

Chelsea and Westminster Hospital

NHS Foundation Trust



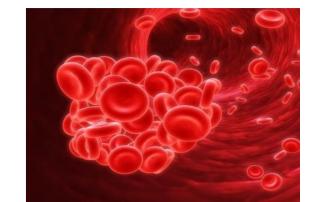
Venous Thromboembolism Prevention Measures for Women in Pregnancy and the Puerperium

GPI No. 50



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Introduction



Women who are pregnant or in the postpartum period have a 4-5 fold increased risk of venous thromboembolism (VTE) compared to non-pregnant women

Pregnancy is associated with hypercoagulability, increased venous stasis, decreased venous outflow, decreased mobility, thus increasing thrombogenic state particularly in postpartum period

VTE remains the leading cause of *direct* maternal deaths during or up to six weeks after delivery with no evidence of a consistent decrease *in mortality over the past 20 years* despite national guidance

- The maternal mortality rate from VTE is now the same as it was in 1985-87, possibly reflecting the increased prevalence of VTE risk factors in the UK maternity population e.g. age, parity, obesity, smoking
- More interventions in practice e.g. caesarean section placing women at increased risk of VTE

Aim

VTE prevention measures for maternity patients were introduced in 2010, with further changes implemented to reduce \bullet mortality and morbidity

Methods and Interventions

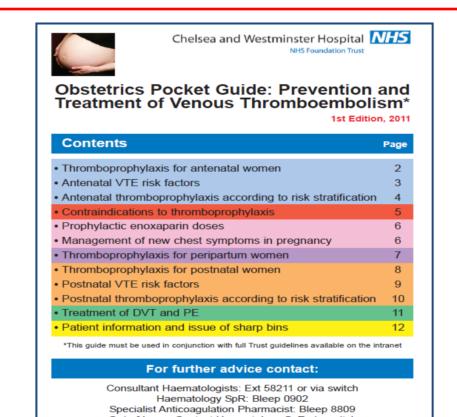
Electronic VTE risk assessment introduced with mandatory alerts at relevant time-points e.g. at booking, on admission, post-delivery, re-admission

(0043)Maternity VTE Risk Assessment Outcome		Name:
Obstetric Patient with Thrombosis and Bleeding Risk identified.	1	If woman is at risk of bleed
Refer to Trust Guidance to calculate VTE score and for futher information		VTE Risk F
Anti-embolism stockings (AES)		(OMC: Obstetric M
All patients should be prescribed and administered AES unless contraindicated.		Any previous recurrent VTE Any previous VTE e.g. unprov VTE (excluding a single previous VTE
Antenatal Management: Calculate VTE score for all pregnant women using VTE guidelines		factors and no other risk factors) Any previous VTE provoked by n
Antenatal Admission:		Medical comorbidities e.g. cance High-risk thrombophilia (antithr deficiency, homozygous Fa
		heterozygote)
Consider enoxaparin thromboprophylaxis during admission unless contraindicated		Low-risk thrombophilia (prothro Leiden) AND family history of VI
Antenatal VTE Score = 2: Antenatal enoxaparin thromobprophylaxis is not indicated</td <td></td> <td>Low-risk thrombophilia (prothro Leiden) and no family history of</td>		Low-risk thrombophilia (prothro Leiden) and no family history of
Antenatal VTE Score 3: Enoxaparin thromboprophylaxis from 28 weeks unless contraindicated		Family history of VTE (first-degr or oestrogen-provoked VTE) Age ≥ 35 years old
Antenatal VTE Score >/= 4: Enoxaparin thromboprophylaxis from 1st trimester unless contraindicated		Obesity at booking (BMI 30 – 39 Obesity at booking (BMI ≥ 40kg/
Previous VTE and/or Thrombophilia and/or Established on Anticoagulant Therapy: Refer to Haematology for guidance		Parity ≥ 3 (para 3 after third deliv Smoker Gross varicose veins (symptomat
Postnatal Management: Calculate VTE score for all pregnant women using VTE guidelines		phiebitis, oedema/skin changes) Paraplegia
Postnatal Admission/Re-admission within Puerperium:		Pre-eclampsia in current pregna Multiple pregnancy
Consider enoxaparin thromboprophylaxis during admission unless contraindicated		Assisted reproductive technologi Readmission or maternal prolong (2: 3 days) in the puerperium
Postnatal VTE Score = 1: Postnatal enoxaparin thromboprophylaxis is not indicated</td <td></td> <td>Emergency caesarean section in</td>		Emergency caesarean section in
Postnatal VTE score 2 or 3: At least 10 days postnatal enoxaparin thromboprophylaxis unless contraindicated.		Mid-cavity or rotational operation Prolonged labour (>24 hours)
If persisting risk factors, consider extending duration of enoxaparin thromboprophylaxis for the appropriate duration		 Postpartum haemorrhage (PPH) Preterm birth <37⁻⁰ weeks in cur Stillbirth in current pregnancy
		Ovarian hyperstimulation syndre Any surgical procedure in pre-
Postnatal VTE Score >/= 4: At least 6 weeks postnatal enoxaparin thromboprophylaxis unless contraindicated		immediate repair of the prostpartum sterilisation
Balance risks of VTE and bleeding. Offer VTE prophylaxis if appropriate		Current systemic infection (req hospital admission)
Do not offer pharmacological VTE prophylaxis if patient has any risk factor for bleeding AND risk of bleeding outweighs		Immobility e.g. pelvic girdle pa distance travel (all forms 24hour Dehydration
Repeat risk assessment within 24 hours of admission and whenever clinical situation changes.		No known risk SCORE
	I/	CLINICIAN NAME / SIGNATU

Simplification of the national VTE risk scoring system to ensure accurate completion of risk assessment(s) and user-ability

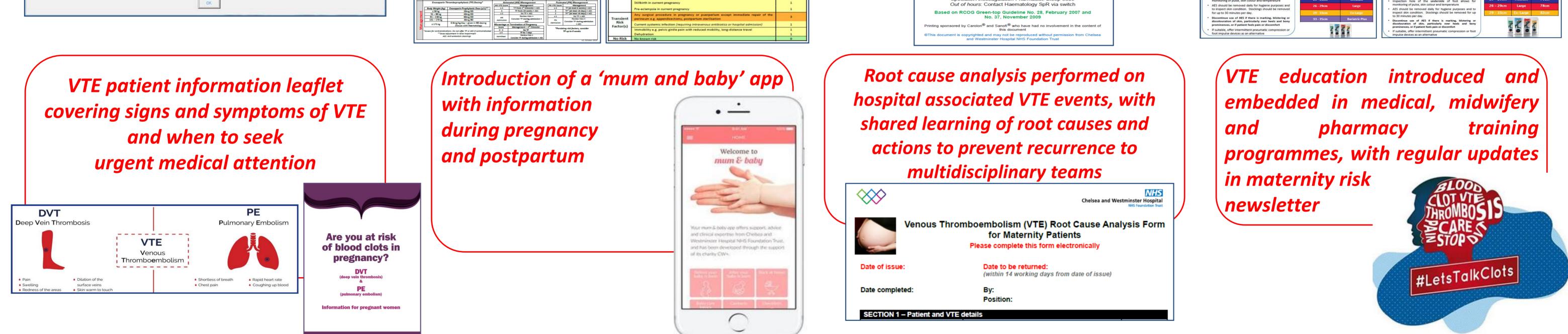
S THR	омвое		LISM (V	TE) RIS			tminster Hosp	pital NHS	Risk		Postnatal VTE Risk Factors	Postnatal Score (WMUH - DMC: Destetric Medicine Clinic)
Date of Birth: Hospital No: Date of Delivery:											Woman prescribed antenatal enoxaparin for pre-existing/obstetric risk factors	4
	of haemorrhage and thrombosis must be assessed before offering thromboprophylaxis										Any previous recurrent VTE	4
		Antenat	tal Score On	Within	Por	stnatal Sco Post-	Postnatal	Change in Clinical			Any previous VTE e.g. unprovoked VTE, oestrogen-provoked VTE (excluding a single previous VTE related to major surgery, provoking factors and no other risk factors)	4
	Antenatal (AN) Score	At Booking	Admission	24 hours of Admission	Postnatal (PN) Score	Delivery	Re- Admission	Situation			Any previous VTE provoked by major surgery	3
											Medical comorbidities e.g. cancer, heart failure, active systemic lupus erythematosus, inflammatory	
tors	4 and OMC	-			4						polyarthropathy or active inflammatory bowel disease, nephrotic syndrome, type 1 diabetes mellitus	3
provoked	4 and OMC				4						with nephropathy, sickle cell disease, current intravenous drug user, urinary tract infection, heart disease	
	3 and OMC											Refer to
	3 and UNIC	-			3				High-ris		High-risk thrombophilia (antithrombin deficiency, protein C or S deficiency,	Haematology (C&W) /
in C or S		-			Refer to							OMC (WMUH)
ompound	Refer to OMC			1 1	OMC only if not seen						homozygous Factor V Leiden/compound heterozygote)	only if not seen
					AN				Pre-			AN
Factor V	2 Refer OMC to			1 1					existin		Low side above has hits from the same sound in the France M Inidae) and from he	
re)	discuss PN options				2-4				Risk Factor		Low-risk thrombophilia (prothrombin gene mutation or Factor V Leiden) and family history of VTE (in first-degree relative)	2 - 4
Factor V	1			1 1	1				· accordor		Low-risk thrombophilia (prothrombin gene mutation or Factor V Leiden) and no family	
oked VTE	1				1						history of VTE	1
	1				1						Family history of VTE (first-degree relative with unprovoked VTE or oestrogen-provoked VTE)	1
	1 2				1 2						Age ≥ 35 years old	1
	1				1						Obesity at booking (BMI ≥ 40kg/m ²)	2
associated	1				1						•	
	Refer to Consultant	<u> </u>			Refer to Consultant						Obesity at booking (BMI 30 – 39 kg/m ²)	1
	1	-			1						Parity ≥ 3 (a woman becomes para 3 after her third delivery)	1
tion (IVF)	1				2				Smoker	1		
					-						Gross varicose veins (symptomatic or above knee or with associated phiebitis, oedema/skin changes)	1
					2							Refer to Consultant
					1						Paraplegia	Obstetrician
					1						Readmission or prolonged admission (≥ 3 days) in the puerperium	2
usion					1						headmission or prolonged admission (c 5 days) in the puerperium	*
					1						Emergency caesarean section in labour	2
er only	4											
n except cectomy,	3				3						Elective caesarean section	1
	3			<u> </u>					Obstet		Mid-cavity or rotational operative delivery	1
biotics or	1				1				Risk		Prolonged labour (>24 hours)	1
ity, long-	1				1				Factor	(s)	Postpartum haemorrhage (PPH) >1 litre or blood transfusion	1
	1				1 0			+ Ⅰ			Multiple pregnancy	1
											Preterm birth <37 ⁴⁰ weeks in current pregnancy	
	-				-				11		Preterm birth <37 weeks in current pregnancy	1
*) Manageme		Pos	itnatal (PN)	Managemei		11		Stillbirth in current pregnancy	1
AN VTE Score Management PN VTE Score Management												

Clear hospital guidance on VTE prevention for pregnant women, including pocket guidance covering risk assessment and thromboprophylaxis



Staff education on mechanical thromboprophylaxis for correct use and monitoring to avoid adverse effects

\otimes	Chelsea and West	minster Hospital	\otimes		Chelsea ar	nd Westminst	er Hospital
BELOW KNEE DENGTH A	IG GUIDE			HIGH LENGTH ANTI-EMBO FITTING GUI	DE	CKING	LATEX FREE
Careful measurement and correct size selection	n is critical			e circumference in centimetres, two-fingers w			A
 Measure ankle circumference in centimetres, two-fings above the ankle bone using tape measure Check ankle measurement chart for appropriate size Observe limb proportions. Are the calf, foot and low proportion to ankle? If no: Large ankle compared to small calf – choose next size Large calf compared to ankle – choose next LARGER s Recheck measurement and fitting regularly 	ver leg in SMALLER		 Measure wide than maximum Check measur Observe limby ankle? If no: Large ank Large calf 	ing tape measure est part of the thigh circumference in centime indicated for chosen size, consider below knee AES rement chart for appropriate size proportions. Are the calf, foot and lower leg in cle compared to small calf – choose next SMALI f compared to ankle – choose next LARGER size urement and fitting regularly	proportion to		
	Contraindicat	ions to AES			Contrain	dication	s to AES
<text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text>	Contrainciteat Suspected or proven peri Peripheral arterial bypass Peripheral arterial bypass Peripheral arterial bypass Peripheral neuropathy sensory impairment (patients) Local condition in which damage e.g. dermatiti "tissue paper" skin or rece Known allergy to materia Cardiac failure Severe leg oedema or pu congestive heart failure Unusual leg size or shape Major limb deformity pre Local leg infections e.g. co Pressure ulcers to lower I Heel pressure ulcers Use caution and clinical applying AES over venou	Ipheral arterial disease s grafting or other causes of caution in diabetic stockings may cause is, gangrene, fragile ent skin graft al of manufacture ilmonary oedema from eventing correct fit eliulitis, vien ligation limb	over foot towards the	How to Apply How to Apply Insert hand into stocking as far as heel pocket frmly grasp centre of heel pocket and keeping hold of heel, turn stocking inside out of the heel heel patch is under the heel. curring at the front of the foot and apply the stocking heel and then onwards over the calf. It is positioned underneast the base of heel (A). Smooth out any axcess material on the foot by pulling the open teo of the stocking forward ensuring that the toa area is covered and the open toe is comfortably located under the toe area (B). Pull the remaining the dark colour ends below the knee. Pull the remaining section over the knee and thigh, ensuring that the top band rests in the upper thigh area directly below the buttods (E). Smooth out any winkles in the stocking and	Suspected or pr Peripheral arteri Peripheral neu sensory impai patients) Local condition damage e.g. der paper skin or re Known allergy to Cardiac failure Severe leg oed congestive hear Unusual leg size Major imb defo Local leg infectio Pressure ulcers t Heel pressure ulcers Heel pressure ulcers	oven periphera al bypass graft ropathy or rment (cauti in which stoo mattis, gangr cent skin graft material of m ma or pulmor tafalure or shape rmity preventi ns e.g. celluli to lower limb cers	al arterial disease ting other causes of ion in diabetic ckings may cause ene, fragile 'tissue anufacture hary oedema from ng correct fit is, vein ligation
inspection hole is located under the toe area.	AES Size	Chart	55	ensure the non-graduated knee area is in place, the heel is positioned correctly, the toes are covered and the inspection hole is located under	AE	S Size Ch	art
PLEASE ENSURE TOP BAND OF STOCKING IS NOT ROLLED OR FOLDED DOWN AS THIS CAN CONSTRICT BLOOD FLOW	Ankle Measurement	Size		the toe area. PLEASE ENSURE TOP BAND OF STOCKING IS NOT ROLLED OR FOLDED DOWN AS THIS CAN CONSTRICT BLOOD FLOW	Ankle Measurement	Size	Maximum Thigh Circumference
Inspection hole of the underside of foot allows for	19 - 23cm	Small	D	aily Monitoring of AES	19 – 23cm	Small	65cm
 Inspection noie of the underside of foot allows for monitoring of pulse, skin colour and temperature 	23 - 26cm	Medium		ole of the underside of foot allows for	23 – 26cm	Medium	70cm



Results and Achievements

- Over 95% of women with VTE risk assessments on admission, with weekly and monthly performance reports for local monitoring and dissemination
- Pharmacy staff perform quarterly audits on appropriate thromboprophylaxis, with feedback to staff/departments
 - 97% inpatients received appropriate pharmacological thromboprophylaxis Ο
 - 88% inpatients were wearing anti-embolism stockings as mechanical thromboprophylaxis Ο
- VTE management plan pre-printed in maternity documentation to assist with transfer of care
- Development of an 'app' to provide patient information and improve VTE education and awareness

		Postilatat v i E Risk Assessment & Management							
eparti			Patient Addressograph	Booking weight (kg)	Enoxaparin Prophylactic Dose* via subcutaneous injection * Dose adjustment required in renal impairment				
		Postnatal VTE Risk Factors Completed VTE risk assessment on Lastw	ord 🗌 🗌 bro	≤ 50 kg	20mg OD				
		Pre-existing Risk Factors	Score	51 – 90 kg	40mg OD				
		Contraction	(OMC: Obstetric Medicine Clinic)	91 – 130 kg	60mg OD				
		Woman prescribed antenatal enoxaparin for pre-existing/obstetric risk factors Previous recurrent VTE	Addressograph injection * Dose adjustment required in renz * Score 20mg OD 51 - 90 kg 40mg OD 4 40mg AD 2 1 1 Date of Postnatal VTE Risk Assessment 2 Date of Postnatal VTE Risk Assessment 1 Date of Postnatal VTE Risk Assessment 2 Date of Postnatal VTE Risk Assessment 1 Date of Postnatal VTE Risk Assessment 2 Date of Postnatal VTE Risk Assessment 1 Enoxaparin required postpartum: Yes / No / NA 2 Total duration of thromboprophylaxis: 10 days / 6 weeks / Other 2 1 1 Contraindications to AES: 1 Contraindications to AES: 2 Contraindications to AES: 3 Contraindications to AES: 4 Superstead prophymerstermachter	40mg BD					
and the second			4		0.6mg/kg/day as BD dosing				
		Previous VTE provoked by major surgery	3	≥ 171 kg					
Appropriate thrombop	rophylaxis prescribing:	Medical comorbidities e.g. cancer, heart failure, active SLE, IBD or inflammatory polyarthropathy, nephrotic syndrome, type 1 DM with nephropathy, sickle onli disease, current IV drug user, whary tract infection, heart disease	3						
		High-risk thrombophilis e.g. antithrombin deficiency, protein C or S deficiency, homozygous Factor V Leiden/compound heterozygote	Refer to Haematology / OMC	If epidural, spinal or CSE used, PPH or delivery in I	theatre, follow anaesthetic or obstetric instructions.				
ior to prescribing enoxaparin, p	olease check: 🛛 🌇 🏔	Low-risk thrombophilin (prothrombin gene mutation or Factor V Leiden) and family history of VTE (in first- degree relative)	2-4	VTE Management Plan					
 B a shift a substable 			1		man of statements				
 BOOKING WEIGHT 			1	Date of Postnatal VTE Risk Assessment	Postnatal VTE Score				
			1						
 Renal function 				Date of Postnatal VTE Risk Assessment	Postnatal VTE Score				
			2	terior superior sources and the second					
 Platelets 			1	Date of Postnatal VTE Risk Assessment	Postnatal VTE Score				
		Concluer	1						
 Contraindications / bleeding 	rieke	Gross varicose veins (ametamatic above knee, or with associated ablability ordema/skin changes)	i	Enoxaparin required postpartum: Yes / No / NA					
· contraindications / bieeding	113N3		Refer to Consultant Obstetrician						
		Obstetric Risk Factors		Total duration of thromboprophylaxis: 10 days / 0	5 weeks / Other				
Prophylactic En	ovanarin Doso	Re-admission or prolonged admission (2 3 days) in the puerperium	2	-					
FTOPHYIACUC EN	Nonspire CLEWICS Postnatal VTE Risk Assessment on Lativer dl Postnatal VTE Risk Assessment on Lativer dl Prophylactic thrombooprophylaxis prescribing prescribing enoxaparin, please check:: oking weight nal function telets ntraindications / bleeding risks Prophylactic Enoxaparin Dose poking Weight (kg) Enoxaparin Dose Dotteric Edit rations (abave ration (b) prescribed information (b) abave ration (b)	VTE patient information leaflet given: Yes / No							
I			1						
Booking Weight (kg)	Enovanarin Dose		1	Anti-Embolism Stockings (AES)	Contraindications to AES:				
booking weight (kg)	Liloxaparili Dose		1	the second second go (res)	 Suspected or proven peripheral arterial disease 				
			1	Contraindication(s) to AES: Yes / No	Peripheral neuropathy or other causes of sensory impairment				
			1	(caution in diabetic patients)					
< 50 kg	20mg OD	Preterm birth «37 ⁻⁰ weeks in current pregnancy Stillbirth in current pregnancy	1	Date of AES Measurement	Peripheral arterial bypass grafting Local condition in which stockings may cause damage such as.				

- Patients counselled on anticoagulation medication to support medication compliance
- VTE education embedded in staff training programmes \bullet
- VTE ward rounds for ongoing stewardship

		re-examples a current pregnancy 1 Ankle Circumference (cm)								ine en recente print grene		
51 – 90 kg	40mg OD	Any surgical procedure in pregnar e.g. oppendicectomy, postportum sterilis	g intravenous antibiotics or hospital admission)	AES Size: Sma Plus Size	erence (cm) if a	Large / Extra		 Severe leg bedeme or pulmonary bedeme from congestive h feilure Local leg infections e.g. cellulitis, verin ligetion Pressure ulcers to lower limb Heel pressure ulcers Unsuble guize or shee 				
91 – 130 kg	60mg OD	POSTNATAL VTE SCORE	(unless contraindicated, refer to Naematology) Offer anti-embolism stackings, unless contraindicated, if inpatient At test 6 weeks postnatal enosaperi in trombogrophysis (use booking weight)			POSTNATAL POSTNATAL Unites contraindicated, effer to iterationalogy) VTE SCORE Offer enti-embolium stockings, unless contraindicated, if inpatient Daily AES Monitoring Assessment					Major limb deformity preventing correct fit Known allergy to material of manufacture	
31 – 170 kg	40mg BD	3	i no contraindications At least 10 days postnatal enoxaparin thrombop in no contraindications Consider extending duration of enoxaparin thromboprophylaxis fi 10 days postpartum) risk tectors e.g. profonged admission, we until the additional risk tectors] ar				Date of AES change Discard AES every third day	are present; marking, blistering, swelling, discolouration of skin, pain, discomfort, tingling in toes, sensation change, inform	Staff Name			
> 170 kg	See advice from Haematology	2	At least 10 days postnetal enoxaparin thrombop if no contraindictions ; Consider extending duration of enoxaparin thromboprophysiks in 10 days postpartum) risk fectors; en until the additional risk fectors; en-	oresent or up to 6 weeks for persisting (lasting more than und infection or surgery in the puerperium or					doctor (record name of doctor informed)			
	Chelsea and Westminster Hospital	\$1	Postnatal enoxaparin thromboprophy Encourage early mobili Avoid dehydratio	sation	-							
IDING PREVENTABLE VEN	IOUS THROMBOEMBOLISM (VTE)	Postnatal prolonged admission (2 3 days) or Hospital re-admission within the puerperfuem	Review risk(s) and consider enoxaparin thromboo during hospital admission if no contr									



- Robust and sustainable VTE interventions implemented in maternity departments at two hospital sites \bullet
- Audits and performance reports confirm improvements and compliance to national and local VTE targets

Increasing patient education and engagement on **VTE prevention measures**

Next Steps

Robust and sustainable interventions to improve patient outcomes

Staff engagement to embed **VTE prevention measures in practice**

Messages for Others

VTE champions to drive the local VTE prevention programme striving for excellence and to enhance patient safety

Multidisciplinary engagement for *implementation of changes to practice*

Shared learning and feedback for a positive culture

Contact: sheena.patel@chelwest.nhs.uk

Reference

M. et al. on behalf of MBRRACE-UK. Saving Lives, Improving Mothers' Care - Lessons learned to inform maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2014-16. University of Oxford (2018)