people discharged from hospital, (including from A&E)' (National Institute for Health and Care Excellence, 2018). Key recommendations from the guideline include risk assessment for VTE and bleeding, the provision of verbal and written advice, and prompt initiation of TP where indicated.

In the absence of an accepted gold standard risk assessment tool, NICE recommends using one 'published by a national UK body, professional network or peer-reviewed journal'. Tools that fit those requirements currently include the following:

- Department of Health VTE risk assessment tool (National Institute for Health and Care Excellence, 2018)
- GEMNet rule (Roberts C, 2013)
- Plymouth rule (Keenan J, 2009)
- L-TRiP(cast) rule (Nemeth B, 2015)

The current UK 'Thromboprophylaxis in Lower Limb Immobilisation (TiLLI)' study project is expected to provide some much-needed clarity in this area.

Meanwhile, many EDs have made their own individual arrangements, varying from routine provision of TP for all patients without contraindications to restrictive use of TP in patients at particularly high risk, such as those with Achilles tendon rupture or a personal history of VTE.

When this audit was run in 2015-16, it revealed considerable room for improvement with regards to the utilisation of risk assessment tools as well as the documented provision of written patient information.

The present audit is an opportunity to build up an updated UK-wide picture in this important area of practice, while the new online audit tools should make it easy for departments to track the effect of quality improvement (QI) interventions on their performance over time.

Methodology

Inclusion criteria
Patients must meet the following criteria for inclusion:

- Adults and adolescents **17 years of age and over**
- Presenting to an ED or a Minor Injuries Unit that is part of the ED
- Presented with a **lower limb injury**
- Discharged with **temporary immobilisation** of the limb using a plaster cast or airboot

Exclusion criteria
Do **not** include:

- Any patient under the age of 17 years
- Patients who are admitted to a ward as an inpatient (excluding observation and short stay wards under the jurisdiction of the ED)
- Patients on warfarin, a Direct Oral Anticoagulant (DOAC), a heparin or fondaparinux
- Patients with lower limbs immobilised by other means e.g. cricket splint etc

For further information about using ECDS or your ED's electronic patient record to identify relevant cases, and to extract data from your system, please see the appendix 1 and 2.

Flow of data searches to identify audit cases
Using codes in appendix 1 first identify all patients attending your ED between the relevant dates, then by age at time of attendance, then through the other relevant criteria.

If your ED is reliably using the Emergency Care Data Set (ECDS), then your IT department should be able to a) pull off a list of eligible cases for you, and b) extract some or all of the data you need to enter. Please see appendix 1 and 2 for the list of codes they will need to identify eligible cases or extract the data.

Data entry information

Sample size and data frequency

The RCEM clinical audits have had a major upgrade, providing you with a range of new features and quality improvement tools. These include a live data dashboard tracking how your data changes weekly on run charts, and the ability to have your own PDSA cycles added to your charts.

Recommended: To maximise the benefit of the new run charts and features RCEM recommends entering **5 consecutive cases per week**. This will allow you to see your ED's performance on key measures changing week by week.

Alternative: If your ED will find weekly data entry too difficult to manage, you may wish to enter data monthly instead. The system will ask you for each patient's arrival date and automatically split your data into weekly arrivals, so you can get the benefit of seeing weekly variation.

Expected patient numbers	Recommended sample size	Recommended data entry frequency
<5 a week	All patients	Weekly
>5 a week	5 consecutive patients	Weekly
Expected patient numbers	**Alternative sample size**	**Alternative data entry frequency**
<5 a week	All patients	Monthly
>5 a week	20 consecutive patients	Monthly

Data collection period

Data should be collected on patients attending from 1 August 2018 – 31 January 2019.

Data submission period

Data can be submitted online at the link below from 1 August 2018 – 31 January 2019. You can find the link to log into the data entry site at www.rcem.ac.uk/audits

Data Sources

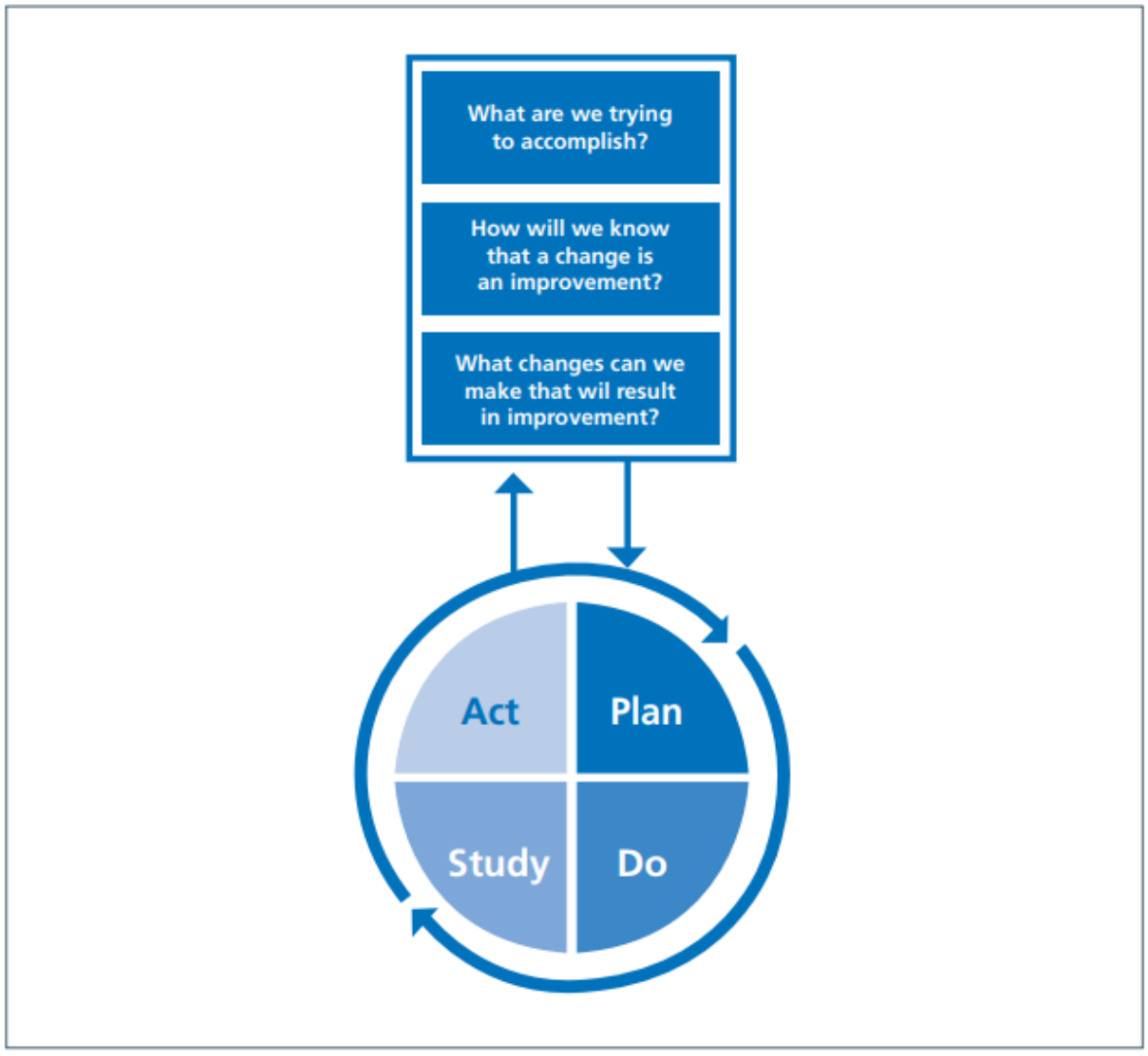
ED patient records (paper, electronic or both).

Quality improvement information

The purpose of clinical audit is to quality assure and quality improve your service where it is not meeting standards. The new RCEM system allows your team to record details of quality improvement projects (QIP) and see on your dashboard how each initiative affects your data on key measures.

We encourage you to use this new feature to try out QIPs in your department. If you are new to QIPs, we recommend you follow a Plan Do Study Act (PDSA) methodology. The Institute for Healthcare Improvement (IHI) provides a useful worksheet which will help you to think about the changes you want to make and how to implement them.

The model for improvement, IHI



Standards

STANDARD	GRADE
1. There should be written evidence that patients who are fitted with a new leg cast or boot have their risk of VTE and bleeding assessed during their visit to the ED	F
2. Evidence that a patient information leaflet (PIL) outlining the risks and need to seek medical attention if they develop symptoms of VTE has been given to ALL patients with temporary lower limb immobilisation who are discharged from the emergency department, regardless of their risk.	F
3. If pharmacological thromboprophylaxis is documented as being indicated, there should be written evidence of the treatment having been initiated in the ED	D

Grade definition

F - Fundamental: need to be applied by all those who work and serve in the healthcare system. Behaviour at all levels and service provision need to be in accordance with at least these fundamental standards. No provider should provide any service that does not comply with these fundamental standards, in relation to which there should be zero tolerance of breaches.

D - Developmental: set requirements over and above the fundamental standards.

A - Aspirational: setting longer term goals.

Standards definitions

Standard	Term	Definition
3	Pharmacological thromboprophylaxis	This includes: Low-molecular-weight heparin (LMWH), Direct oral anticoagulants (DOAC), Unfractionated heparin (UFH), Fondaparinux, Warfarin, or other pharmacological thromboprophylaxis. This does not include non-pharmacological thromboprophylaxis such as anti-embolism stocking, venous ligation, intermittent pneumatic compression, or venous foot pump.

Audit questions

Casemix

1.1	Reference (do not enter patient identifiable data)	
1.2	Date of arrival	dd/mm/yyyy
1.3	Age of patient on attendance	17-40
		41-59
		60 and over

Diagnosis

2.1	What was the documented diagnosis for the lower limb injury? *(tick all that apply)*	Fracture
		Dislocation
		Achilles tendon rupture
		Sprain
		Other soft tissue injury
		Not recorded

Assessment

3.1	Was a VTE and bleeding risk assessment carried out in the ED prior to discharge?	Yes
		No – but the reason was recorded
		No – but VTE risk assessment would have been carried out at follow up (e.g. fracture clinic) within 24 hours of ED attendance
		No
3.1a	(Only answer if YES to 3.1) Was the level of VTE risk (e.g. high/low) explicitly documented in the notes?	Yes
		No
3.2	(Only answer if YES to 3.1) Is there documented evidence on whether or not thromboprophylaxis is indicated?	Yes – indicated
		Yes – not indicated
		Not recorded

Treatment

4.1	Is there written evidence of the patient receiving thromboprophylaxis? *(tick all that apply)*	Low-molecular-weight heparin (LMWH)
		Direct oral anticoagulants (DOAC)
		Unfractionated heparin (UFH)
		Fondaparinux
		Warfarin
		Other – please state
		Patient declined thromboprophylaxis
		No thromboprophylaxis in the ED but referred for this purpose to another service

		Not recorded
4.1.a	(Only answer if 4.1 = pharmacological treatment received in the ED) Did the patient receive a STAT dose in the ED?	Yes No Not recorded

Patient information

5.1	Is there written evidence that an information leaflet on the risk of VTE, symptoms and where to seek medical help was provided to the patient?	Yes
		No – but the reason was recorded
		No

Notes
(Optional space to record any additional notes for local use)

Question and answer definitions

Term	Definition
Pharmacological thromboprophylaxis / pharmacological treatment	Treatment with: • Low-molecular-weight heparin (LMWH) • Unfractionated heparin (UFH) • Fondaparinux • Direct oral anticoagulants (DOAC) • Warfarin • or other pharmacological thromboprophylaxis This does not include non-pharmacological thromboprophylaxis such as anti-embolism stocking, venous ligation, intermittent pneumatic compression, or venous foot pump.
VTE risk assessment	To select the answer YES there should be explicit evidence of the evaluation of recognised risk factors. This will often (if not always) be based on an assessment tool such as: - Department of Health VTE risk assessment tool - GEMNet rule - Plymouth rule - L-TRiP (cast) rule - and sometimes involves a proforma **NB**: Departments with a policy of routine provision of TP for all patients without contraindications may tick YES for all patients here, provided there is evidence of an assessment of the risk of bleeding.
Thromboprophylaxis: Yes – not indicated	If Q3.2 is answered as 'Yes – not indicated', where the patient was risk assessed but thromboprophylaxis was not indicated with good reason, Q4.1 should be answered as 'Not recorded'.

Organisational questions

Please answer these questions once per ED.

1.1	Does your ED have a guideline or protocol to assess the risk of VTE and bleeding in adult patients who are discharged with a new leg cast or boot?	Yes - Assessment tool published by a national UK body
		Yes - Assessment tool published by a professional network
		Yes - Assessment tool published in peer-reviewed journal
		Yes - Locally developed tool
		No guideline or protocol

Evidence base for standards

The audit standards have been checked for alignment with National Institute for Health and Care Excellence (2018) Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism. NICE guideline (NG89) https://www.nice.org.uk/guidance/ng89

STANDARD	EVIDENCE
1. There should be written evidence that patients who are fitted with a new leg cast or boot have their risk of VTE and bleeding assessed during their visit to the ED	NICE guideline (NG89) Recommendation 1.1.5: Assess all surgical and trauma patients to identify the risk of VTE and bleeding: • As soon as possible after admission to hospital or by the time of the first consultant review • Using a tool published by a national UK body, professional network or peer-reviewed journal. The most commonly used risk assessment tool for surgical patients is the Department of Health VTE risk assessment tool
2. Evidence that a patient information leaflet (PIL) outlining the risks and need to seek medical attention if they develop symptoms of VTE has been given to ALL patients with temporary lower limb immobilisation who are discharged from the emergency department, regardless of their risk.	NICE guideline (NG89) Recommendation 1.2.4: As part of the discharge plan, give patients and their family members or carers (as appropriate) verbal and written information on: • the signs and symptoms of deep vein thrombosis (DVT) and pulmonary embolism • how people can reduce their risk of VTE (such as keeping well hydrated and, if possible, exercising and becoming more mobile) • the importance of seeking help if DVT, pulmonary embolism or other adverse events are suspected
3. If pharmacological thromboprophylaxis is documented as being indicated, there should be written evidence of the treatment having been initiated in the ED	NICE guideline (NG89) Recommendation 1.1.7: If using pharmacological VTE prophylaxis for surgical and trauma patients, start it as soon as possible and within 14 hours of admission, unless otherwise stated in the population-specific recommendations

Appendix 1: ECDS codes to support case identification

These codes will help you and your IT team to identify cases that may be eligible for the audit. This is not an exhaustive list and other search terms can be used. All potential patients should then be reviewed to check they meet the definitions & selection criteria before inclusion in the audit.

Inclusion criteria	ECDS data group	ECDS data item	M/R /O	Format	Start value	Finish value	DM&D Code	DM&D Description	SNOMED code	SNOMED description
Audit period	EC attendance activity characteristics	EMERGENCY CARE ARRIVAL DATE	M	an10 CCYY-MM-DD	2018-08-01	2019-01-31	-	-	-	-
	EC attendance activity characteristics	EMERGENCY CARE ARRIVAL TIME	M	an8 HH:MM:SS	00:00:01	23:59:59	-	-	-	-
Adults 17 years of age or over	Patient Identity	PERSON BIRTH DATE	R	an10 CCYY-MM-DD	2001-08-01	2002-01-31	-	-	-	-
		AGE AT CDS ACTIVITY DATE	M	max an3	17	120	-	-	-	-
Presenting to ED/MIU	EC Attendance Location	EMCARE DEPARTMENT TYPE	M	an2	-		01	Type 1 : General Emergency Department (24 hour)	-	-
							03	Type 3 : Minor Injury Unit	-	-
							05	Ambulatory Emergency Care Service*	-	-
Presenting with lower limb injury	EC Attendance Characteristics	Chief complaint	M	SNOMED-CT	-				21631000119105	Limb ischaemia (disorder)
									312608009	Laceration - injury (disorder)
									312609001	Puncture wound - injury (disorder)

						93459000	Foreign body in subcutaneous tissue (disorder)
						127279002	Injury of lower extremity (disorder)
						10601006	Pain in lower limb (finding)
						271771009	Joint swelling (finding)
						417746004	Traumatic injury (disorder)
						262595009	Traumatic amputation (disorder)
						371708003	Injury due to electrical exposure (disorder)
						370977006	Frostbite (disorder)
						371704001	Injury due to chemical exposure (disorder)
						161647008	History of anticoagulant therapy (situation)
Discharged home	EC Discharge	EC Discharge destination	R	SNOMED-CT	-	306689006	Discharge to home (procedure)
						306691003	Discharge to residential home (procedure)
						306694006	Discharge to nursing home (procedure)

						306705005	Discharge to police custody (procedure)
						50861005	Patient discharge, to legal custody (procedure)
Treatment	Treatment	Treatment	M	SNOMED-CT	-	180289009	Application of plaster cast (procedure)
						243751002	Provision of mobility device (procedure)

Appendix 2: ECDS codes to support data extraction

These codes will help you and your IT team to extract audit data from your electronic patient records. This is not an exhaustive list and other search terms can be used. All data should be reviewed to ensure it is accurate.

Audit questions			Able to capture directly via EDIS (ECDS)?	ECDS data item and codes			ECDS proxy measure		
				ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description	ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description
Case mix									
1.1	Reference (do not enter patient identifiable data)		NO			-	n/a	-	-
1.2	Date of arrival		YES	EMERGENCY CARE ARRIVAL DATE	DM&D	-	n/a	-	-
1.3	Age of patient on attendance	17-40	YES	AGE AT CDS ACTIVITY DATE	-	-	-	-	-
		41-59					-	-	-
		60+					-	-	-
Diagnosis									
2.1	Were was the documented diagnosis for the lower limb injury?	Fracture- Open/ Closed	YES	PLEASE note ECDS has SUSPECTED/ CONFIRMED qualifiers for all Diagnoses. Diagnosis is a MANDATORY data item, so none should be NOT recorded	447138000	Closed fracture of tarsal bone (disorder)	n/a	-	-
					25415003	Closed fracture of femur (disorder)	n/a	-	-
					428151000	Closed fracture of bone of knee joint (disorder)	n/a	-	-
					80756009	Closed fracture of patella (disorder)	n/a	-	-

Audit questions			Able to capture directly via EDIS (ECDS)?	ECDS data item and codes			ECDS proxy measure		
				ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description	ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description
					447139008	Closed fracture of tibia (disorder)	n/a	-	-
					447395005	Closed fracture of fibula (disorder)	n/a	-	-
					413877007	Closed fracture of tibia and fibula (disorder)	n/a	-	-
					42188001	Closed fracture of ankle (disorder)	n/a	-	-
					64665009	Closed fracture of calcaneus (disorder)	n/a	-	-
					342070009	Closed fracture of foot (disorder)	n/a	-	-
					81576005	Closed fracture of phalanx of foot (disorder)	n/a	-	-
					428258002	Open fracture of tarsal bone (disorder)	n/a	-	-
					28576007	Open fracture of femur (disorder)	n/a	-	-

Audit questions			Able to capture directly via EDIS (ECDS)?	ECDS data item and codes			ECDS proxy measure		
				ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description	ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description
					428019004	Open fracture of bone of knee joint (disorder)	n/a	-	-
					111643005	Open fracture of patella (disorder)	n/a	-	-
					446979005	Open fracture of tibia (disorder)	n/a	-	-
					447017008	Open fracture of fibula (disorder)	n/a	-	-
					414943006	Open fracture of tibia and fibula (disorder)	n/a	-	-
					48187004	Open fracture of ankle (disorder)	n/a	-	-
					24948002	Open fracture of calcaneus (disorder)	n/a	-	-
					367527001	Open fracture of foot (disorder)	n/a	-	-
					74395007	Open fracture of phalanx of foot (disorder)	n/a	-	-
		Dislocation	YES		58320001	Traumatic dislocation of knee joint (disorder)	n/a	-	-

Audit questions			Able to capture directly via EDIS (ECDS)?	ECDS data item and codes			ECDS proxy measure		
				ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description	ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description
					263029007	Dislocation of patellofemoral joint (disorder)	n/a	-	-
					125622002	Traumatic dislocation of ankle joint (disorder)	n/a	-	-
					208986008	Dislocation or subluxation of foot (disorder)	n/a	-	-
					263030002	Dislocation of toe joint (disorder)	n/a	-	-
		Achilles tendon Rupture	YES		22817005	Strain of Achilles tendon (disorder)	n/a	-	-
		Sprain	YES		54888009	Sprain of knee (disorder)	n/a	-	-
					44465007	Sprain of ankle (disorder)	n/a	-	-
					49388007	Sprain of foot (disorder)	n/a	-	-
					262998001	Sprain of toe joint (disorder)	n/a	-	-
		Other soft tissue injury	YES		274198002	Superficial injury of thigh (disorder)	n/a	-	-
					283040009	Superficial injury of knee (disorder)	n/a	-	-
					283041008	Superficial injury of lower leg (disorder)	n/a	-	-

Audit questions			Able to capture directly via EDIS (ECDS)?	ECDS data item and codes			ECDS proxy measure		
				ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description	ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description
					274195004	Superficial injury of ankle (disorder)	n/a	-	-
					274199005	Superficial injury of foot (disorder)	n/a	-	-
					274200008	Superficial injury of toe (disorder)	n/a	-	-
					74270009	Crushing injury of thigh (disorder)	n/a	-	-
					40874009	Crushing injury of lower leg (disorder)	n/a	-	-
					65896005	Crushing injury of ankle (disorder)	n/a	-	-
					43422002	Crushing injury of foot (disorder)	n/a	-	-
					74682007	Crushing injury of toe (disorder)	n/a	-	-
					210678002	Degloving injury of thigh (disorder)	n/a	-	-
					210702006	Degloving injury of lower leg (disorder)	n/a	-	-
					210703001	Degloving injury, ankle (disorder)	n/a	-	-

Audit questions			Able to capture directly via EDIS (ECDS)?	ECDS data item and codes			ECDS proxy measure		
				ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description	ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description
					210720002	Degloving injury of foot (disorder)	n/a	-	-
					210732003	Degloving injury toe (disorder)	n/a	-	-
					812741000000102	Injury of muscle of thigh (disorder)	n/a	-	-
					812751000000104	Injury of muscle of lower leg (disorder)	n/a	-	-
					812761000000101	Injury of muscle of foot (disorder)	n/a	-	-
					828981000000104	Injury of tendon of ankle (disorder)	n/a	-	-
					813311000000109	Injury of tendon of foot (disorder)	n/a	-	-
					813321000000103	Injury of tendon of toe (disorder)	n/a	-	-
					57662003	Injury of blood vessel (disorder)	n/a	-	-
					57182000	Nerve injury (disorder)	n/a	-	-

Audit questions				Able to capture directly via EDIS (ECDS)?	ECDS data item and codes			ECDS proxy measure		
					ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description	ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description
						90584004	Spinal cord injury (disorder)	n/a	-	-
						240037007	Tendon injury (disorder)	n/a	-	-
						111245009	Compartment syndrome (disorder)	n/a	-	-
						95858001	Traumatic amputation of toe (disorder)	n/a	-	-
		Not recorded		NO		281900007	No abnormality detected (finding)	n/a	-	-
Assessment										
3.1	Was a VTE and bleeding risk assessment carried out in the ED prior to discharge?	Yes		NO	-	-	-	-	-	-
		No			-	-	-	-	-	-
		No	But reason recorded		-	-	-	-	-	
		No	Assessed at review within 24hrs of ED attendance		-	-	-	-	-	
3.1a	(Only answer if YES to 3.1) Was the level of VTE risk (e.g. high/low) explicitly documented in the notes?	Yes		NO	-	-	-	-	-	-
		No			-	-	-	-	-	-
3.2	(Only answer if YES to 3.1) Is there	Yes - indicated		NO	-	-	-	-	-	-

Audit questions			Able to capture directly via EDIS (ECDS)?	ECDS data item and codes			ECDS proxy measure		
				ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description	ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description
	documented evidence on whether or not thromboprophylaxis is indicated?	Yes - not indicated		-	-	-	-	-	-
		Not recorded		-	-	-	-	-	-
Treatment									
4.1	Is there written evidence of the patient receiving thromboprophylaxis?	Low molecular weight heparin	NO	-	-	-	EC Treatment	266712006	New medication commenced (finding)
		Direct oral anticoagulants (DOAC)		-	-	-	EC Treatment	266712009	New medication commenced (finding)
		Unfractionated heparin (UFH)		-	-	-	EC Treatment	266712005	New medication commenced (finding)
		Fondaparinux		-	-	-	EC Treatment	266712007	New medication commenced (finding)
		Warfarin		-	-	-	EC Treatment	266712008	New medication commenced (finding)
		Other (please state)		-	-	-	-	-	-
		Patient declined thromboprophylaxis		-	-	-	-	-	-
		No treatment in ED but referred for		-	-	-	EC DTA	324	Anticoagulant Service

Audit questions			Able to capture directly via EDIS (ECDS)?	ECDS data item and codes			ECDS proxy measure		
				ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description	ECDS data item	SNOMED / D&DM code	SNOMED / D&DM description
		treatment to another service							
		Not recorded		-	-	-			
4.1a	(ONLY answer if 4.1 pharmacological treatment was received in the ED) Did the patient receive a STAT dose in the ED?	Yes	NO	-	-	-	EC Treatment	18629005	Administration of drug or medicament (procedure)
		No		-	-	-	EC Treatment	183964008	Treatment not indicated (situation)
		Not recorded		-	-	-	-	-	-
Patient Information									
5.1	Is there written evidence that an information leaflet on the risk of VTE, symptoms and where to seek medical help WAS provided to the patient?	Yes	NO	-	-	-	EC Treatment	413334001	Patient given written advice (situation)
		No- but there was a reason recorded		-	-	-	-	-	-
		Not recorded		-	-	-	EC Treatment	183964008	Treatment not indicated (situation)

Appendix 3: analysis plan for standards

This section explains how the RCEM team will be analysing your data. You are welcome to use this analysis plan to conduct local analysis if you wish. Analysis sample tells you which records will be included or excluded from the analysis. The analysis plan tells you how the RCEM team plan to graph the data and which records will meet or fail the standards.

STANDARD	GRADE	Analysis sample	Analysis plan – conditions for the standard to be met
1. There should be written evidence that patients who are fitted with a new leg cast or boot have their risk of VTE and bleeding assessed during their visit to the ED	F	Exclude: Q3.1 = 'No – but the reason was recorded'	SPC chart Met: Q3.1 = 'Yes' Not met: all other cases
2. Evidence that a patient information leaflet (PIL) outlining the risks and need to seek medical attention if they develop symptoms of VTE has been given to ALL patients with temporary lower limb immobilisation who are discharged from the emergency department, regardless of their risk.	F	Exclude: Q5.1 = 'no but the reason was recorded'	SPC chart Met: Q5.1 = 'yes' Not met: Q5.1 = 'no'
3. If pharmacological thromboprophylaxis is documented as being indicated, there should be written evidence of the treatment having been initiated in the ED	D	Exclude: Q3.2 = 'Yes – not indicated'	SPC chart Met: Q4.1 'LMWH' OR 'DOAC' OR 'UFH' OR Fondaparinux OR Warfarin Not met: Q4.1 = 'not recorded' OR 'No thromboprophylaxis in the ED but referred for this purpose to another service' OR 'patient declined thromboprophylaxis'

Analysis plan for casemix and diagnosis

Question	Analysis sample	Chart type and details
Q1.3 Age of patient on attendance	All patients	Pie chart showing age breakdown
Q2.1 What was the documented diagnosis for the lower limb injury?	All patients	Bar chart showing diagnoses, including 'not recorded'

Analysis plan for assessment and treatment

Question	Analysis sample	Chart type and details
Q3.1a Was the level of VTE risk (e.g. high/low) explicitly documented in the notes?	Q3.1 = 'Yes'	SPC showing Q3.1a = 'yes'
Q3.2 Is there documented evidence on whether or not thromboprophylaxis is indicated?	Q3.1 = 'Yes'	Pie chart showing: Yes – indicated, yes – not indicated – not recorded SPC showing both 'Yes' responses combined
Q4.1 Is there written evidence of the patient receiving pharmacological thromboprophylaxis?	Q4.1 = yes - indicated	SPC showing any treatment received
Q4.1a Did the patient receive a STAT dose in the ED?	Q8= UFH, OR LMWH, OR Fondaparinux, OR Warfarin, OR DOAC	SPC showing 'Yes'

Analysis plan for organisational data

Question	Analysis sample	Chart type and details
Q1.1. Does your ED have a guideline or protocol to assess the risk of VTE and bleeding in adult patients who are discharged with a new leg cast or boot?	All EDs (one response expected per ED)	Met: a 'Yes' option is ticked. Not met: 'No guideline or protocol'

References

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National Institute for Health and Care Excellence. (2018). Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism (NG89). *NICE guideline*.

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Zee AA, v. L. (2017, 8). Low molecular weight heparin for prevention of venous thromboembolism in patients with lower-limb immobilisation. *Cochrane Database Sys Rev*, CD006681.