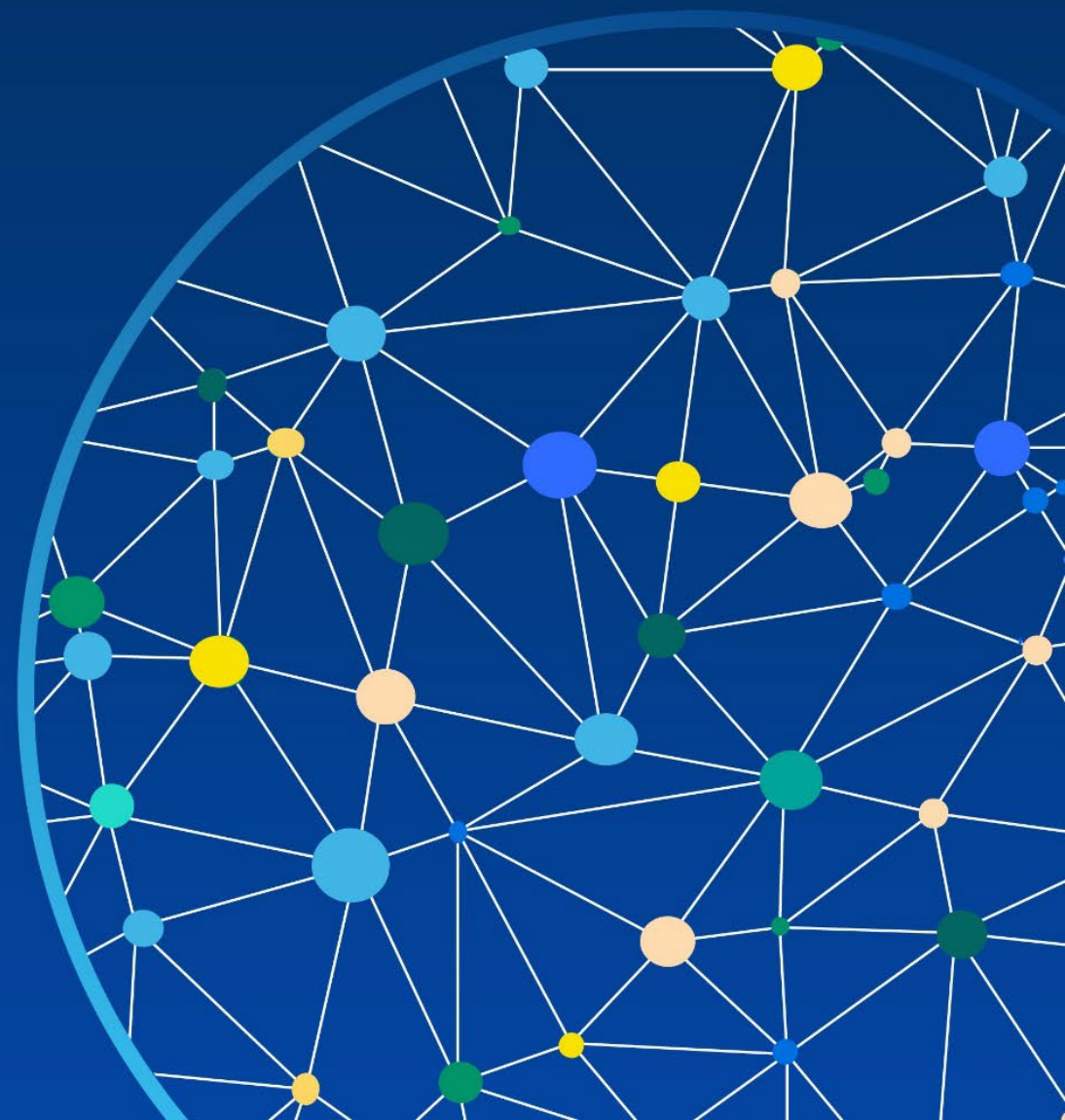


VTE in pregnancy: A national picture

Hosted and facilitated by NHS
Resolution Safety and Learning
Team



Agenda

Item	Time	Title	Speaker
1	12:30	Welcome and housekeeping	Victoria Wilkins
2	12:35	Current challenges	Prof Beverley Hunt
3	12:45	Maternal Care Bundle	Debbie Scott
4	13:00	Lived experience	Lesley Simpson and Fern Guillen
5	13:20	VTE in abortion services	Michael Nevill
6	13:35	Learning from claims	Bethan Percival and Prima Shah
7	13:55	BREAK	
8	14:05	Discussion panel	Multiple
9	14:40	Question and answer session	Victoria Wilkins
10	15:00	Closing remarks	Erum Khan

We recognise that prescribing of prophylaxis is a significant and important challenge between primary and secondary care. However, as this topic is outside of the scope of this webinar, we have chosen not to focus on this today.

Please keep this in mind when submitting questions.



Current and past challenges in VTE prevention & management in pregnancy

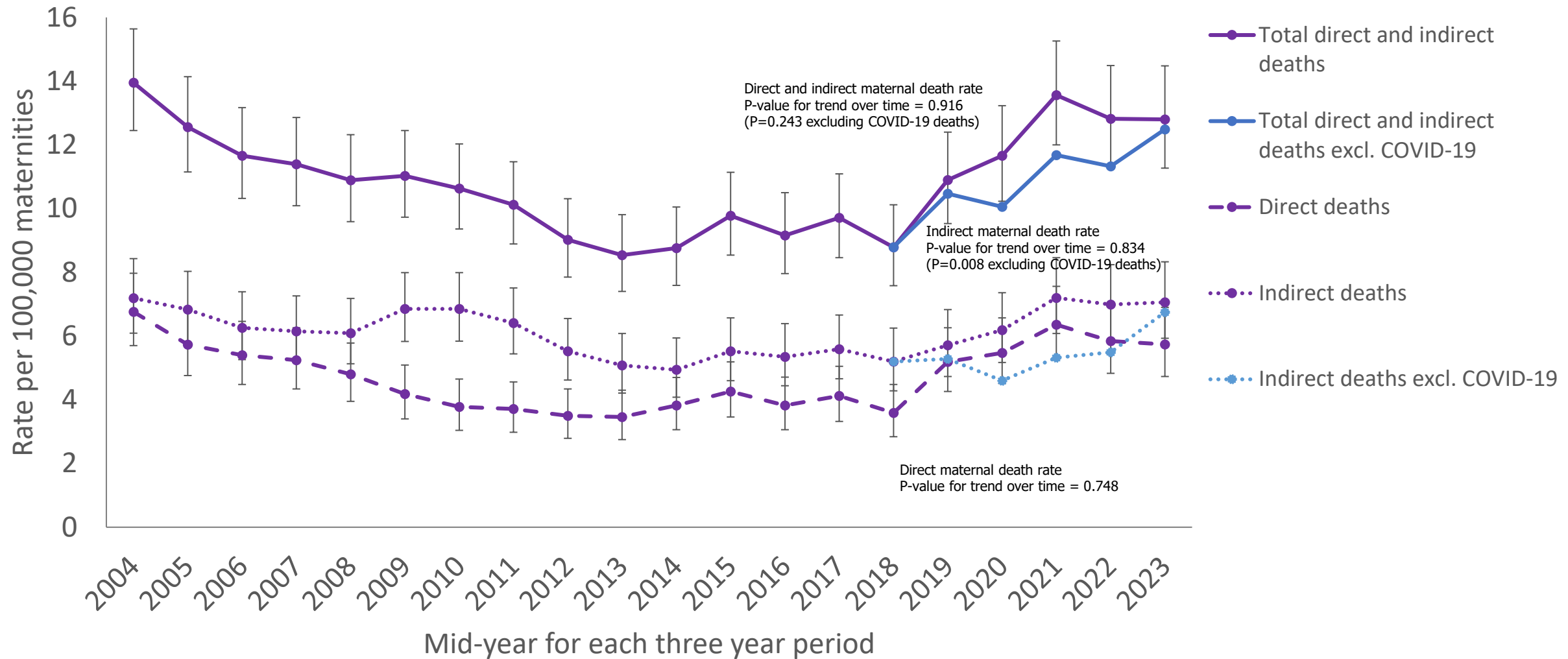
- Prof Beverley Hunt OBE,
- Guy's, St Thomas' & Kings College, London
- Founder & Trustee Thrombosis UK
- Twitter: @bhwords

A large orange circle is positioned on the left side of the slide, partially cut off by the edge.

Learning objectives

- To understand current issues around thromboprophylaxis & management of venous thromboembolism in pregnancy
 - Highlighting especially the difficulties of research into thromboprophylaxis and VTE management in pregnancy & puerperium
 - What is the modern management of PE?
- 
- A series of four yellow dashed line segments are arranged in a curved, upward-sloping pattern in the bottom right corner of the slide.

Three-year rolling average maternal mortality rates, UK 2003-23



Key messages

from the report 2024



275 women died during pregnancy or up to six weeks after pregnancy in 2020-2022
13.56 women per 100,000 died during pregnancy or up to six weeks after pregnancy



Causes of women's deaths



The **national risk assessment tool** must be evidence-based, clear and accurate



Consider the effects of vomiting, dehydration, immobility and other **symptoms** that can increase risk



Risk happens early - define pathways so women who need medication to prevent blood clots can access it when they need it, including in the first trimester

Blood clots 16%

43 women

38 women

36 women

31 women

25 women

25 women

20 women

18 women

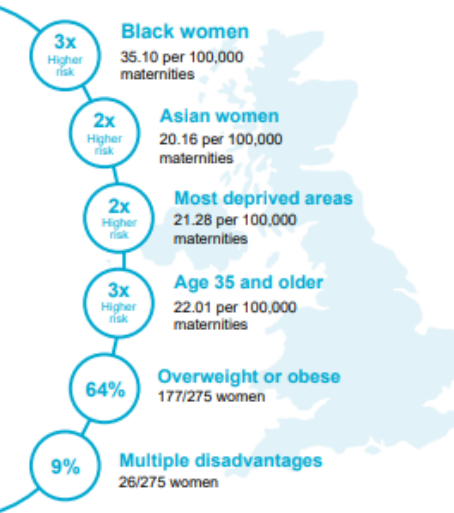
15 women

10 women

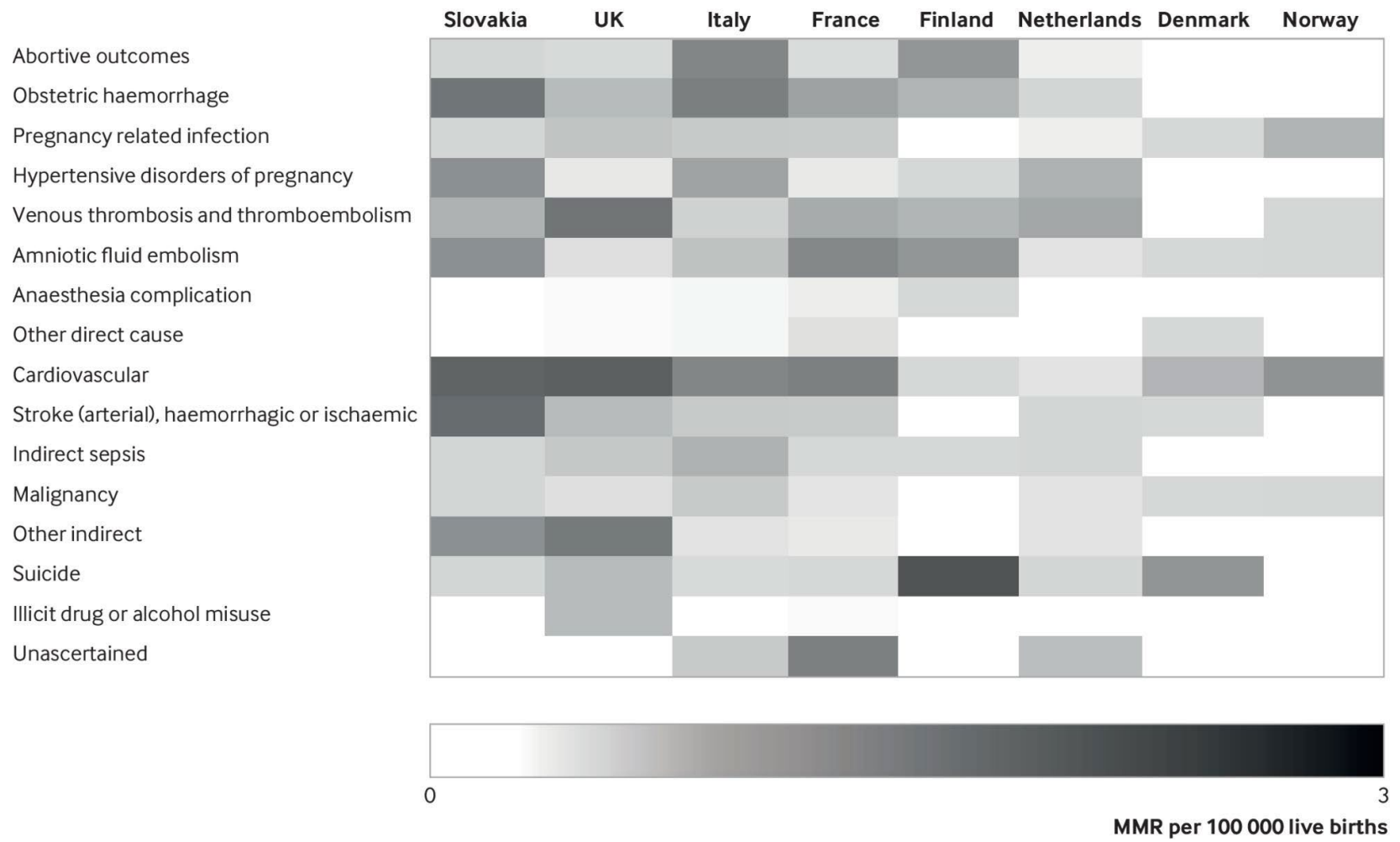
7 women

7 women

Inequalities in maternal mortality



Cause specific maternal mortality ratios, in countries with enhanced surveillance systems.



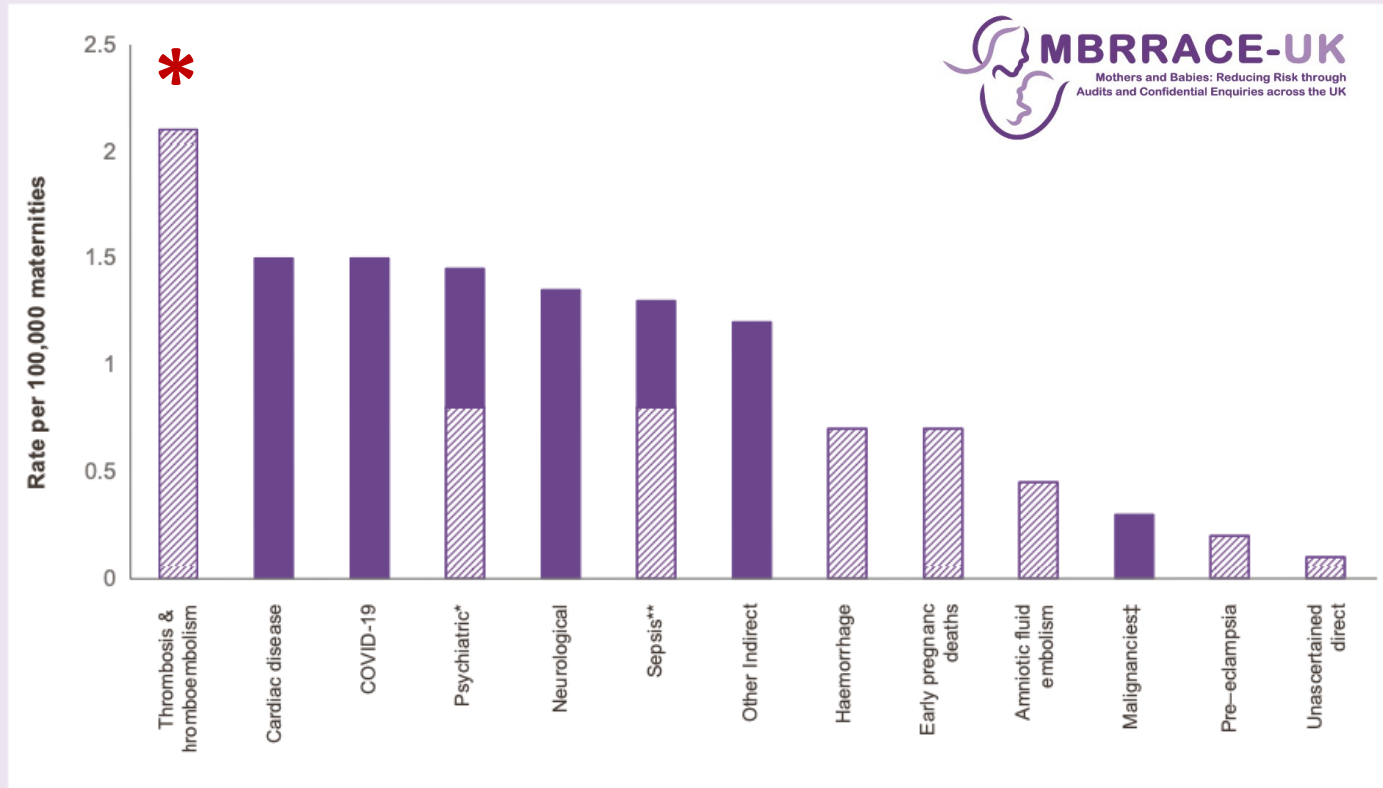
Caroline Diguisto et al. BMJ 2022;379:bmj-2022-070621



Background

- **VTE is the leading cause of maternal mortality in the UK: 16% of maternal deaths from 2021 to 2023**¹
- **Higher maternal mortality than European countries with similar healthcare setting**²
- **VTE mortality rates are rising**¹
- **Excess mortality in Black ethnicity**¹
- **Severe PE (high-risk and intermediate-high-risk) presents the greatest clinical challenge with mortality up to 37%**³

Figure 2.3: Maternal mortality rates by cause per 100,000 maternities, UK 2021-23



Key messages

for the care of women with thrombosis and thromboembolism



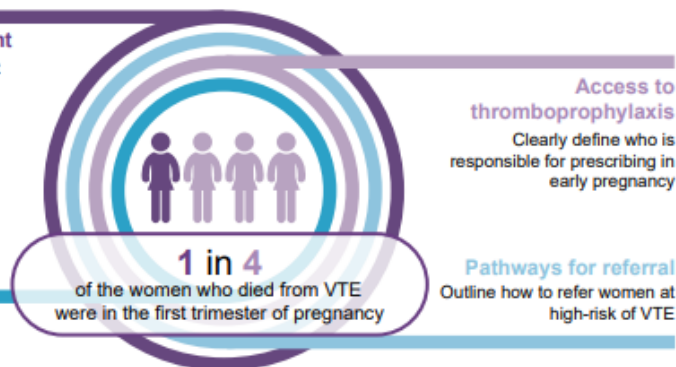
Ensure women at high-risk of venous thromboembolism (VTE) receive pre-pregnancy counselling and are appropriately managed in the first trimester

Early risk assessment

Assess VTE risk at the first opportunity

Pathways for advice

Ensure GPs can obtain timely specialist advice



Research evidence is needed to restructure the existing national VTE risk assessment tool

The national assessment tool should:

- ☒ Be easy to use, clear and accurate
- ☒ Take into account factors that may arise during pregnancy or in the postnatal period
- ☒ Be based on research evidence

Women should be assessed:

- ☒ At booking or as early in pregnancy as possible
- ☒ After pregnancy, regardless of how the pregnancy ends
- ☒ If they are admitted to the hospital or develop other problems



Evidence-based

Appendix III: Risk assessment for venous thromboembolism (VTE)

- If total score ≥ 4 antenatally, consider thromboprophylaxis from the first trimester.
- If total score 3 antenatally, consider thromboprophylaxis from 28 weeks.
- If total score ≥ 2 postnatally, consider thromboprophylaxis for at least 10 days.
- If admitted to hospital antenatally consider thromboprophylaxis.
- If prolonged admission (≥ 3 days) or readmission to hospital within the puerperium consider thromboprophylaxis.

For patients with an identified bleeding risk, the balance of risks of bleeding and thrombosis should be discussed in consultation with a haematologist with expertise in thrombosis and bleeding in pregnancy.

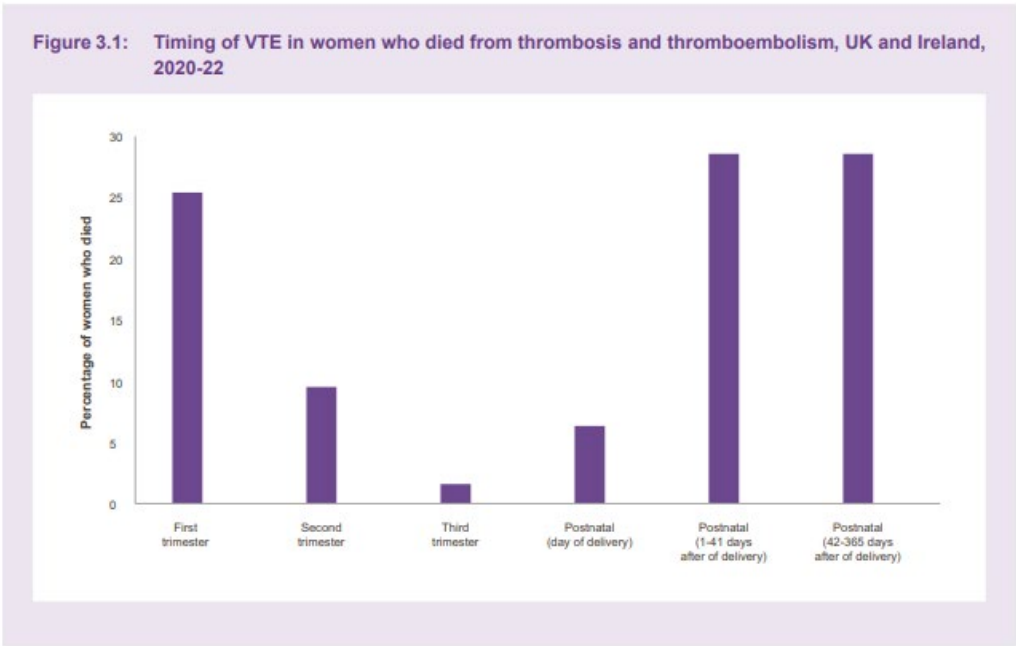
Risk factors for VTE		
Pre-existing risk factors	Tick	Score
Previous VTE (except a single event related to major surgery)		4
Previous VTE provoked by major surgery		3
Known high-risk thrombophilia		3
Medical comorbidities e.g. cancer, heart failure; active systemic lupus erythematosus, inflammatory polyarthropathy or inflammatory bowel disease; nephrotic syndrome; type 1 diabetes mellitus with nephropathy; sickle cell disease; current intravenous drug user		3
Family history of unprovoked or estrogen-related VTE in first-degree relative		1
Known low-risk thrombophilia (no VTE)		1 ^a
Age (> 35 years)		1
Obesity		1 or 2 ^b
Parity ≥ 3		1
Smoker		1
Gross varicose veins		1
Obstetric risk factors		
Pre-eclampsia in current pregnancy		1
ART/IVF (antenatal only)		1
Multiple pregnancy		1
Caesarean section in labour		2
Elective caesarean section		1
Mid-cavity or rotational operative delivery		1
Prolonged labour (> 24 hours)		1
PPH (> 1 litre or transfusion)		1
Preterm birth $< 37^{\text{th}}$ weeks in current pregnancy		1
Stillbirth in current pregnancy		1
Transient risk factors		
Any surgical procedure in pregnancy or puerperium except immediate repair of the perineum, e.g. appendicectomy, postpartum sterilisation		3
Hyperemesis		3
OHSS (first trimester only)		4
Current systemic infection		1
Immobilisation, dehydration		1
TOTAL		

Abbreviations: ART assisted reproductive technology; IVF in vitro fertilisation; OHSS ovarian hyperstimulation syndrome; VTE venous thromboembolism.

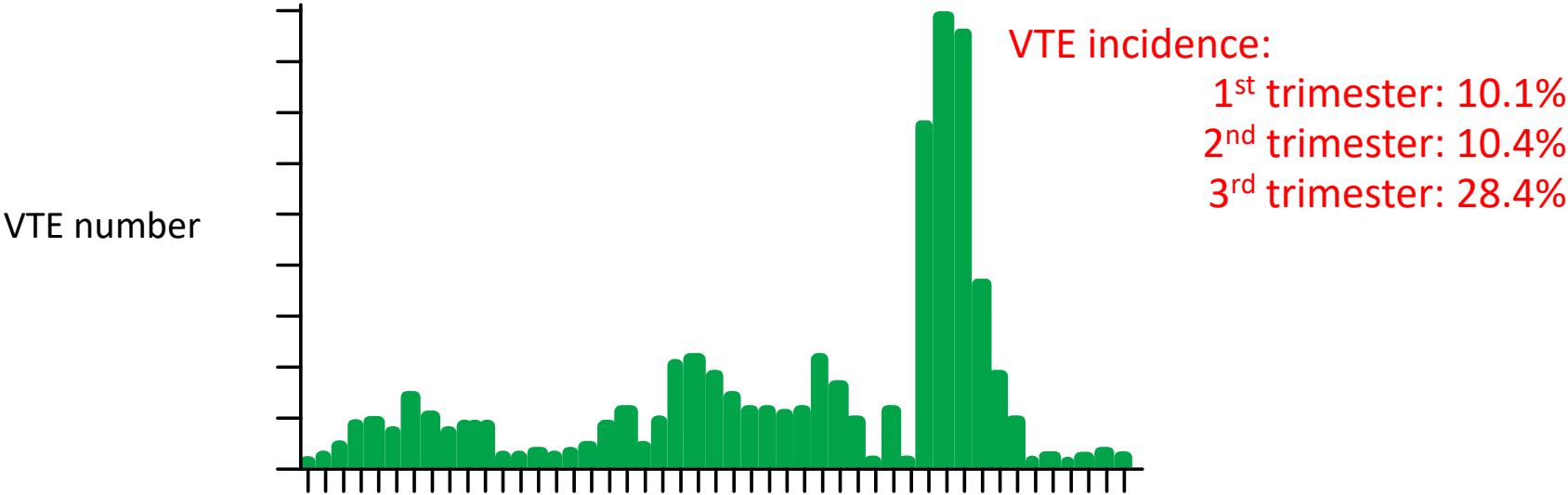
^a If the known low-risk thrombophilia is in a woman with a family history of VTE in a first-degree relative postpartum thromboprophylaxis should be continued for 6 weeks.

^b BMI $\geq 30 = 1$; BMI $\geq 40 = 2$

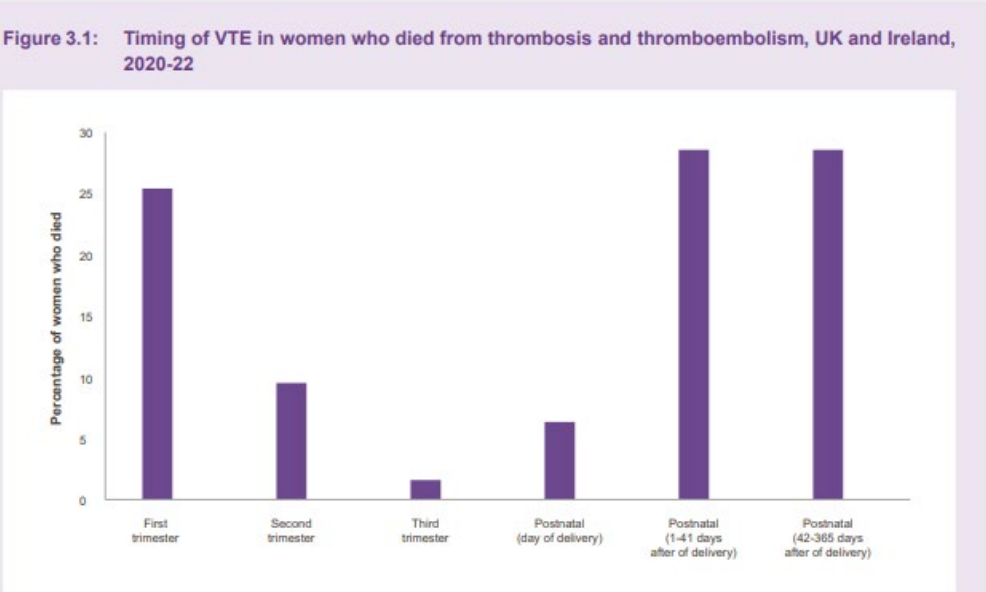
The first trimester problem



Distribution of VTE in pregnancy & puerperium

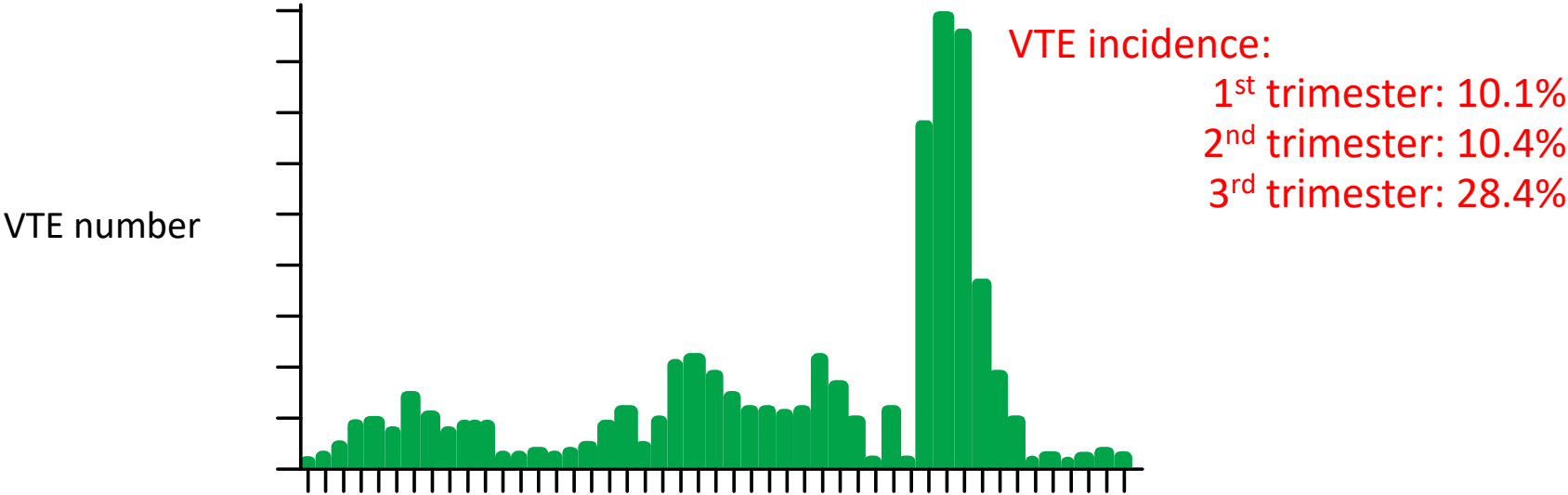


The first trimester problem



A quarter of all deaths in pregnancy & puerperium are in the first trimester

Distribution of VTE in pregnancy & puerperium



VTE risk in the first trimester

- Falls out of obstetric care usually – booking at 10 weeks
- Can we do VTE risk assessment separately from second and third trimester for many risk factors don't apply?

This is a unique population

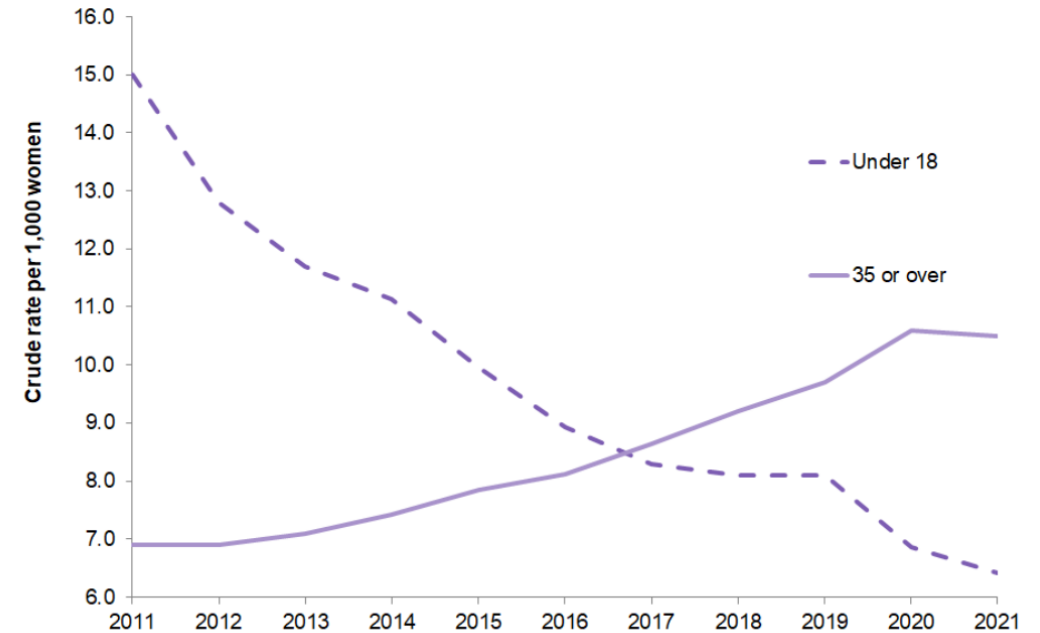
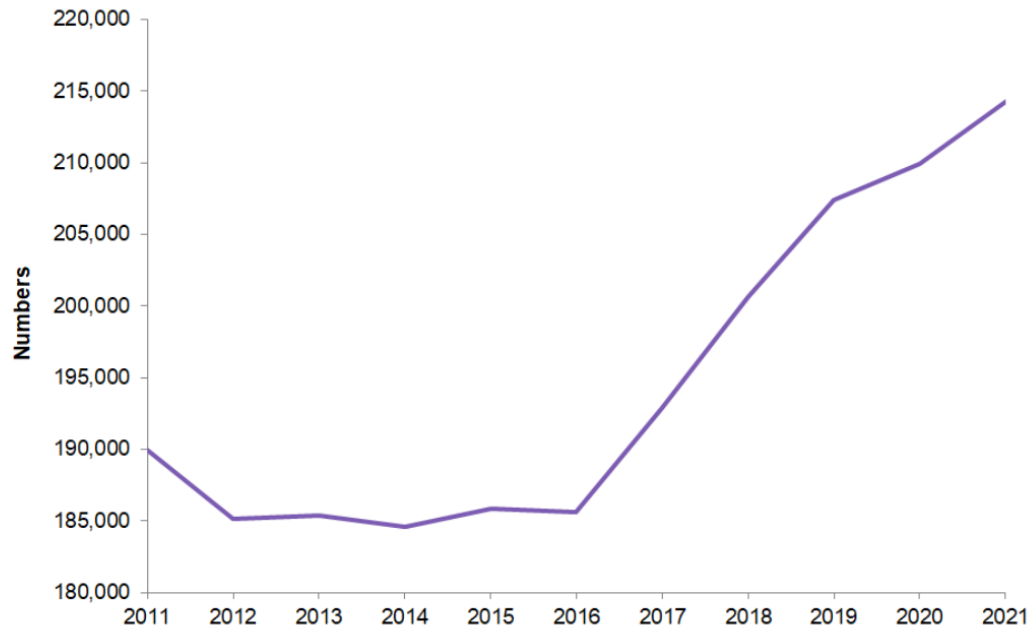
- Do they know they are at risk? (MORI poll suggests no)
- How can they access risk assessment? Could we organise self assessment?
- How can they access LMWH?
- Many are having abortion care

Accredited official statistics

Abortion statistics, England and Wales: 2021

Updated 26 July 2024

Figure 1: number of abortions, England and Wales, 2011 to 2021



99% of abortions in England and Wales were funded by the NHS in 2021, with 77% of abortions taking place in the independent sector.

Venous thromboembolism after induced abortion: a population-based, propensity-score-matched cohort study in Canada

[Ning Liu, MSc](#) ^{a,f} · [Simone N Vigod, MD](#) ^{a,b,f,g} · [M Michèle Farrugia, MD](#) ^{c,h} · [Marcelo L Urquia, PhD](#) ^{d,i,l} · [Prof Joel G Ray, MD](#) ^{a,c,e,f,j,k}  

Findings

We identified 194 086 eligible women whose first pregnancy ended with induced abortion, of whom 176 001 (90·7%) could be matched with women whose first pregnancy ended in delivery of a newborn. These 176 001 women were also matched to 880 005 non-pregnant women. The rate of venous thromboembolism within 42 days of an induced abortion was 30·1 (95% CI 22·0–38·2) per 100 000 women compared with 13·5 (11·1–16·0) per 100 000 women in the non-pregnant group (HR 2·23, 95% CI 1·61–3·08). The HR was 0·16 (95% CI 0·12–0·22) when compared with the women in the livebirth cohort, whose venous thromboembolism rate within 42 days postpartum was 184·7 (95% CI 164·6–204·7) per 100 000 women.

Interpretation

The 42-day risk of venous thromboembolism after an induced abortion is double that of a matched non-pregnant woman, and is significantly lower than after a livebirth. This novel information can inform estimates of peri-procedural risk of venous thromboembolism after induced abortion. Clinicians could consider a lower threshold for ordering a diagnostic test to rule out venous thromboembolism after induced abortion than they would in a non-pregnant woman.

Abortion & VTE prevention

- Most abortions in the UK are performed by three large providers before 12 weeks gestation (BPAS, MSI, NUPAS)
- A different pathway from obstetric care
- No one has thought about VTE risk assessment & thromboprophylaxis in this group, the agencies have generated their own unvalidated guidance
- Only one study ever on rates of VTE around abortion
- Definitely an area of unmet need

In the last decade there has been unprecedented change in the management of pulmonary embolism outside of pregnancy

New classification 1



ESC
European Society
of Cardiology

Escardio

ESC eLearning

ESC 365

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Topics

2019 Guidelines on Acute Pulmonary Embolism (Diagnosis and Management of)

31 Aug, 2019

Early mortality risk		Indicators of risk			
		Haemodynamic instability ^a	Clinical parameters of PE severity and/or comorbidity: PESI class III–V or sPESI ≥1	RV dysfunction on TTE or CTPA ^b	Elevated cardiac troponin levels ^c
High		+	(+) ^d	+	(+)
Intermediate	Intermediate–high	–	+ ^e	+	+
	Intermediate–low	–	+ ^e	One (or none) positive	
Low		–	–	–	Assesment optional; if assessed, negative

In the last decade there has been unprecedented change in the management of pulmonary embolism outside of pregnancy

New technologies

Currently multiple clinical trials evaluating their use in severe PE

- Most exclude pregnancy so we have no idea of efficacy and safety
- Being used in only 3% of admitted pregnant women in the UK

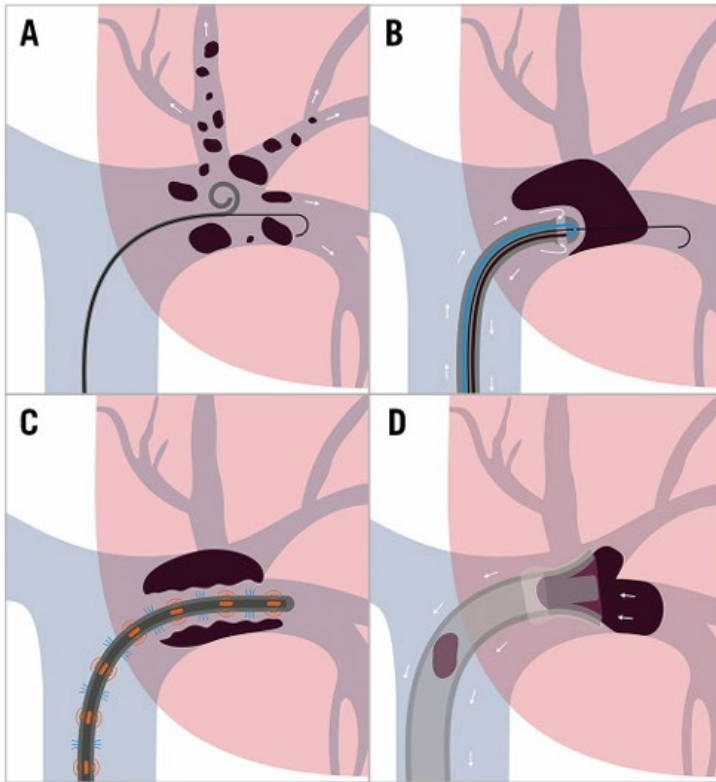


Figure 1. Mechanisms of catheter-based therapies for acute PE. Schematic illustration of the four mechanisms of catheter-directed therapy for acute PE. A) Fragmentation. B) Rheolytic therapy. C) Catheter-directed thrombolysis. D) Aspiration.

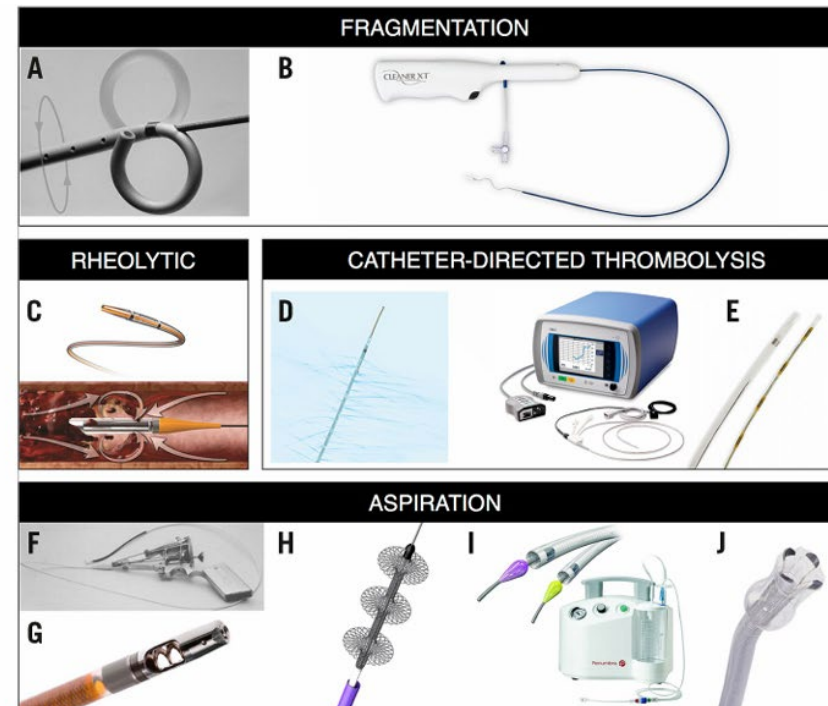


Figure 2. Images of catheter-based therapies for acute PE. A) Rotational pigtail catheter. B) CleanerXT. C) AngioJet. D) Uni*Fuse. E) EkoSonic. F) Greenfield. G) AspirexS. H) FlowTriever. I) Indigo. J) AngioVac. The manufacturers and copyright holders of all devices mentioned in this article, except Edwards Lifesciences (Fogarty catheter), have given permission to reproduce the images of their devices.

In the last decade there has been unprecedented change in the management of pulmonary embolism outside of pregnancy

New classification 2

Circulation

CLINICAL PRACTICE GUIDELINES

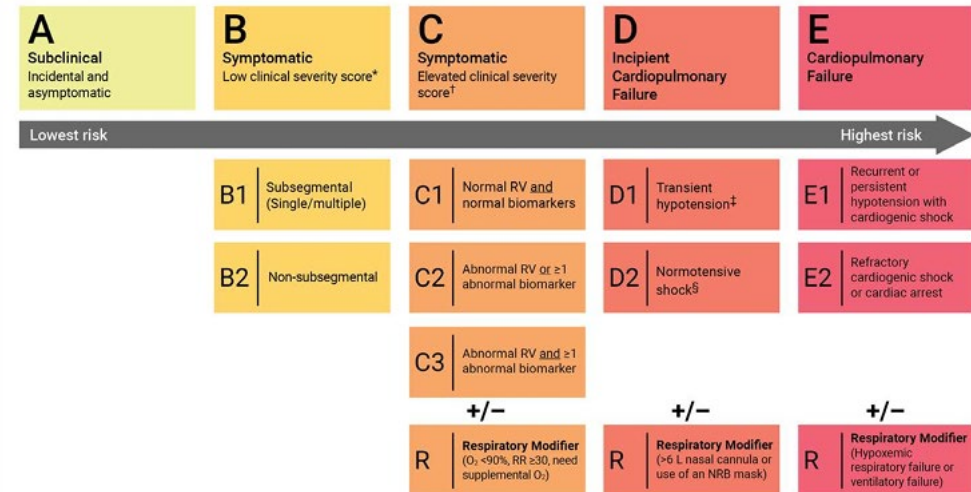
2026 AHA/ACC/ACCP/ACEP/CHEST/SCAI/SHM/SIR/SVM/SVN Guideline for the Evaluation and Management of Acute Pulmonary Embolism in Adults: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines

Developed in Collaboration With and Endorsed by the American College of Clinical Pharmacy, American College of Emergency Physicians, American College of Chest Physicians, Society for Cardiovascular Angiography & Interventions, Society of Hospital Medicine, Society of Interventional Radiology, Society for Vascular Medicine, and the Society of Vascular Nursing

Writing Committee Members*

Mark A. Creager, MD, FACC, FAHA, MSVM, Chair; Geoffrey D. Barnes, MD, MSc, FACC, FAHA, FSVM, Co-Vice Chair;

AHA/ACC Acute PE Clinical Categories



2026 Adults With Acute Pulmonary Embolism
© 2026 by the American Heart Association, Inc., and the American College of Cardiology Foundation.

What does the new North American guideline say about PE in pregnancy ?

PE risk factors during pregnancy

General

- Prior venous thromboembolism
- Thrombophilia
- Strong family history
- Surgery
- Hospitalization
- Immobility
- Inflammatory and other medical conditions
- Obesity
- Varicose veins

Pregnancy-specific

- Venous stasis due to venodilation, venous compression by the uterus and exaggerated compression of left iliac vein by right iliac artery
- Hormonal induced hypercoagulability
- Assisted reproduction
- Hyperemesis gravidarum
- Pre-eclampsia
- Multiple pregnancy
- Parity
- Antepartum and postpartum hemorrhage
- Cesarean delivery

Pregnancy-specific recommendations in the ACC/AHA 2026 guideline

- **Diagnosis:** Pregnancy-adapted YEARS criteria for clinical assessment and D-dimer testing. Low-radiation CT angiography
- **Anticoagulation:** LMWH (or UFH) during pregnancy and LMWH (or UFH or warfarin) while breastfeeding
- **Anticoagulant monitoring:** No clear role for routine monitoring of LMWH anti-Xa levels
- **Care Team:** Management by clinicians with expertise in thrombosis



Opportunities for future improvement

- **Research:** Protecting pregnant women by including them in appropriately designed research studies to better inform their future care.
- **Consensus-based guidance:** Clear interim guidance to clinicians, including for the evolving landscape of advanced therapies in the continuum of severe PE (ACC/AHA categories C-E) and advising which specialists should be considered in Pulmonary Embolism Response Teams

Sex, Pregnancy, and Reproductive Health in the Management of Acute Pulmonary Embolism.

Bates SM, Bikdeli B, Hunt BJ.

J Am Coll Cardiol. 2026 Apr 7;87(13):1550-1553..

In the last decade there has been unprecedented change in the management of pulmonary embolism outside of pregnancy

The emergence of Pulmonary Embolism Response Teams (PERT) teams

Myc *et al. Respiratory Research* (2020) 21:159
<https://doi.org/10.1186/s12931-020-01422-z>

Respiratory Research

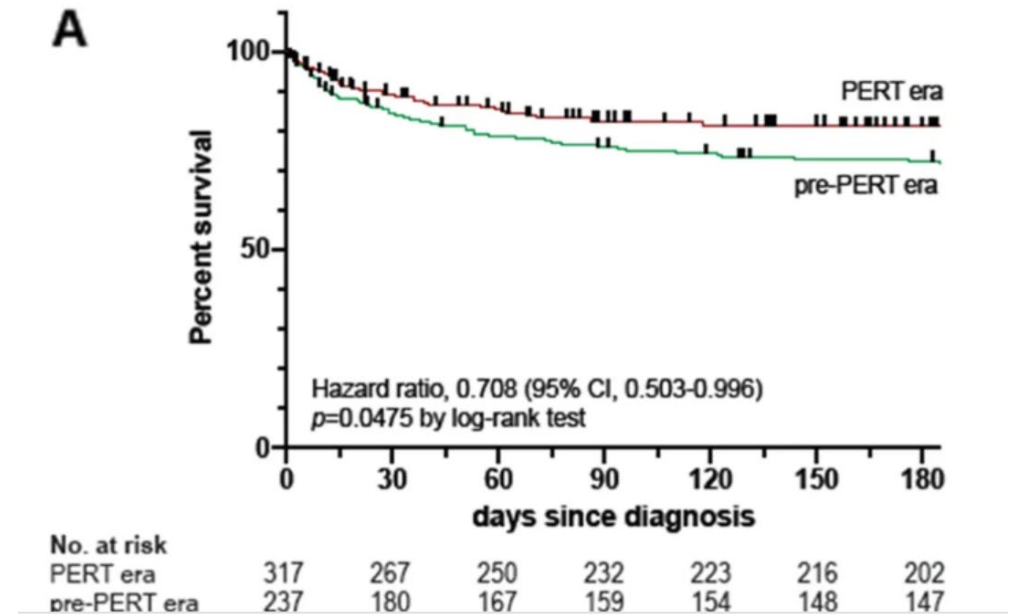
RESEARCH

Open Access



Adoption of a dedicated multidisciplinary team is associated with improved survival in acute pulmonary embolism

Lukasz A. Myc¹, Jigna N. Solanki², Andrew J. Barros¹, Nebil Nuradin², Matthew G. Nevulis², Kranthikiran Earasi², Emily D. Richardson², Shawn C. Tsutsui², Kyle B. Enfield¹, Nicholas R. Teman³, Ziv J. Haskal⁴, Sula Mazimba⁵, Jamie L. W. Kennedy⁵, Andrew D. Mihalek¹, Aditya M. Sharma⁵ and Alexandra Kadl^{1,6*} 



MATRON

Maternal Audit on Thrombosis Outcome and decision

A Multicentre UK Audit of High- and Intermediate-High-Risk Pulmonary Embolism
in Pregnancy and Puerperium

Results – MDT involvement



Rare PERT involvement
(only 3 cases)

[Intervention Review]

Venous thromboembolism prophylaxis for women at risk during pregnancy and the early postnatal period

Philippa Middleton¹, Emily Shepherd², Judith C Gomersall³

¹Healthy Mothers, Babies and Children, South Australian Health and Medical Research Institute, Adelaide, Australia. ²Robinson Research Institute, Discipline of Obstetrics and Gynaecology, Adelaide Medical School, The University of Adelaide, Adelaide, Australia. ³Women and Kids, South Australian Health and Medical Research Institute, Adelaide, Australia

What evidence did we find?

This is an update of a Cochrane Review published in 2014. We searched for new evidence in October 2019. Twenty-nine randomised controlled studies, involving 3839 women, are now included. The studies were published from 1975 to 2016 and were mainly carried out in high-income countries. They included women at increased risk of VTE who were pregnant, in childbirth, and after the birth. Treatments assessed included different types and doses of heparin (of low molecular weight heparin and unfractionated heparin), and compression stockings or devices. No deaths occurred. The reported findings were supported by very low-certainty evidence.

Authors' conclusions

The evidence is very uncertain about benefits and harms of VTE thromboprophylaxis in women during pregnancy and the early postnatal period at increased risk of VTE. Further high-quality very large-scale randomised trials are needed to determine effects of currently used treatments in women with different VTE risk factors. As sufficiently large definitive trials are unlikely to be funded, secondary data analyses based on high-quality registry data are important.

Why are there no large RCTS of thromboprophylaxis in pregnancy?

Doing the science is hard

- Despite being a major cause of morbidity & mortality the rates of VTE are 1-2 per 1000 pregnancies thus clinical trials would have to be v large
- What's acceptable to clinicians & patients?
- Current guidelines extrapolate data from non-pregnancy areas & rely on clinical consensus
- Current RCOG guidelines demand that 35% of post partum women receive 10 days thromboprophylaxis

Background environment is misogynistic

- Poor funding streams even today, most R&D done in diseases predominantly affecting men
- “Paternalism” means pregnant women are usually excluded from clinical trials, esp commercial, sponsors & ethic committees are not keen, physicians conservative

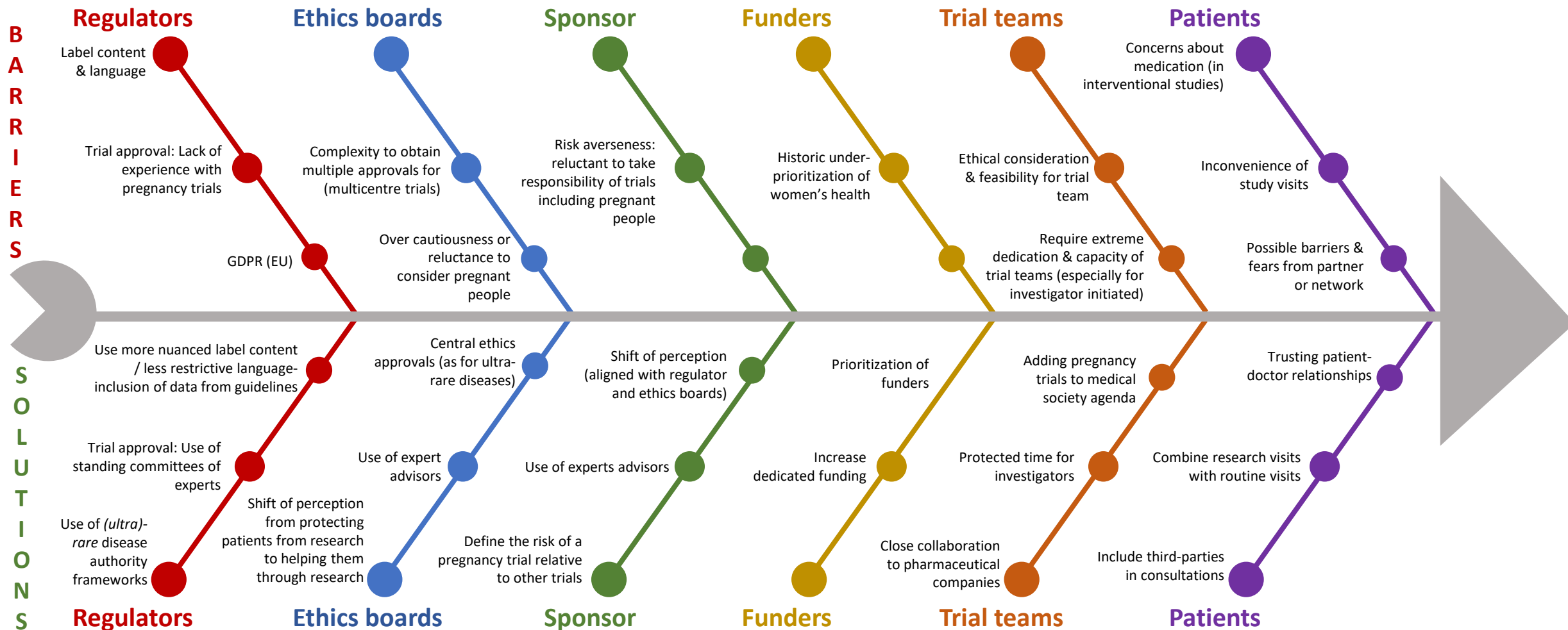
Received: 20 March 2024 | Accepted: 20 March 2024

DOI: 10.1002/ajh.27309

EDITORIAL



Feminist issues in clinic care, research, and healthcare professionals in thrombosis and hemostasis



THE LANCET
Rheumatology

SERIES | Pregnancy and Rheumatic Diseases • Volume 6, Issue 8, E560-E572, August 2024

Challenges of designing and conducting cohort studies and clinical trials in populations of pregnant people

Karen Schreiber, MD PhD ^{a,b,c} · Christine Graversgaard, MD ^{a,d} · Prof Beverley J Hunt, MD OBE ^e · Prof James M S Wason, MPhil ^e · Prof Nathalie Costedoat-Chalumeau, MD PhD ^{f,g,h} · Silvia Aguilera, PhD ⁱ · et al. [Show more](#)

What influences women's decisions to participate in trials for prevention of venous thromboembolism during pregnancy and the puerperium: a qualitative study



Sampson et al. *BMC Pregnancy and Childbirth*
<https://doi.org/10.1186/s12884-025-07759-x>

(2025) 25:651

Fiona C Sampson^{1*}, Sarah Davis¹, Maxine Kuczawski¹, Rosemary Carser², Beverley J Hunt³, Steve Goodacre¹, Abdullah Pandor¹, Catherine Nelson-Piercy⁴ and Jahnvi Daru⁵

Background Thromboprophylaxis for the prevention of venous thromboembolism during pregnancy and the puerperium is widespread, but there is a lack of evidence on the risks and benefits of thromboprophylaxis within this population. Trials involving pregnant women often struggle to recruit and retain participants which makes it difficult to improve the evidence base. We undertook qualitative evaluation of patient perspectives of pregnancy/postpartum thromboprophylaxis to understand willingness to participate in future trials.

Methods We undertook four focus groups of women who had thromboprophylaxis due to prior VTE ($n = 10$) or been offered thromboprophylaxis due to other risk factors ($n = 12$) during pregnancy and the puerperium. Focus groups were held online between November 2021 and January 2022. We recruited via social media and national special interest groups representing diverse cultural and socio-economic backgrounds, sampling purposively for condition, age, ethnicity, and socio-economic status. Participants received a £50 voucher. We transcribed focus groups and analysed data using thematic analysis.

Results A lack of knowledge around the risks and benefits of thromboprophylaxis influenced how women perceived future trial participation. Limited understanding of thromboprophylaxis risks led to a lack of equipoise among participants who only identified benefits from treatment. Some women were unaware of why they had been given thromboprophylaxis but still perceived placebo as an inferior option. Concerns around injecting thromboprophylaxis were often minimised and ignored by healthcare professionals yet influenced treatment adherence. However, these negative experiences also motivated women to participate in future trials to receive a higher standard of care, as well as improving future care for others.

Conclusions Trial treatment adherence may be affected by negative experiences of injecting and limited understanding of why they had been offered thromboprophylaxis. To improve recruitment and retention in pregnancy and puerperium clinical trials, women need to be given clear explanations of the risks and benefits of

Guidelines in prevention and management of PE in the UK

- NICE is in charge of guidelines writing
- Set rigorous process with the literature surveyed so that when updates are required, they are taken on
- E.g currently updating orthopaedic guidelines
- In 2014 NICE delegated VTE in pregnancy guidelines to RCOG
- Guidelines 37a and b written in 2015
- Not updated since
- Following MBRRACE report asked to update guidelines.
- First draft should have been produced Jan 2026. Still waiting

Awareness & education about VTE in pregnancy

The public

- An unpublished MORI poll from last year by Thrombosis UK showed only 10% of the public of reproductive age are aware that the risk of VTE increases in pregnancy

- Healthcare professionals
- We know many VTE are “missed” in and out of pregnancy
- Lack of education about the modern understanding of the presentation of DVT and PE in pregnancy
- Inadequate undergraduate education

Results – VTE prophylaxis at booking



Failure to administer timely thromboprophylaxis to high-risk women

High risk, but no prophylaxis (n=14)

12 antenatal
2 postpartum

Median gestational age at PE diagnosis was **8.5 weeks (range 7-16) in this subgroup**

Most common VTE risk categories:

- **Obesity (BMI ≥ 30 or 40)**
- **Previous VTE**
- Maternal age >35 years
- Medical comorbidities
- Elective caesarean section

Conclusions

Largest UK retrospective database of high risk and intermediate high-risk PE in pregnancy and puerperium.

Key findings:

- Majority of antenatal PEs were in the 1st trimester
- Underuse of VTE prophylaxis in patients at high risk, which we hope will be addressed by Element 1 of the Maternal Care Bundle.
- Limited use of advanced treatment despite severity.
- No difference in bleeding outcomes between advanced treatments versus anticoagulation alone.
- Lack of long-term outcomes data including those related to functional recovery and anxiety/depression.
- Rare involvement of PERT in decision making.

Conclusions

Lack of clinical trials in preventing and managing VTE in pregnancy has led to an absence of evidence-based guidelines and thus uncertainty in managing patients

We only have out-of-date guidelines (2015) for prevention and treatment, while the management of PE has changed radically

Management of PE outside of pregnancy has changed, we need to catch up

There have been unmet needs especially in the first trimester and abortion care, which will be discussed shortly



3. Maternal Care Bundle – Debbie Scott



- Consultant midwife for the Yorkshire and Humber Maternal Medicine Network.
- Masters degree in Public Health and has worked across the whole spectrum of maternity care over the last 30 years.
- Lead for VTE in the NHS England maternal care bundle.

Maternal Care Bundle

Element 1

Debbie Scott
Consultant Midwife Y&H MMN
Lead Midwife Element 1 MCB (2026)

Maternal Care Bundle

Published in January 2026

Aim to reduce Maternal Mortality and Morbidity and Reduce Inequalities in Outcomes

5 key Elements:

VTE,
Pre Hospital and Acute Care,
Epilepsy in pregnancy,
Maternal Mental Health,
Obstetric Haemorrhage

Maternal Care Bundle development

Consideration for inclusion

- Anticipated Impact
- Feasibility of Implementation
- Potential to reduce Inequalities

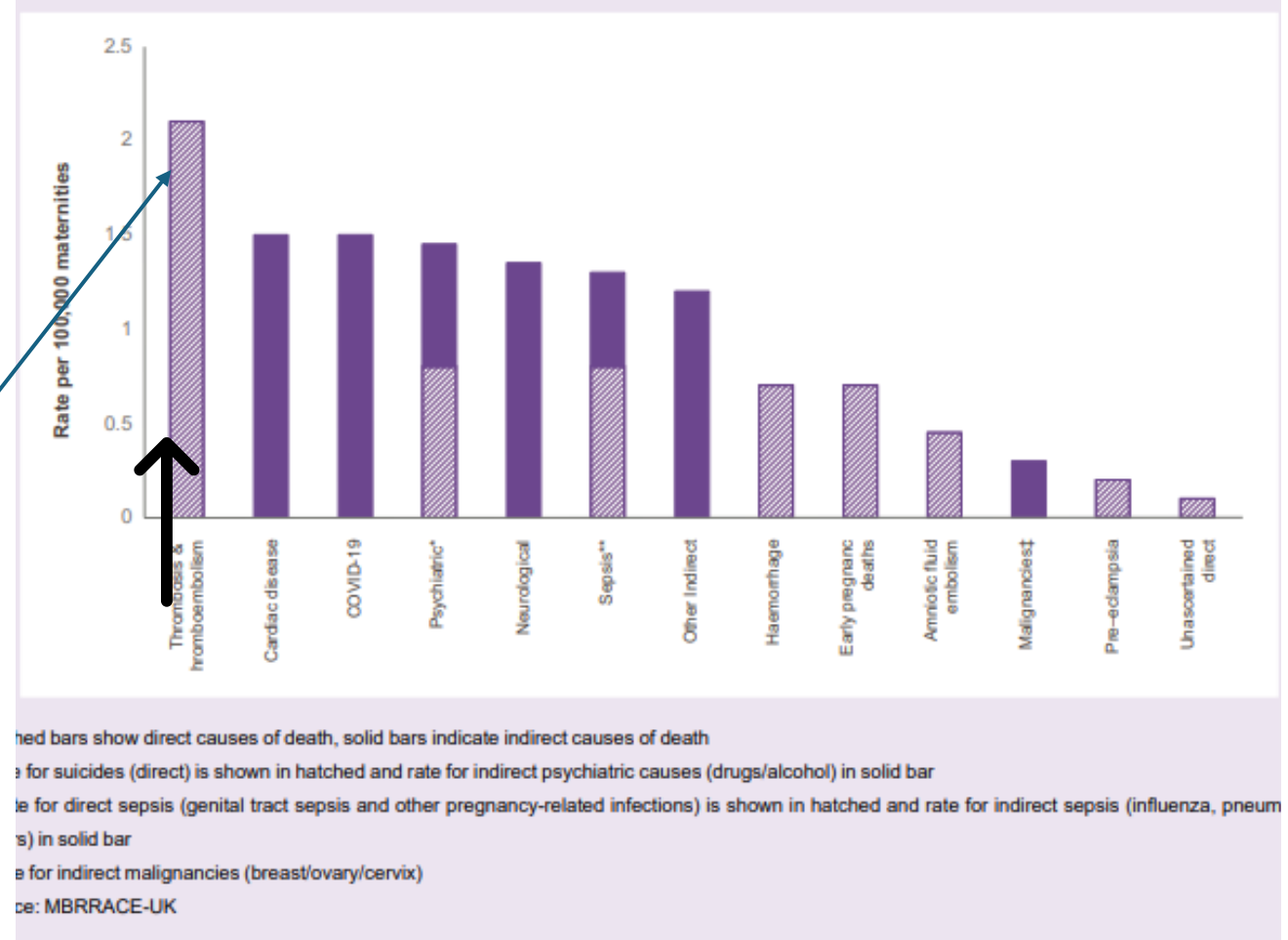
Why VTE?



Why women die

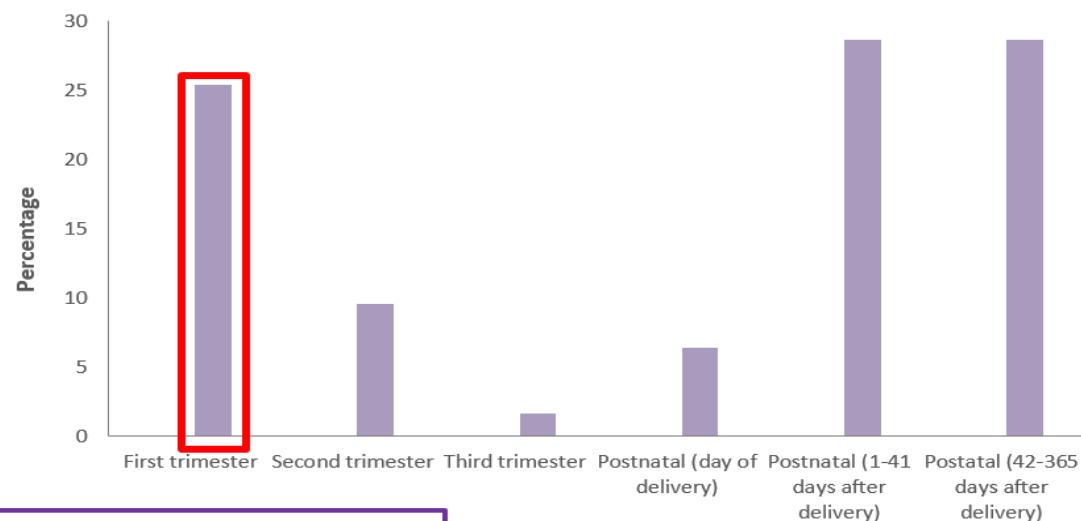
VTE leading cause of direct death

Figure 2: Maternal mortality rates by cause per 100,000 maternities, UK 2021-23



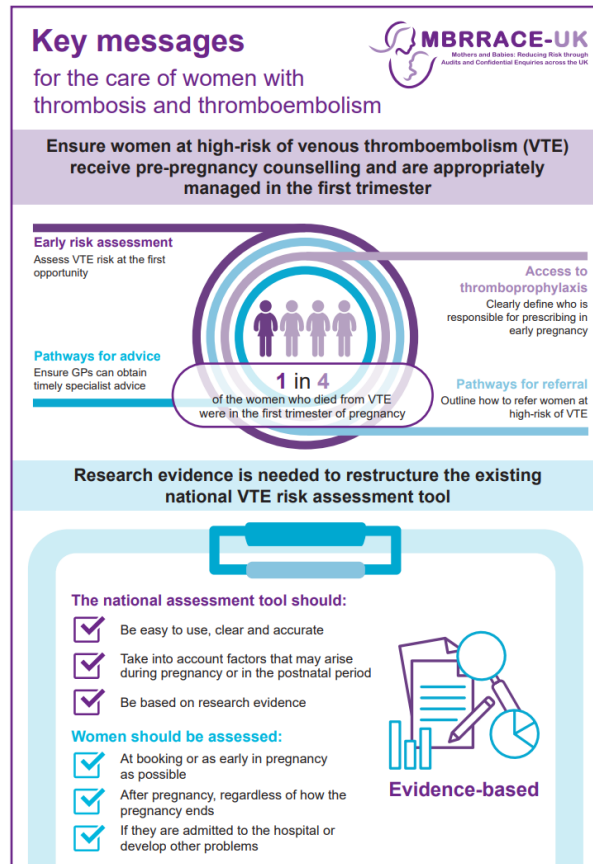
Pregnancy is a pro thrombotic state

Timing of VTE in women who died from thrombosis and thromboembolism, UK and Ireland, 2020-22



5 history of VTE
6 severe hyperemesis
1/3 obese
1/3 $\geq$ aged 35 years old

MBRRACE recommendations



Assess VTE risk at first opportunity

Clearly define pathways for prescribing in early pregnancy

Current Maternity Pathway



- Maternity Booking appointment 8-10 weeks
- VTE risk assessment performed (RCOG)
- Consultant review after booking if LMWH required
- Some may receive earlier if accessed PPC

Maternal Care Bundle- Element 1

Assessment at first NHS contact- pre booking

Multi System Involvement- (Maternity, Acute settings, Early pregnancy units, Termination service)

Self risk assessment for any pregnant woman not already taking clot preventing medication

Developing the self risk assessment tool

Process was iterative- 25 versions!!

Involved all major experts in pregnancy and VTE and termination providers and service users

Needed to be relevant for service users

- Why is VTE important

- Co-produced

- Plain English campaign consulted

Simplified Risk Assessment

Previous VTE- not already taking clot preventing medication

Hyperemesis- causing dehydration or immobility

BMI>50

Return to RCOG risk assessment at the point of booking

Hyperemesis

16% (n=42) died from VTE
25% of VTE deaths in first trimester

28% of women who died from a VTE were experiencing hyperemesis (MNSI)



Effect of BMI on VTE Prevalence

Antenatal period

Underweight	0.02%
Obesity Class II (BMI 35-39)	0.04%
Obesity Class III (BMI >40)	0.11%

Butwick et al 2018

Standardised lower dosing of LMWH

- Evidence based (Highlow trial – Bistervels et al 2022)
- Easier prescribing
- Reduce prescribing hesitancy

Type of LMWH	Weight <100kgs	Weight >100kgs
Enoxaparin	40mgs	60mgs
Tinzaparin	3,500iu	4,500iu
Dalteparin	5,000iu	7,500iu

**Return to usual maternity dosing after booking*

BLOOD CLOT RISK-ASSESSMENT QUESTIONNAIRE

To be used by anyone in early pregnancy.



DID YOU KNOW THAT BLOOD CLOTS ARE A MAJOR CAUSE OF DEATH DURING AND AFTER PREGNANCY?

This questionnaire is designed to find out if you are at high risk of having blood clots (known as venous thromboembolism or VTE) in early pregnancy.

You should fill in this questionnaire if you are pregnant but have not yet had an appointment (known as the booking appointment) with a midwife.

Name:	
Date of birth:	Today's date:

6 January 2026

Please tick the appropriate box		YES	NO
Previous blood clots Have you ever had a deep vein thrombosis (DVT) or pulmonary embolism confirmed by a scan?			
Nausea and vomiting Do you have nausea or vomiting severe enough that: • you cannot drink without vomiting; or • you struggle to stand up or walk due to nausea? (It is normal to have some nausea & vomiting in early pregnancy, but sometimes it can be severe)			
Body mass index (BMI) Is your BMI over 50?	 To check your BMI Scan the QR code for more details. If yes, what is your BMI?		
Are you currently taking one of these anticoagulants: warfarin, apixaban, rivaroxaban, dabigatran or edoxaban?			
Have you been diagnosed with antithrombin deficiency (a disorder that makes blood clots more likely)?			

IF you answered **yes to any of the questions
you need medication to reduce the risk of a blood clot.**



If you plan to continue your pregnancy, refer yourself for maternity care as soon as possible. You can do this online at <https://www.nhs.uk/nhs-services/refer-yourself-for-nhs-pregnancy-care/> or through your GP practice. Share the results of this questionnaire with your maternity service or GP so that clot-preventing medication can be prescribed urgently.

Even if you do not plan to continue your pregnancy, you could still be at higher risk of a blood clot. You should discuss this with your GP or other healthcare provider.

If you have answered "yes" to taking anticoagulant medications or been diagnosed with antithrombin deficiency, please see your regular haematology service or anticoagulation clinic as soon as possible.

Pregnancy Blood Clot Risk Assessment Questionnaire

Available at thrombosisuk.org

Patient information

BACKGROUND INFORMATION

What are blood clots and why am I at risk?

A blood clot is where blood sticks together in a vein and stops flowing normally. In a vein and stops blood from flowing normally. A clot in the deep veins of the legs is called a **deep vein thrombosis**. This can cause pain and swelling in the leg, but you may have no symptoms. If the clot (or part of it) breaks free, it can travel through the blood vessels in the body to block part or all of the blood supply to the lungs (this is medically known as a pulmonary embolism).

A pulmonary embolism is a medical emergency. Pregnancy increases the risk of blood clots.

For some people, the risk of blood clots is very high. These people would benefit from taking clot-preventing medication to protect them from a life-threatening blood clot.

What is clot-preventing medication?

The body produces blood clots to stop bleeding from wounds. Clot-preventing medication known as anticoagulation interferes with the clotting process to help prevent blood clots forming. They're commonly referred to as blood-thinners.

The safe clot-preventing medication in pregnancy is known as 'low molecular weight heparin (LMWH)'. You may hear it called:

- enoxaparin (brand names, Inhixa and Clexane);
- tinzaparin (brand name, Innohep); or
- dalteparin (brand name, Fragmin).

LMWH helps prevent blood clots forming in women without affecting the baby. It is injected under the skin and your healthcare practitioner will show you how to do this. (See this video for more details)

Your healthcare professional will tell you how long to take the LMWH for.



HOW CAN I REDUCE MY RISK OF BLOOD CLOTS AND WHAT SYMPTOMS SHOULD I LOOK OUT FOR?

Keeping active, having a healthy diet and keeping hydrated by drinking plenty of water, all reduce the risk of blood clots.

For more information on reducing the risk of blood clots, and the signs and symptoms please explore the Thrombosis UK website.

If you experience any of the following symptoms, which suggest a blood clot, get urgent medical advice.



Symptoms of a deep vein thrombosis (DVT) may include

- Unexplained pain, tenderness or swelling in one or both legs,
- Occasionally reddish/blue skin discolouration in one or both legs
- If thrombosis affects the thigh veins (common in pregnancy), the whole leg may be swollen
- The area may be warm to touch
- In pregnancy clots often start with pain in the groin

Symptoms of a pulmonary embolism (PE) may include:

- Sudden shortness of breath
- Unexplained breathlessness (for example when doing something you can usually do normally without becoming breathless)
- Chest pain that can be sharp or stabbing and may get worse with deep breaths
- A rapid heart rate
- Unexplained cough, sometimes with blood-streaked mucus
- Sudden collapse

Prescribing information

GUIDANCE FOR PRESCRIBING PROFESSIONALS

This risk-assessment questionnaire has been produced in consultation with NHS England. NHS England recommends that NHS services use this questionnaire as part of the Maternal Care Bundle.



Recommended dose of LMWH for women not already taking clot-preventing medication

Type of low molecular weight heparin	Weight: less than 100 kg	Weight: 100 kg or more
Enoxaparin (brand names, Inhixa and Clexane)	40 mg	60 mg
Tinzaparin (brand name, Innohep)	3,500 IU	4,500 IU
Dalteparin (brand name, Fragmin)	5,000 U	7,500 U

For more information,

see Element 1 of the NHS England Maternal Care Bundle at <https://www.england.nhs.uk/publication/the-maternal-care-bundle-a-care-bundle-for-reducing-maternal-mortality-and-morbidity/>

If a pregnant woman is already on clot-preventing medication (for example, warfarin, apixaban, rivaroxaban, dabigatran or edoxaban), please contact the healthcare professional who normally looks after them, to check it is safe in pregnancy or if there is a need to change to another clot-preventing medication.



Thank you

4. Lived experience – Lesley Simpson

- Community Engagement Officer at Thrombosis UK, with many years of experience in the Third Sector and a special passion for health charities.
- She is committed to creating supportive, inclusive spaces for people affected by thrombosis, and has led initiatives including monthly online patient support meetings and Thrombosis UK's annual four-day online conference.



4. Lived experience – Fern Guillen

- Mother of one who, in 2015, experienced an extensive deep vein thrombosis in her left leg and multiple pulmonary emboli just three weeks after giving birth.
- Fern would like to share her personal experience of this life-threatening event and reflect on the lessons it offers for patient care, communication, and clinical practice moving forward.





Thrombosis UK

Awareness • Research • Care

Lesley Simpson

Community Engagement Officer

Fern Lewis

Patient volunteer and Thrombosis UK Trustee

Patient access to information

Blood clots totally changed my life, not understanding so much made it even harder

I had so many questions, especially once I was home but no where to go

What should I expect?

What is normal? How do I know what is ok?

If I had only known....



Lived experience - Fern

Psychological impact

“You could have died!”

“I’m SO anxious about recurrence and feeling very overwhelmed on top of sleep deprivation. It’s a lot.”

“The biggest obstacle has been accepting my new normal at an age when you think you can do anything”

44% of people who have suffered a VTE episode end up experiencing health anxiety or post traumatic stress disorder (PTSD)

Information & support

- Let's Talk Clot app

[Let's Talk Clots App | Thrombosis UK](#)

- Online support groups

[Support Meetings | Thrombosis UK](#)

- Booklets & factsheets

[Patient information resources | Thrombosis UK](#)

- Closed Facebook Group

[Thrombosis UK Closed Group | Facebook](#)



5. VTE in abortion services – Michael Nevill

- Clinical Director at NUPAS and a senior nurse leader with over 20 years' experience across NHS and independent sector services.
- He contributed to the NHS England Maternal Care Bundle as a member of the VTE working group.
- Michael is also a member of the RCN Women's Health Forum Steering Committee and a NICE advisor.
- He is active in national policy and guidance development, specifically in abortion care and women's health, with a strong focus on patient safety and quality improvement.



6. Learning from claims – Bethan Percival



- Senior Registrar in Obstetrics & Gynaecology at Buckinghamshire Healthcare NHS Trust, with an interest in high-risk obstetrics and intrapartum care.
- She has a strong interest in quality and safety improvement, particularly how culture, human factors, and systems influence outcomes.

6. Learning from claims – Prima Shah



- ST5 Obstetrics and Gynaecology registrar in the East Midlands, currently at University Hospitals of Leicester.
- Former Obstetric Clinical Fellow at NHS Resolution's Early Notification team, contributing to national maternity safety initiatives.
- Special interests include early pregnancy, gynaecology, patient safety, education, and quality improvement.

AIM: Reducing VTE (Venous Thrombosis Embolism) in pregnancy

Safety and Learning Directorate

Presented by: [Bethan Percival, Obstetric Clinical Fellow/Prima Shah, Obstetric Clinical Fellow/Victoria Wilkins, Associate Safety and Learning Lead/Project Lead]

June 2026

Our strategic priorities



Priority 1

Fair resolution

All of our services will focus on fair and timely resolution, keeping patients and healthcare staff out of litigation and other formal processes to minimise distress and cost.



Priority 2

Data and insights

We will contribute our unique data and insights to learn from harm and the response to harm across the health and justice systems.



Priority 3

Maternity and neonatal

We will draw on our unique position and work with our system partners to support maternity and neonatal safety improvements.

Background

Pregnancy elevates venous thromboembolism (VTE) risk by a factor of 4 to 6 compared to the non-pregnant state.

It is associated with significant morbidity, mortality and psychological distress for families.

This poses a substantial financial burden onto the NHS.

National discussions on VTE in maternity have highlighted a potential disconnect between primary and secondary care, prompting action to improve prevention.

- To identify contributory factors in the occurrence and management of VTE in maternity by analysing NHS Resolution claims data, with a view to promote consistency and excellence in risk assessment and prophylaxis throughout the duration of maternity care.

A retrospective thematic analysis of NHS Resolution claims related to VTE



Inclusion criteria (Total 51 Claims):

Settled maternity claims with
damages paid

All VTE during pregnancy up until 6
weeks postnatal.

Incidents occurring between April
2016 - March 2025.



Themes from 43 open claims were identified but not analysed.

Results

1 in 2
suffered with
a **Pulmonary
Embolism
(PE)**

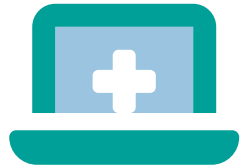
3 in 4
developed a
VTE in the
**postnatal
period**, most
commonly
between 11-42
days.

3 in 5
delivered
vaginally



Results - Diagnosis

- **1 in 2** presented more than once before a diagnosis was made.
- For those who presented more than once, the average time from presentation to diagnosis was **9 days**
- The longest time from presentation to diagnosis was **102 days***
- **2 in 5** presented to **Urgent Care or Emergency Departments** between 24 weeks to 10 days postnatal
- **3 in 5** presented to a **GP** > 11 days postnatal



Results - Risk Assessment

- Of the claims with no VTE risk assessment it was apparent from the letter of claim that risk factors were present
- **3 in 4** women had a completed VTE risk assessment, however only **1 in 3** were completed **correctly**
- **3 in 4** women had a **change** in risk factors from booking
- This led to VTE prophylaxis not being prescribed in several cases where it was required (58%)

Results - Risk Assessment

Booking

- Maternal Age
- BMI 30-40
- Parity
- Family History
- Smoker

Antenatal

- Hospital Admission
- Current Systemic infection
- Immobility

Postnatal

- Caesarean Section
- Parity
- Maternal Age
- BMI
- VTE in antenatal period

Illustrative case story – Primary and secondary care

Situation:

- Patient aware they were high risk for VTE in pregnancy, attended GP at 5/40 when pregnancy was confirmed
- GP referral to obstetrics as unclear on correct medication, dosage and duration to prescribe.
- Patient was booked but not seen by an obstetrician until 14/40 gestation due to limited appointments
- 3 days later, patient presented with collapse and PE was confirmed. The patient did not receive or administer medication as the hospital chemist been closed early on a Friday and on a weekend

Background:

- G6 P5
- Previous VTE when on contraceptive pill
- BMI of 38
- Smoker
- Maternal age 34 at booking

Assessment:

Breach of Duty:

- Unable to access care early enough to receive prophylaxis
- Referral to obstetrician too late and not escalated from first contact with maternity services
- No prophylaxis given in the antenatal period prior to VTE occurring

Recommendations:

Causation:

- Had the GP or the obstetrician prescribed prophylaxis from the time of confirmed pregnancy the VTE is unlikely to have occurred on a balance of probabilities
- Communication and ability to bypass the standard process for women in this situation is key to ensuring they receive prophylaxis as early as possible.

Illustrative case story – Surgical admission for non-obstetric procedure



Resolution

Situation:

- Patient, 25+3 weeks pregnant, had an accident whilst gardening and scraped leg on a piece of rotten wood with rusty nails protruding
- Patient attended emergency department 2 days later with grazing, cuts and weeping wounds
- Cellulitis diagnosed and antibiotics required IV
- Wound unclean therefore decision made for surgical wash out and for admission
- Patient went on to develop a PE whilst an inpatient
- Patient was seen daily for FH monitoring whilst an inpatient but remained under surgical care

Background:

- G2 P1 – previous SVD
- Maternal age 37
- No prior medical conditions

Assessment:

Breach of Duty:

- VTE assessment not completed as an inpatient or after surgery
- When symptoms arose, although a VTE assessment carried out, this was not maternity specific.

Recommendations:

Causation:

- Correct VTE assessment was required on admission, prior to surgery and after surgery.
- A maternity VTE assessment and re-assessment would have triggered the prescribing of prophylaxis which should have prevented the PE on a balance of probabilities

Illustrative case story – Postnatal

Situation:

- Presented four days post forceps delivery to emergency department with shortness of breath and chest pain
- Discharged home. No diagnostic testing performed.
- Five days later patient collapsed and was admitted.
- Diagnosis was confirmed pulmonary embolism and respiratory infection
- Patient deteriorated and required admission to ITU
- Patient went on to develop pulmonary oedema and cardiomyopathy

Background:

- G5 P3 – 1 singleton, 1 set of twins
- Deemed low risk pregnancy
- Late booker
- Previous LETZ procedures
- BMI of 35
- Smoker
- Maternal age 34 at booking – turned 35 during pregnancy

Assessment:

Breach of Duty:

- Wrong pathway of care from booking
- Antenatal VTE assessment incorrect
- Postnatal VTE assessment incorrect
- No prophylaxis given

Recommendations:

Causation:

- Correct VTE assessment was required in the antenatal and postnatal periods which would have triggered the prescribing of prophylaxis which should have prevented the initial PE on a balance of probabilities

Limitations

- Assumptions made:
 - Spontaneous vaginal delivery when no other type of delivery is noted
 - Low risk when no risk factors have been noted
- Compliance to prophylaxis remains unknown throughout pregnancy and the postnatal period
- Retrospective – based on available documentation
- Health inequalities were not analysed with this data

The influence of health inequalities on receiving care and making a claim

Ethnicity – multifactorial

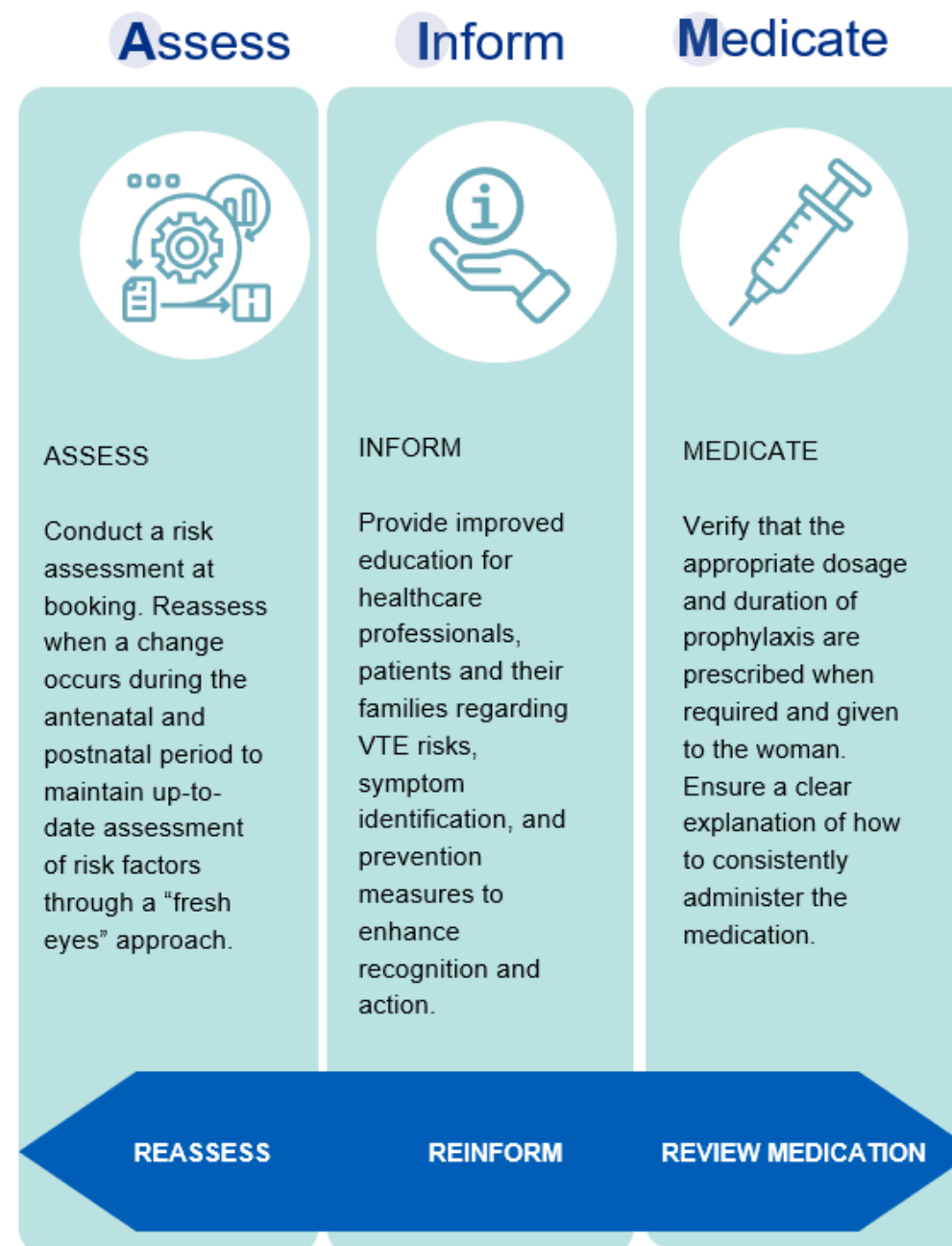
Social and economic deprivation – ability to attend appointments/hospital

Language – ability to understand information and provision of information in appropriate language

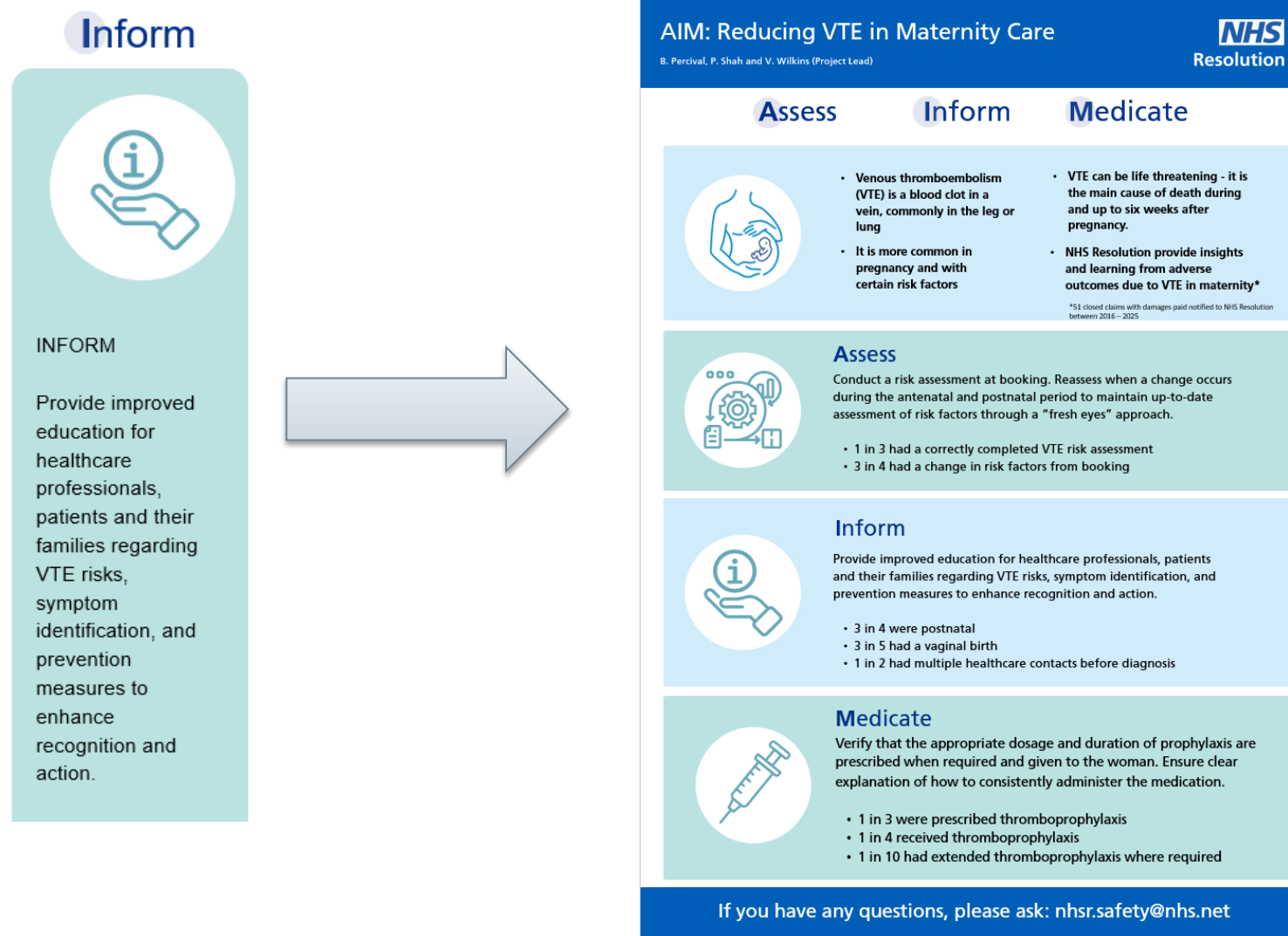
Working pregnant people – ability to attend appointments/hospital

Vulnerabilities – learning disabilities, migrants/asylum seekers, safeguarding concerns, teenagers- multifactorial

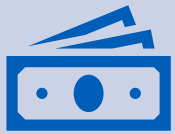
Rural communities – ability to attend appointments/hospital



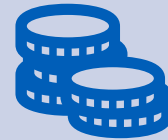
Information poster for clinicians



The cost of claims



The total cost of closed with damages paid claims was £3.5m



The average cost of a claim was £68,793



Other associated costs included increased medication needs for longer duration, increased inpatient stays, longer term ongoing follow up care



Other 'costs' to the patient are detriments to physical, emotional and mental health in the short, medium and long term

Key messages

VTE assessment is essential in pregnancy and the postnatal period

Risk should be reassessed with every change, using the correct maternity VTE assessment tool

This will allow for the correct prophylaxis at the right dosage for the right amount of time

Thank you for listening

Safety and Learning team

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Project Lead - Victoria Wilkins

Associate Safety and Learning Lead
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Venous Thromboembolism (VTE) in Abortion Services

Michael Nevill RN
Clinical Director, NUPAS

Why VTE Matters in abortion care

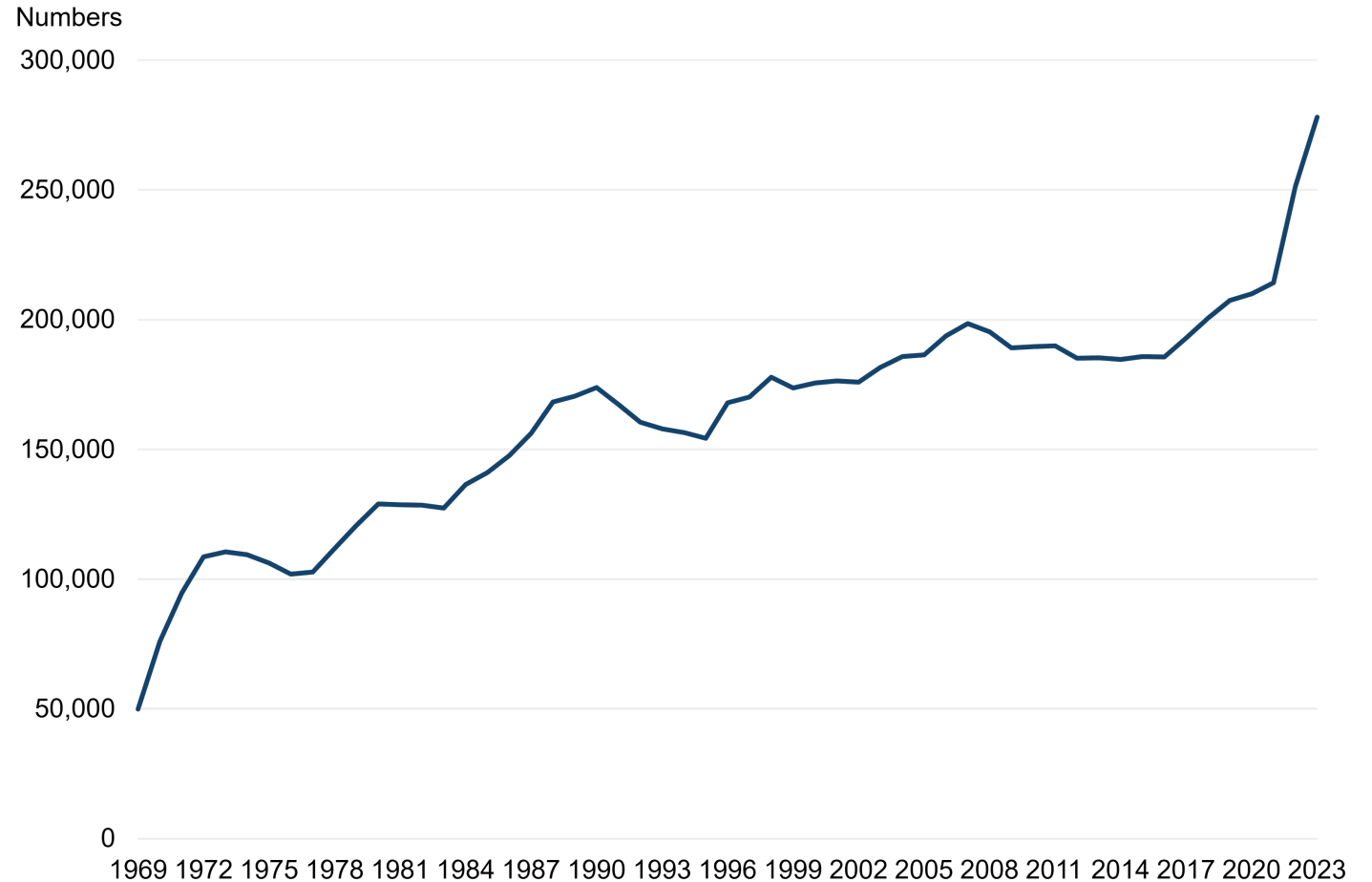
Abortion services are often the only clinical service these pregnant people will access

Many VTE events occur before the first antenatal appointment, most people access abortion <10 weeks gestation (89% of all abortions)

Abortion - Most common gynae procedure



Abortion Statistics for England and Wales





Case Studies

Relevance to abortion services

Patients are
often:

Early in pregnancy
Not yet engaged with NHS maternity or GP

Therefore:

Abortion services = first clinical contact

Opportunity
to:

Identify VTE risk early
Prevent avoidable complications

Previous VTE assessment Tool (adapted from RCOG)

- If total score 0-2, mobilise early
- If total score 3
 - For those with all green conditions, mobilise early
 - For those with 1 or more yellow conditions, offer LMWH for 7 days
- If total score 4 or more, offer LMWH for 7 days postabortion
 - For those with red conditions, patients may need up to 6 weeks of thromboprophylaxis and therefore NHS referral for abortion is required.

Risk factors for VTE	Tick	Score
New onset of leg pain or swelling, or shortness of breath/chest pain during this pregnancy	Advise to attend A+E immediatly	
Previous VTE ^a		4
Previous VTE provoked by major surgery or accident		3
Known high-risk thrombophilia* (with or without prior VTE) • Antithrombin deficiency • Homozygous factor V Leiden • Antiphospholipid syndrome • Homozygous prothrombin gene mutation • Protein C or S deficiency • Compound heterozygotes		4
Medical comorbidities - Current cancer, heart failure, active systemic lupus erythematosus, inflammatory polyarthropathy or inflammatory bowel disease, nephrotic syndrome; type I diabetes mellitus with nephropathy, sickle cell disease, current intravenous drug user, Respiratory disease (excluding mild, well controlled asthma), acute infection (specifically pneumonia, untreated current urinary tract infection and HIV), and rheumatic disease		3
Surgical time more than 60 minutes		2
BMI of 40 kg/m ² or more		2
BMI of between 30 - 40 kg/m ²		1
Gestation of 20 weeks' or more		1
Current hyperemesis, dehydration		1
Family history of unprovoked or estrogen-related VTE in first-degree relative		1
Known low-risk thrombophilia but no prior VTE • Heterozygous factor V Leiden • Heterozygous prothrombin gene mutation • Antiphospholipid antibodies in isolation (lupus anticoagulant, anticardiolipin antibody)		1
ART/IVF in current pregnancy		1
Spontaneous fetal demise in current pregnancy		1
Current systemic infection		1
Immobility (for example, paraplegia, physical disability, recent/upcoming long-haul flight**, etc.)		1

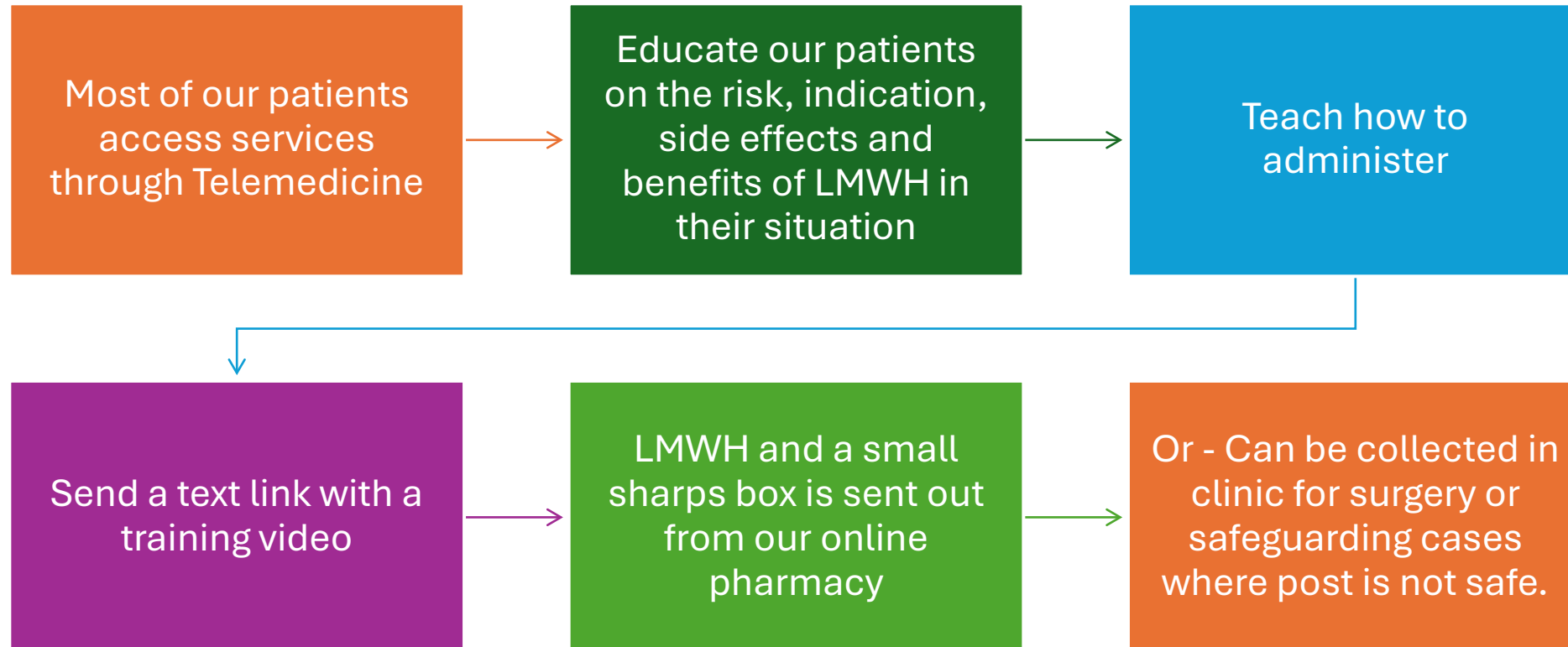
^aIf a patient has a history of **recurrent** VTE and/or high-risk thrombophilia, refer to the NHS for management of their abortion and thromboprophylaxis

**Long-haul flight = airline travel for 4 hours or more, recent means within the last 7 days before abortion and upcoming flight within 7 days postabortion

Abortion services – our new approach to VTE assessments

- Agreement to use VTE Care bundle for gestations up to 24 weeks
 - One single assessment
- Use the 3 screening questions :
 - VTE 1 - Have you ever had a deep vein thrombosis (DVT) or pulmonary embolism confirmed by a scan?
 - VTE 2 – Do you have any nausea/vomiting that either stops you drinking or makes standing or walking hard?
 - VTE 3 - Is your BMI over 50?
(yes to any of these LMWH for 7 days)
- NHS referral if history of antithrombin deficiency

How do we provide LMWH?



Abortion type	When to start LMWH after abortion
Medical abortion at 10 weeks of gestation or less	24 hours after Misoprostol unless bleeding is still heavy
Surgical abortion	6 hours postoperatively

How is it going?

Early days

Appears that less
patients requiring
NHS referral or
LMWH

However a
significant number
of patients have
previous VTE or PE

Summary –

Thank you for Listening

7. Discussion session



Discussion panel – Emma Gee



- Nurse consultant in thrombosis and coagulation at King's College Hospital in London.
- Leads the VTE Specialists Network (VSN), a National network for nurses and allied health professionals.
- Emma is also the associate director of the VTE Exemplar Centres Network, a National Network of centres with a track record of high quality VTE prevention care.

Discussion panel – Alistair Rennie



- Senior medical advisor at NHS Resolution.
- Emergency Medicine consultant for over 20 years in a variety of settings from small community hospitals to large tertiary specialist teaching institutions.
- Associate medical director at North West Ambulance Service.
- Current chair of the Safer Care Committee for RCEM

Discussion panel – Kate Duhig

- Clinical Senior Lecturer and Honorary Consultant Obstetrician at King's College London and Guy's and St Thomas' NHS Foundation Trust.
- National Specialty Advisor for Obstetrics and Prevention at NHS England and the Clinical Lead for the Maternal Care Bundle.



Discussion panel – Kirsty Gillies



- GP with extended role in Women's health and menopause.
- Board director for Primary Care Women's Health Society.
- Tutor at University of Exeter Medical School.

Discussion panel – Erum Khan



- Consultant Obstetrician and Gynaecologist.
- National senior maternity clinical advisor – NHS Resolution.
- National Maternity Improvement Advisor – NHS England.

Discussion panel – Debbie Scott



- Consultant midwife for Yorkshire and Humber Maternal Medicine Network.
- Masters degree in Public Health and has worked across the whole spectrum of maternity care over the last 30 years.
- Lead for VTE in the NHS England maternal care bundle.

9. Question and answer session



10. Closing remarks – Erum Khan



Points to Ponder

ERUM A KHAN

**National Senior Maternity
Clinical Advisor, NHSR**



WHY?

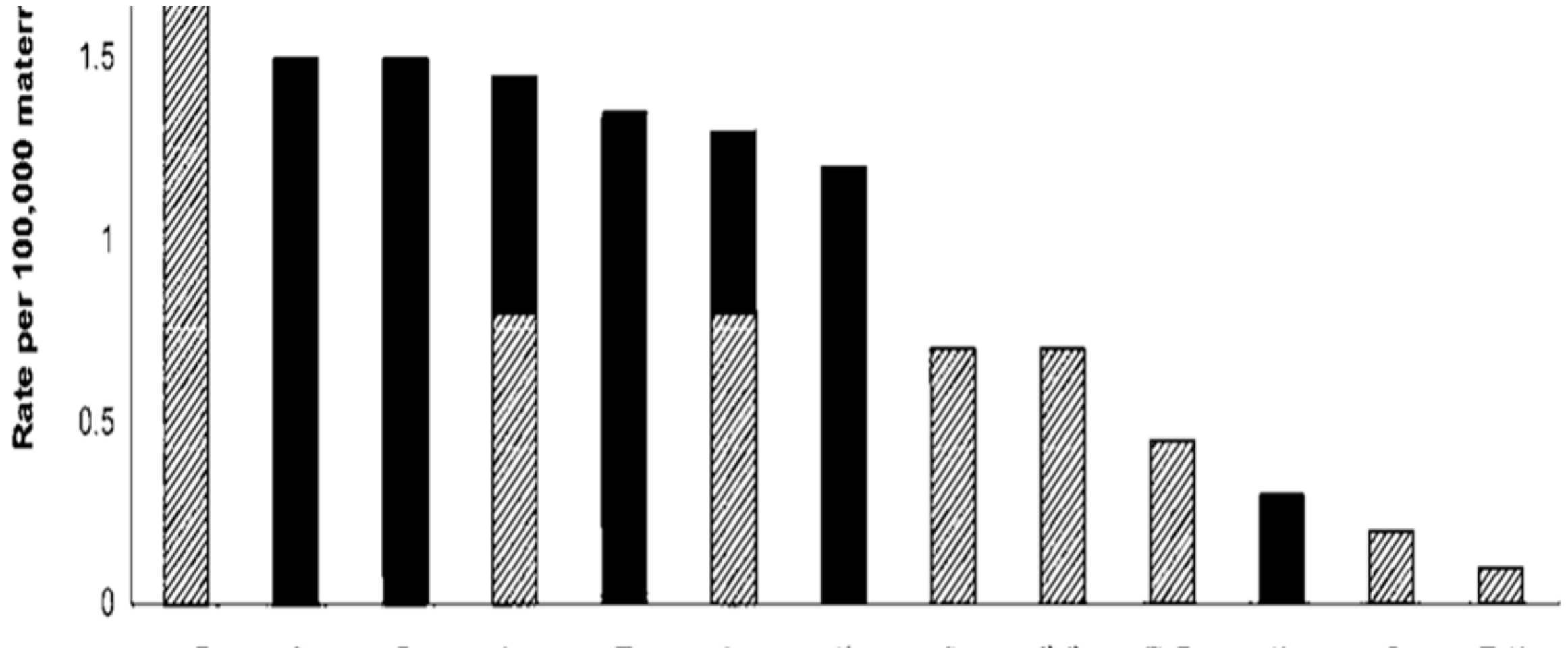
The leading cause of direct maternal death in the UK.

A quarter of deaths from VTE occurred in the first trimester.

Black women died of VTE at more than twice the rate of white women.



WHY?



ONE JOURNEY

- Patients do not experience maternity care as separate teams, departments or specialties.
- They experience one journey.
- That journey may not be the same for every woman.



Multiple opportunities for prevention

- Dynamic risk assessments matter.
- Handover matters.
- Escalation matters.
- Communication matters.
- Because women matter.

Clinical factors: changing risk, competing priorities

Human factors: assumptions, communication gaps

System factors: delayed escalation, complexity, systemic inequalities in care

What do claims show us?

- Not isolated errors
- Repeated missed opportunities
- Across the journey



Prevention happens across the journey (MDT)

- Every team can prevent harm
- Multiple moments
- Shared risk

MDT role



What changes tomorrow?

- Every clinical contact is an opportunity.
- Every handover is an opportunity.

Ask yourself in every contact:

Has risk changed?

Have I provided personalised care?

Have I documented it?

Have I acted on it?

Thank you for your time

GET IN TOUCH

✉ nhsr.safety@nhs.net

FOLLOW US

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