@mcqicspsp

#spspmcqic

Maternity and Children Quality Improvement Collaborative (MCQIC)

Postpartum Haemorrhage Webinar

15 June 2022

Welcome and introduction

Angela Cunningham (Chair)

MCQIC Maternity Clinical Lead

Healthcare Improvement Scotland

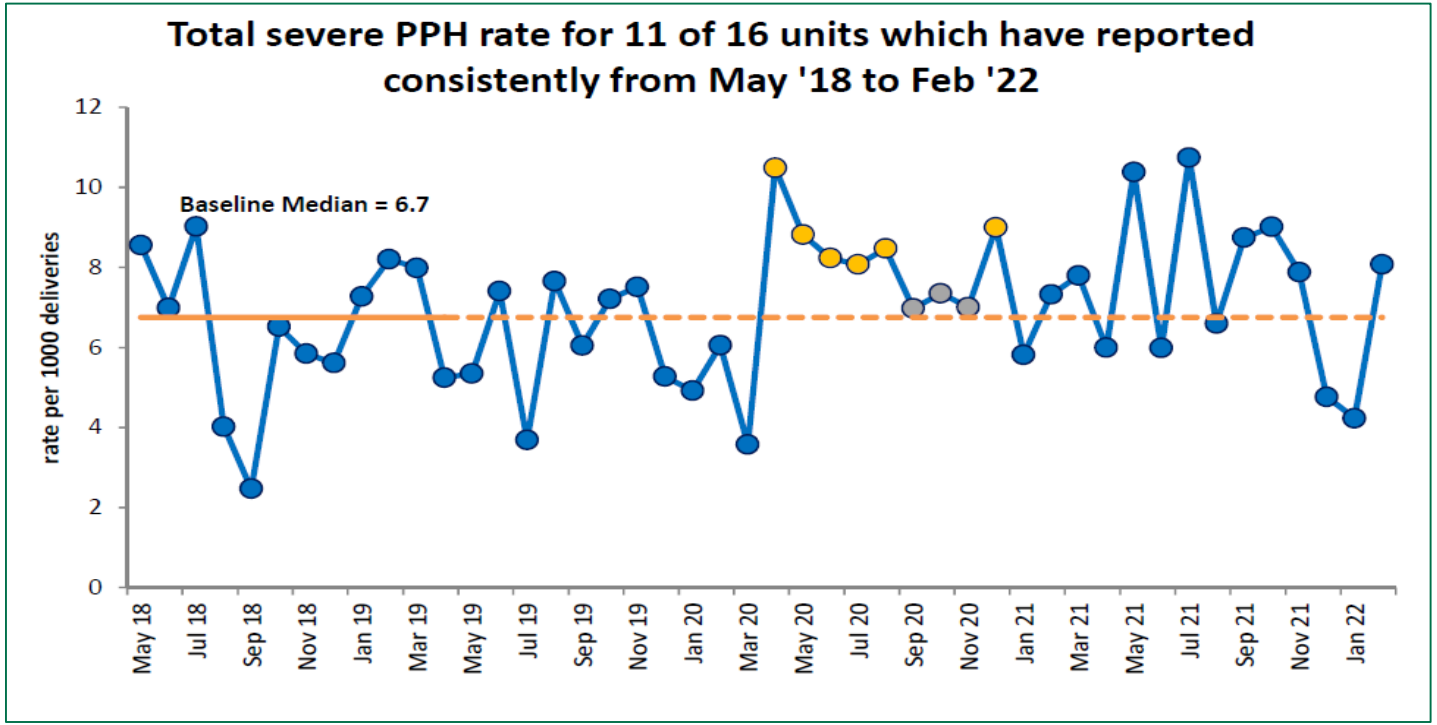
Aims of the webinar

- Consider where we are with PPH – what does the data tell us?
- Hear from a range of disciplines on how we can improve outcomes for women.
- Q&A session providing a networking opportunity to share learning and experiences and ask questions.

Agenda

Time	Topic	Lead
11.00-11.05	Welcome and Introductions	Angela Cunningham (Chair) MCQIC Midwifery Clinical Lead, Healthcare Improvement Scotland
11.05-11.10	Overview & Agenda	Angela Cunningham (Chair) MCQIC Midwifery Clinical Lead, Healthcare Improvement Scotland
11.10-11.20	Community Perspective	Katie Hislop, Community Midwife, NHS Fife
11.20-11.30	How do we solve a problem like postpartum haemorrhage Taking a QI approach	Alison Jane Anderson, Midwife/Lead Clinical Improvement Coordinator NHS Greater Glasgow and Clyde, Laura Flynn Senior Charge Midwife NHS Greater Glasgow and Clyde
11.30-11.45	Postpartum Haemorrhage- Obstetric perspective	Dr Nirmala Mary, Consultant, Obstetrics and Gynaecology, NHS Lothian
11:45-11:55	Postpartum Haemorrhage- An Anaesthetist's perspective	Dr Catherine Collinson, Consultant Anaesthetist, NHS Lothian
11.55-12.20	Panel Q&A	Angela Cunningham (Chair) MCQIC Midwifery Clinical Lead, Healthcare Improvement Scotland
12.20-12.25	Reflections	Angela Cunningham (Chair) MCQIC Midwifery Clinical Lead, Healthcare Improvement Scotland
12.25-12:30	Thank you & Close	

Current data picture



- No change in rate
- Deterioration in 2020
- Incomplete data

Community Perspective

Katie Hislop

Community Midwife

NHS Fife

Discussion Points

- Holistic Needs of the birthing person
- Medical Needs of the birthing person
- Breastfeeding following PPH

Holistic Needs

- Thoughts and feelings following birth:

  -Partners thoughts and feelings.
- Look through notes.
- Encouraging plenty of skin to skin.

Breastfeeding following PPH

- Breastfeeding difficult following PPH.
- No evidence base to suggest milk should be affected.

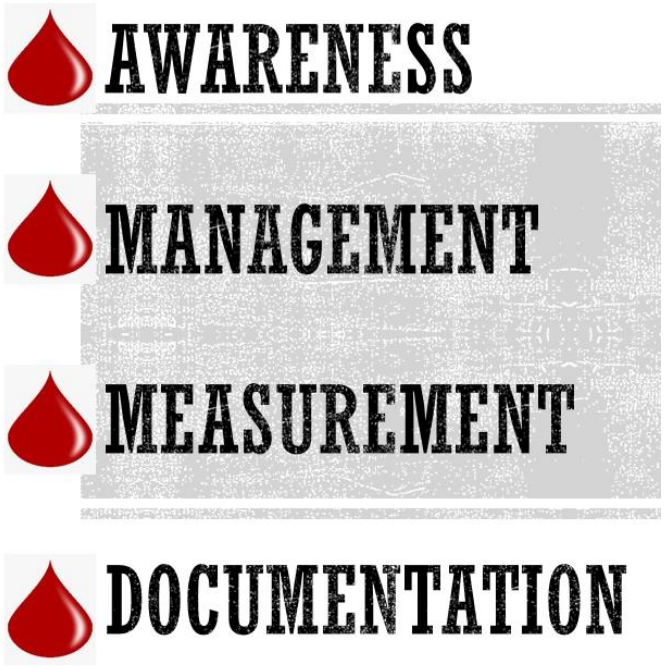
Medical Needs

- Taking iron – follow up FBC.
- Diet
- Fluids
- Anti-coagulants

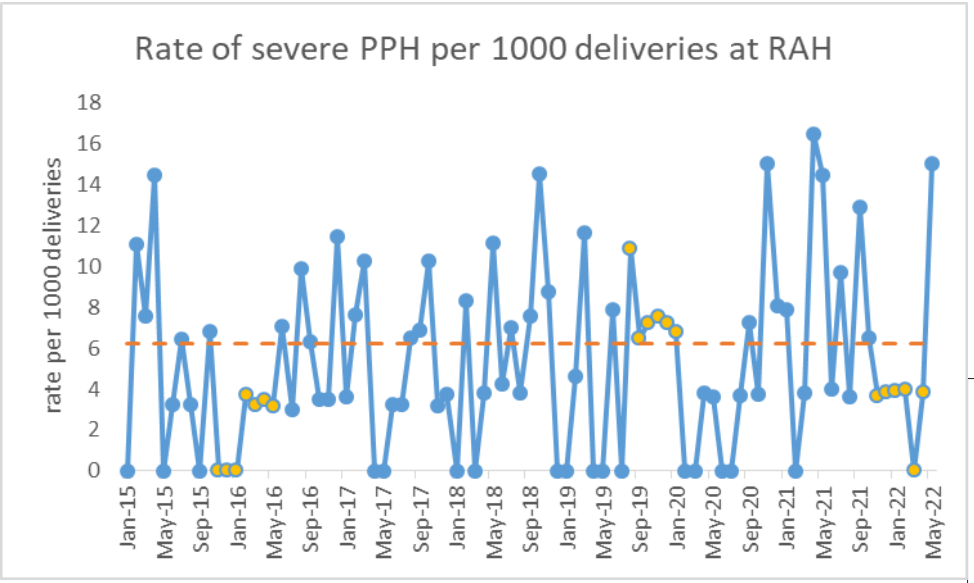
How do we solve a problem like postpartum haemorrhage? Taking a QI approach

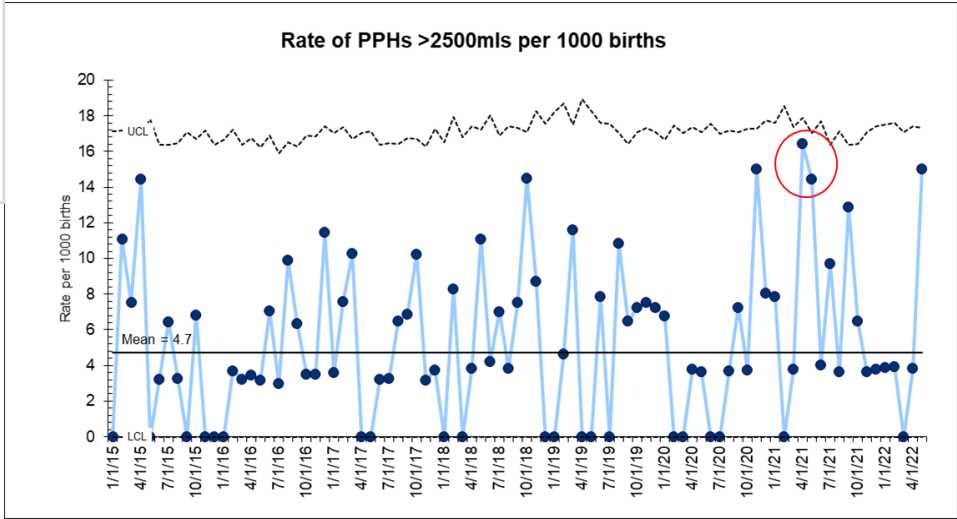
Laura Flynn Senior Charge Midwife, Labour Ward, Royal Alexandra Hospital, GGC

Alison Jane Anderson Midwife / Lead Clinical Improvement Coordinator, GGC

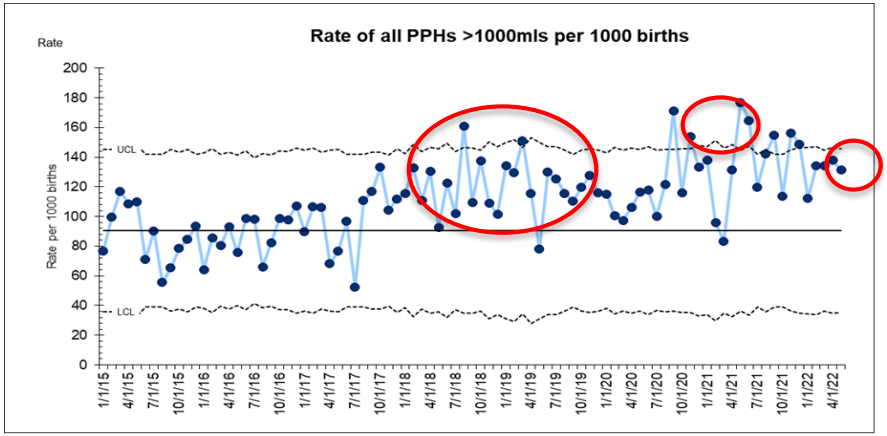


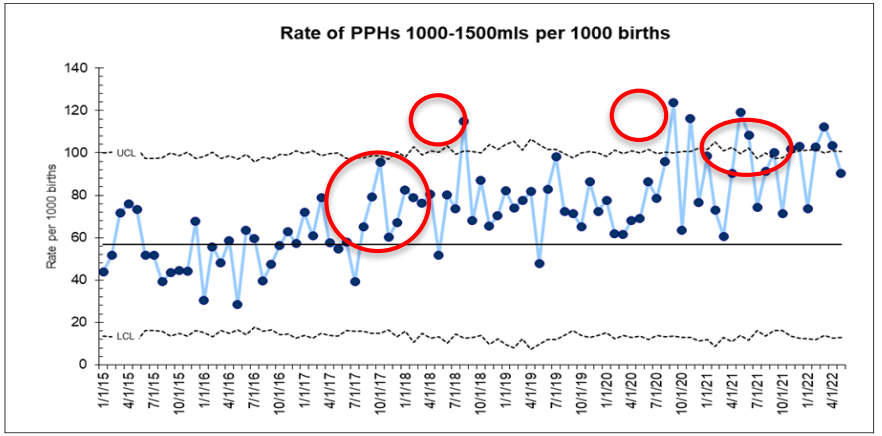
What does the data tell us?

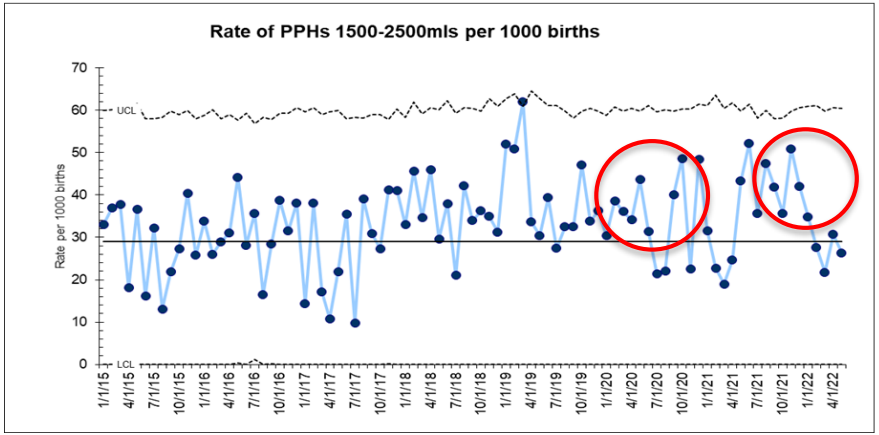


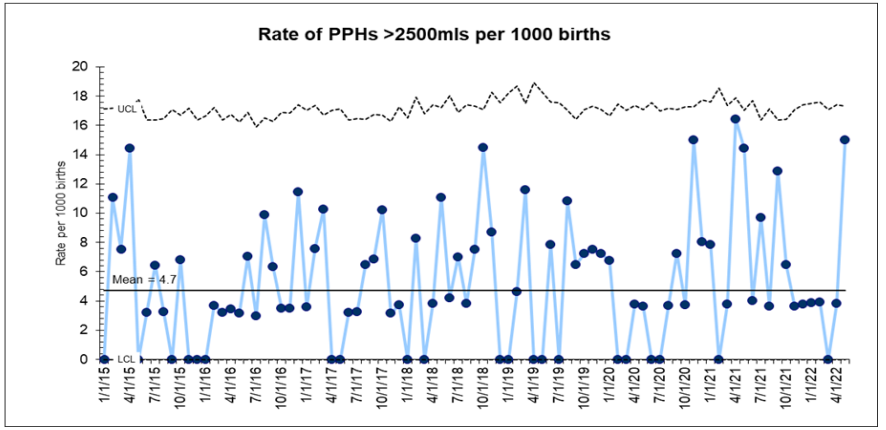


Looking at the detail

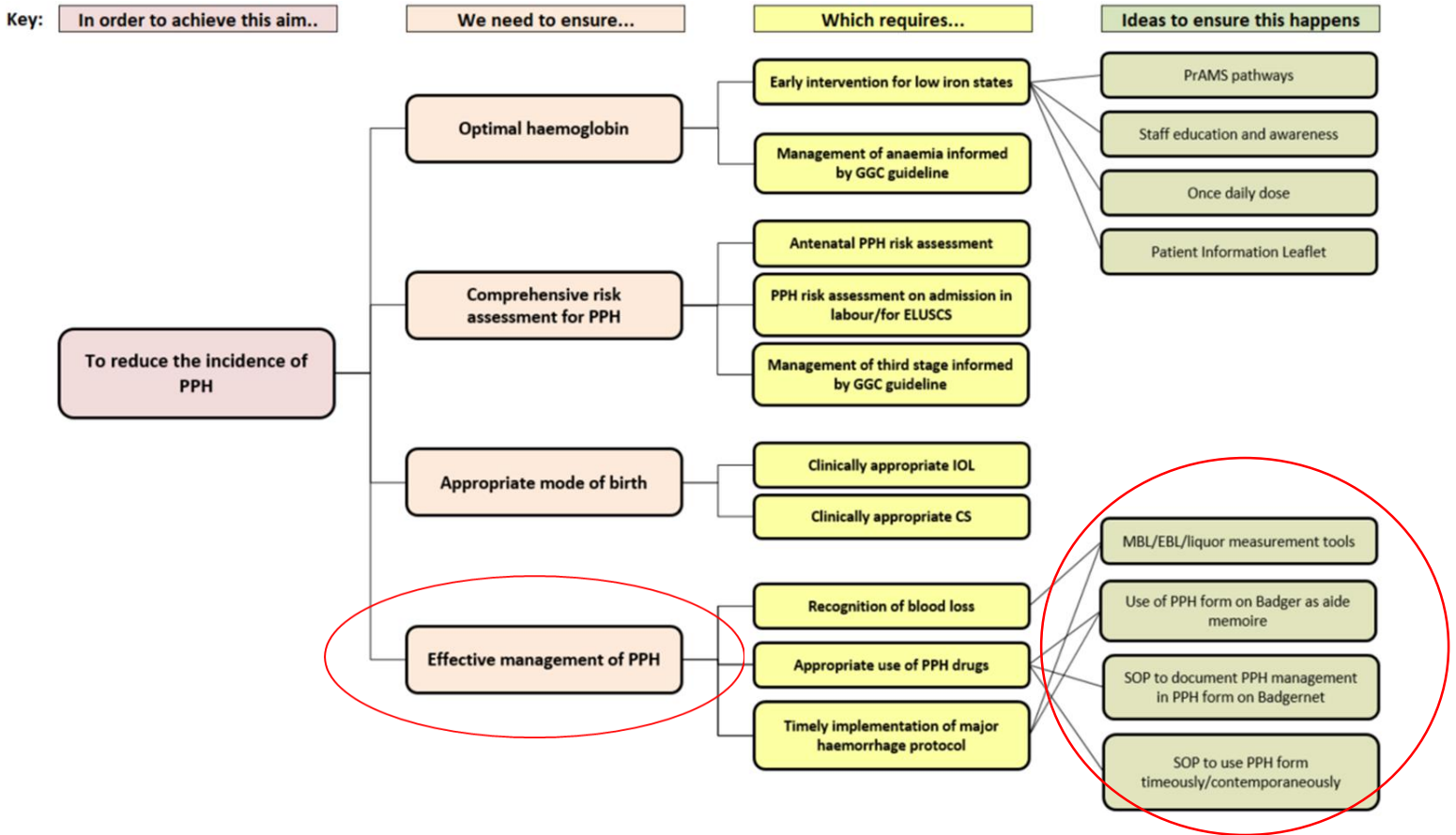








QI tools – Driver Diagram



Change ideas

Best practice for documenting

Review of PPH risk assessment

Early response to blood loss

Recognising blood loss

Support for less experienced staff

Opportunity for reflection

Badger as PPH management prompt

Accurate measurement of blood loss (blood vs liquor)

"Beware of the trickle"

Awareness raising

Simulations

Hot debriefs / supportive reflection and supervision

Remember to catheterise

"Mind the gush"

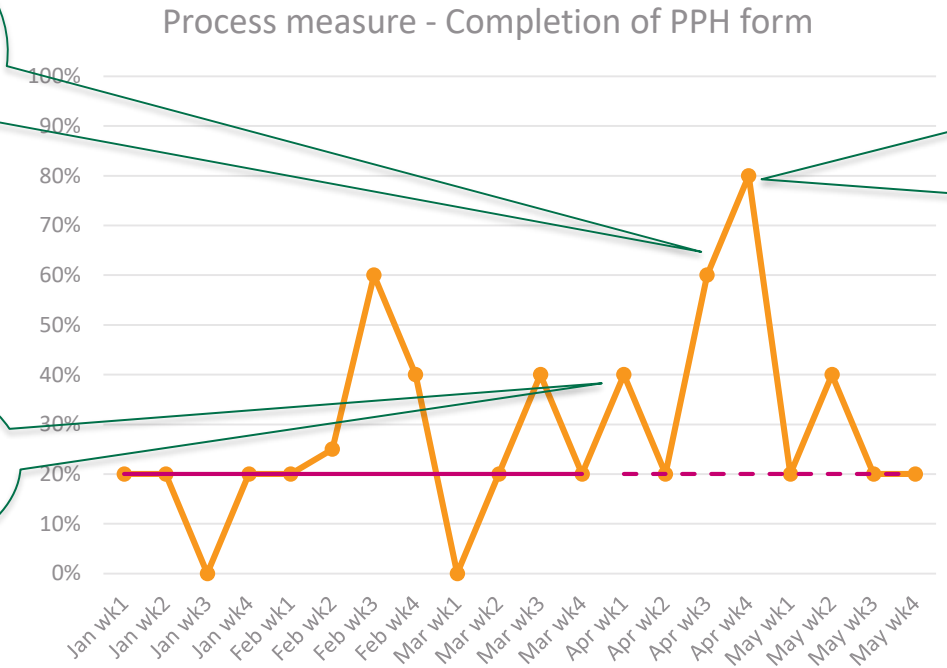
Training / Practice development

First cycle of PDSAs – Awareness raising

PPH champion support at PPHs

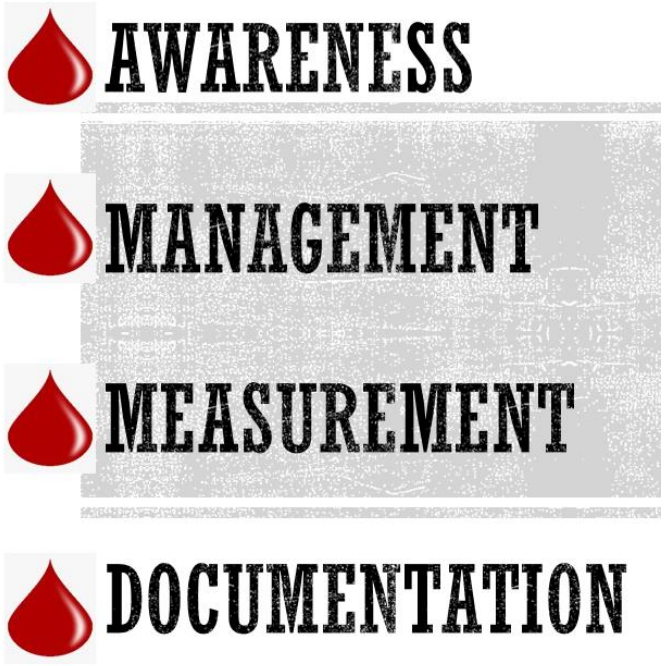
Email sent to all LW staff

LW Education and Updates channel created



What next?

- Regular “LW Improvement Board” updates
- Continue with data to help understand whether changes are improvements
- Further PDSA cycles to test other change ideas



Any questions?

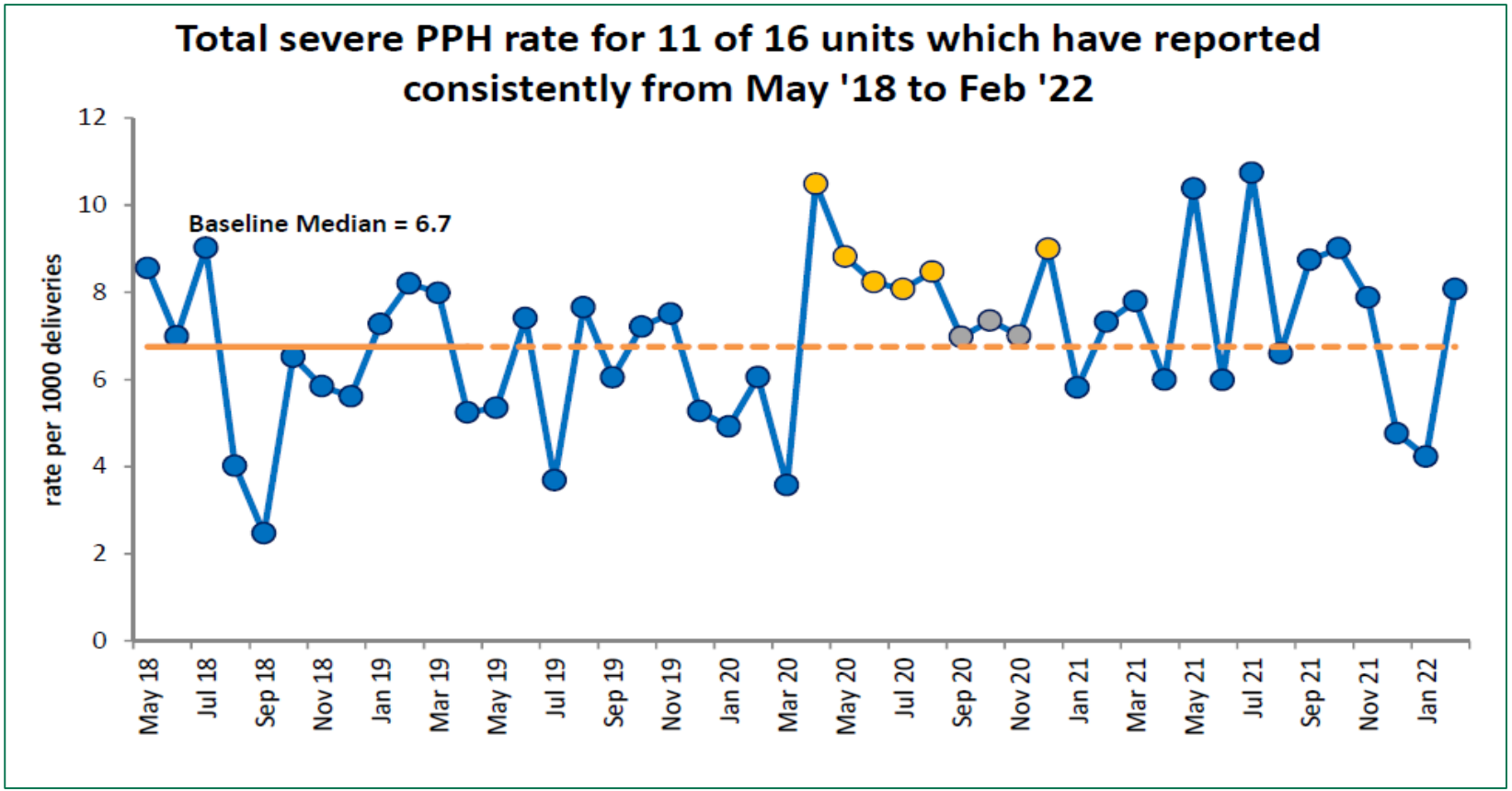
PPH – An Obstetric perspective

Dr Nirmala Mary,

Consultant Obstetrics and Gynaecology

NHS Lothian

Scottish Data



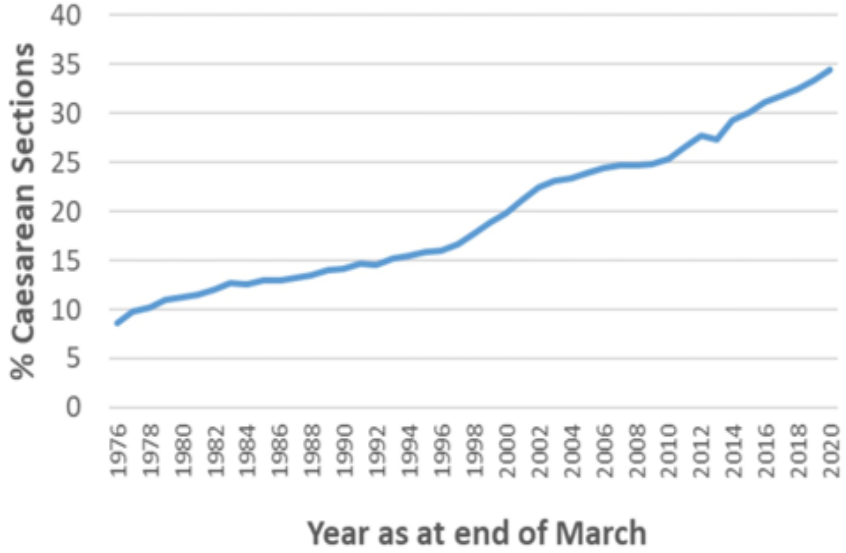
FOCUS OF WORK SO FAR

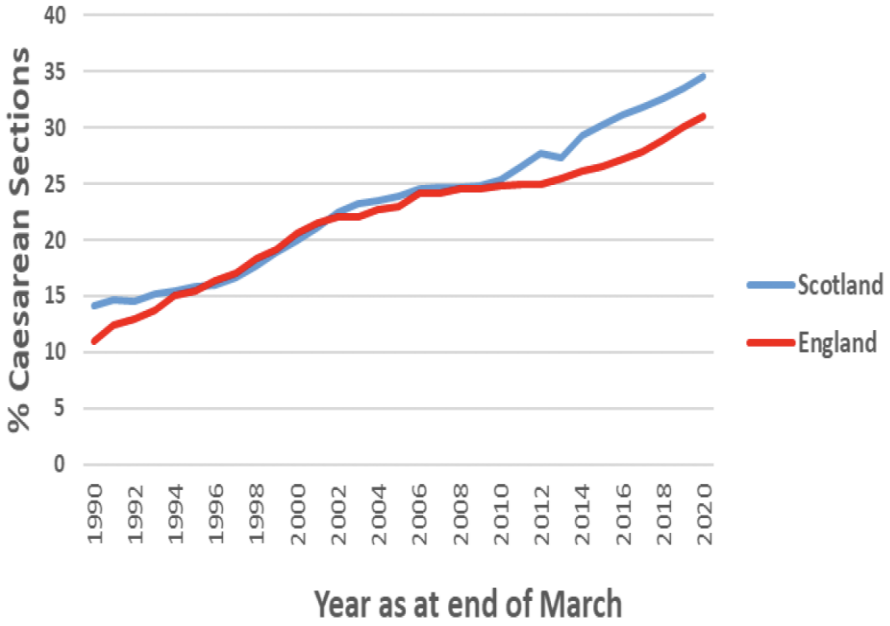
- Risk Assessment
- Recognition
- Recognition
- National bundles
- Collaborative working

Is there room for improvement!!!

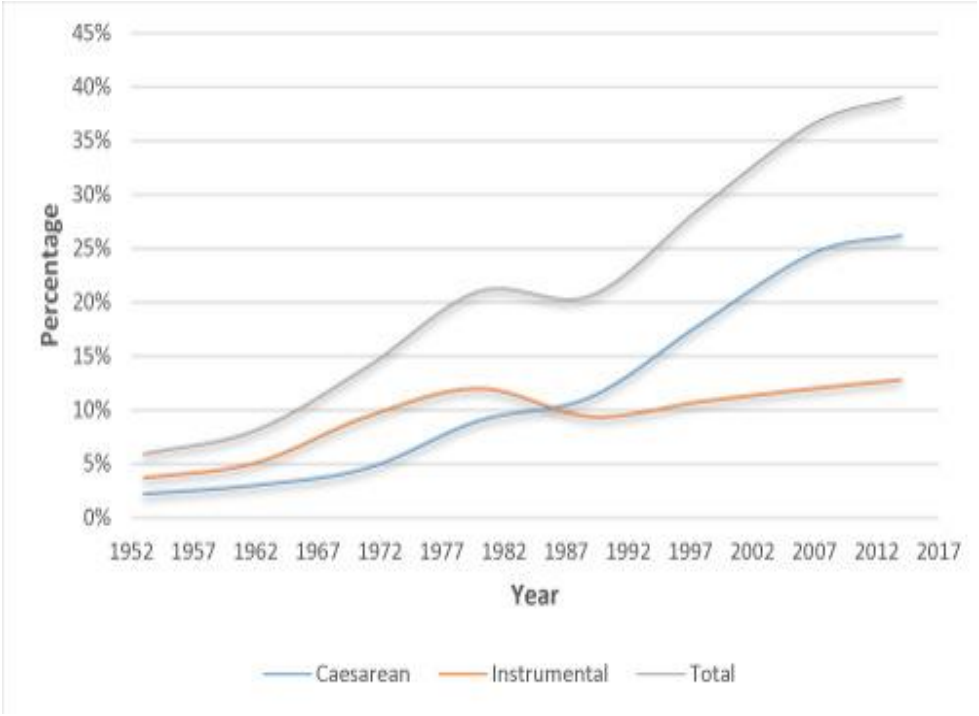
Best Start – Caesarean section rates review report

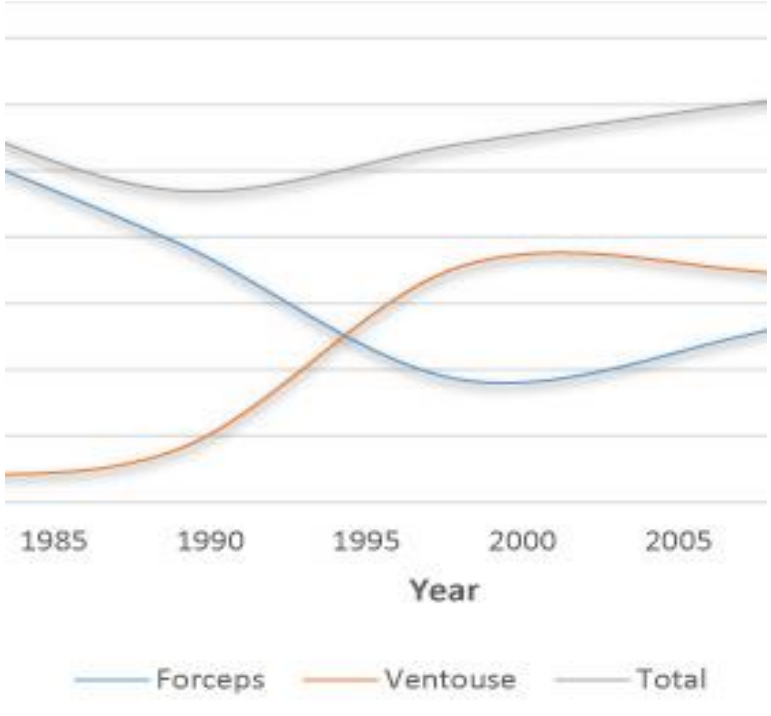
Chart 1 – Proportion of live singleton births delivered by caesarean section in Scotland (1976/77 to 2019/20) [4]





RCOG Instrumental delivery data





Risk factors for PPH

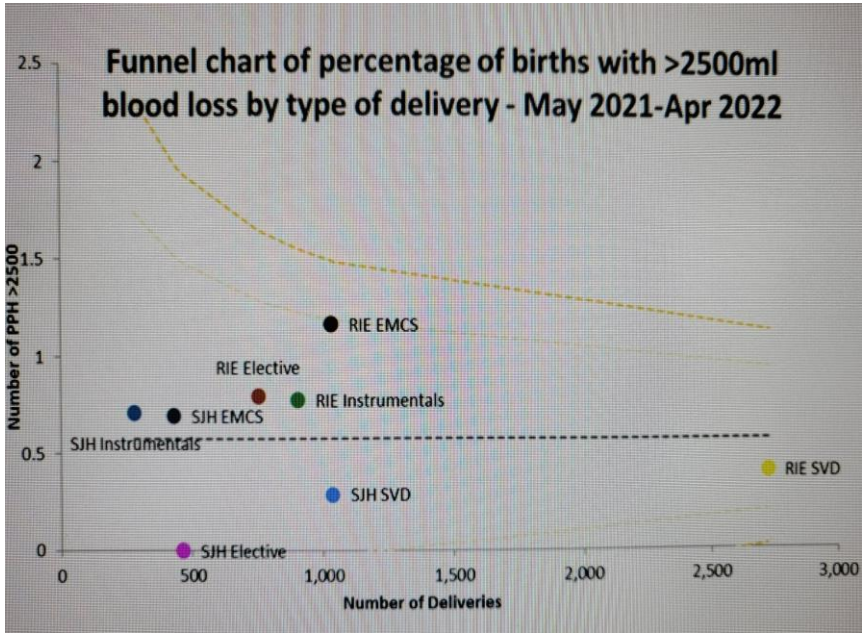
Non- Modifiable:

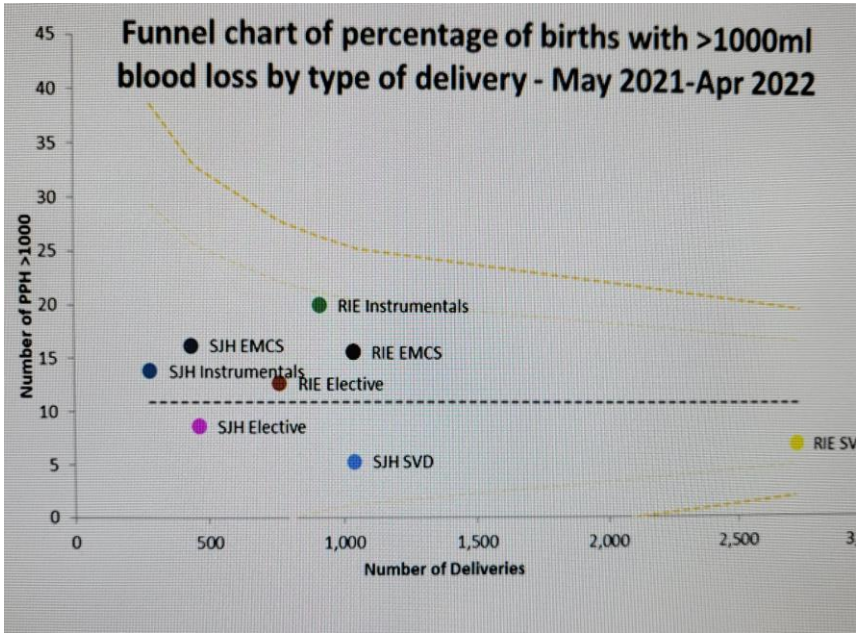
- Multiple pregnancies (OR 2.3-4.7);
- History of PPH (OR 3.3);
- Pregnancy-induced hypertension (OR 1.9-2.5)
- Macrosomia (OR 1.7 to 3.5)
- Chorioamnionitis (OR 2.5)

Modifiable:

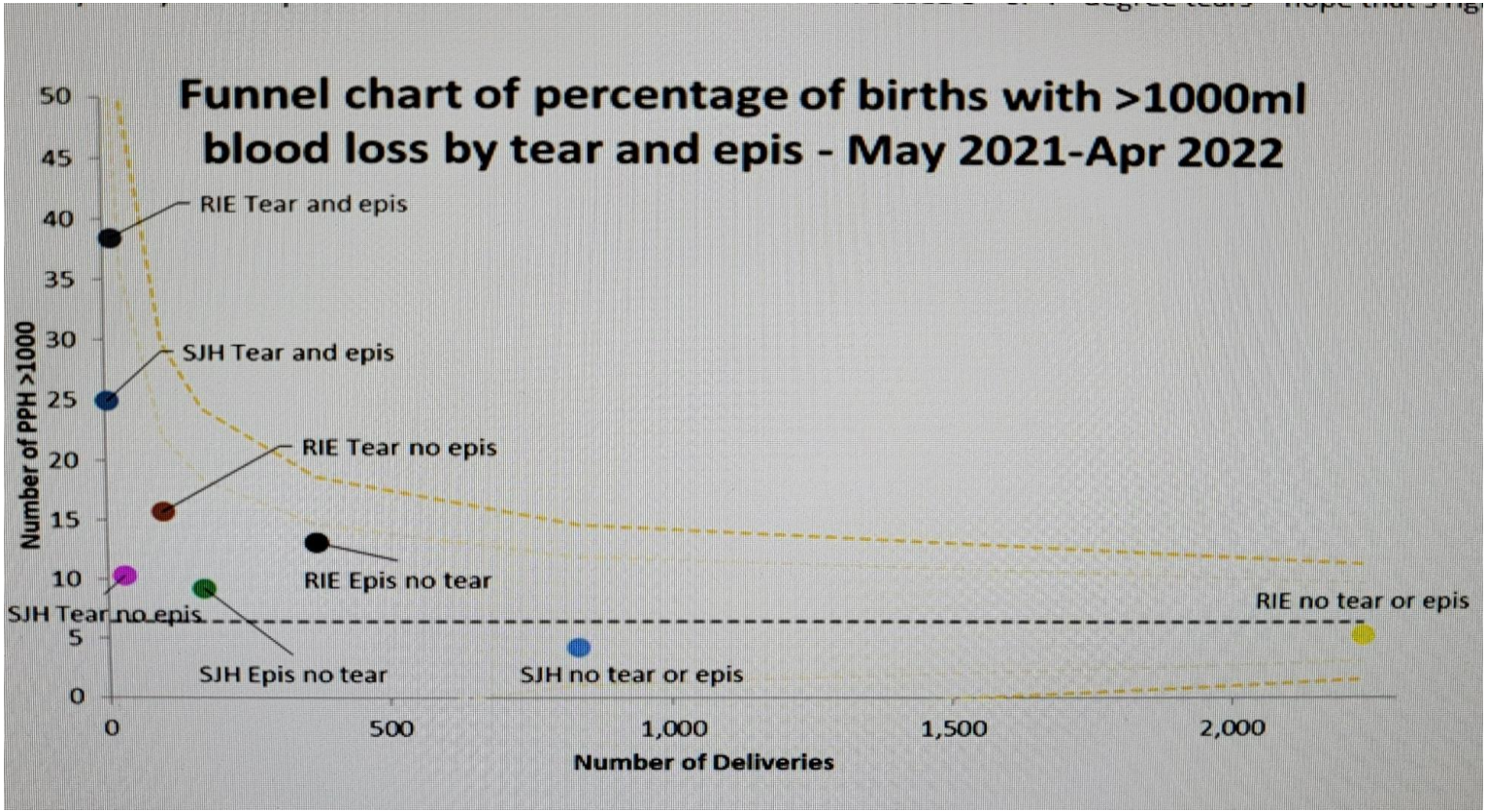
- Anemia in pregnancy
- Pre-labour caesarean section (OR 1.3-2.3)
- Induction of labour – Prostaglandins/Syntocinon
- Caesarean section during labour (OR 1.7-3.6)
- Operative vaginal delivery (OR 2.3)
- Perineal tears
- Episiotomy (OR 1.4 to 2.2)

NHS Lothian data





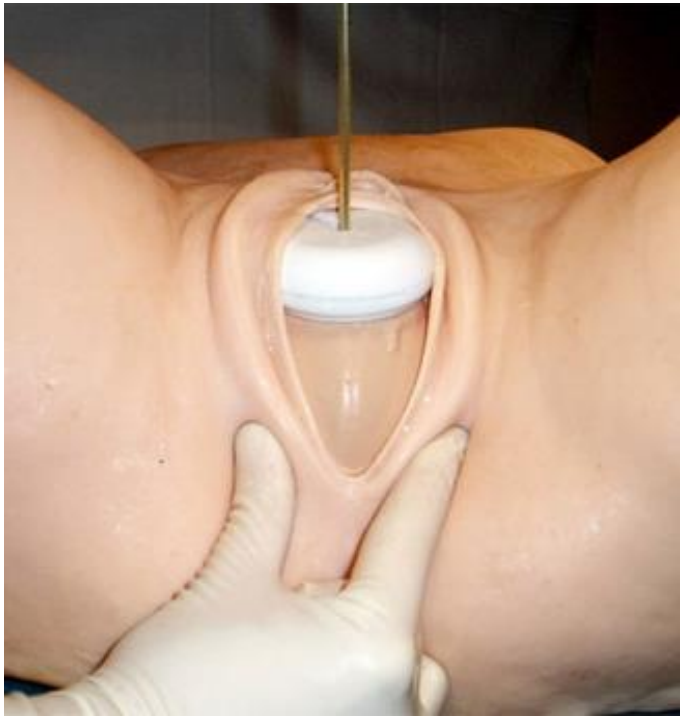
NHS Lothian data



RCOG Patient information leaflet

Tested and proven evidence-based care bundles to reduce third- and fourth-degree and perineal tear rates.

- Perineal massage antenatal(Evidence 1-)
- Warm compress in second stage (Evidence 1++) (50%)
- Communication and correct perineum support
- Episiotomy if required
- PV/PR after birth



Women's Healthcare Australasia - WHA CEC Perineal Protection Bundle

Physiological management of labour and third stage

- Mobilisation in labour
- Optimum positions at birth
- Breast feeding and Skin to skin immediately after birth – both vaginal and caesarean section.

Synergistic effect with stimulation of natural oxytocin with additional proven benefits:

- Reduce PPH
- Help with short and long term maternal and fetal adaptions
- Anxiolytic effects
- Increase pain threshold
- Reduce plasma cortisol and has antidepressant effects

Optimisation of Oxytocin Use

- Oxytocin is a peptide that mediates its action through the oxytocin receptor (OXTR). The OXTR undergoes rapid internalization in the setting of persistent agonist stimulation, which can limit the physiological actions of oxytocin.
- Prolonged oxytocin treatment leads to OXTR desensitization, thereby limiting further oxytocin-mediated contraction responses.
- Whether these molecular events lead to the clinical findings of dysfunctional labour patterns or uterine atony in the setting of prolonged oxytocin stimulation is unclear
- Excessive use of Oxytocin is associated with increased risk of severe postpartum haemorrhage. (OR: 1.57 (1.11-2.22)

Induction and Postpartum haemorrhage

Induction with cervical ripening	1.21 [0.97–1.51]	1.42 [1.04–1.94]
Induction with oxytocin	1.52 [1.19–1.93]	1. 57 [1.11–2.20]

Induction of labour: Independently associated with a 20 % higher risk of PPH and severe PPH in low-risk parturients. (Oxytocin and Prostaglandins)

OBSTETRICS

Changes in obstetrical practices and pregnancy outcomes following the ARRIVE trial

Laura C. Gilroy, MD; Huda B. Al-Kouatly, MD; Howard L. Minkoff, MD; Rodney A. McLaren Jr, MD

BACKGROUND: The ARRIVE trial demonstrated the benefit of induction of labor at 39 weeks gestation. Obstetrics departments across the United States faced the challenge of adapting clinical practice in light of these data while managing logistical constraints.

OBJECTIVE: To determine if there were changes in obstetrical practices and perinatal outcomes in the United States after the ARRIVE trial publication.

STUDY DESIGN: This was a population-based retrospective cohort study of low-risk, nulliparous women who initiated prenatal care by 12 weeks gestation with singleton, nonanomalous pregnancies delivering at ≥39 weeks. Data were obtained from the US Natality database. The pre-ARRIVE group were women who delivered between January 1, 2015 and

30.2%; adjusted odds ratio, 1.36 [1.36–1.37]) and deliver by 39+6 weeks of pregnancy (42.8% vs 39.9%; adjusted odds ratio, 1.14 [1.14–1.15]). The post-ARRIVE group had a significantly lower rate of cesarean delivery than the pre-ARRIVE group (27.3 % vs 27.9%; adjusted odds ratio, 0.94 [0.93–0.94]). Patients in the post-ARRIVE group were more likely to receive a blood transfusion (0.4% vs 0.3%; adjusted odds ratio, 1.43 [1.36–1.50]) and be admitted to medical intensive care unit (0.09% vs 0.08%; adjusted odds ratio, 1.20 [1.09–1.33]). Neonates in the post-ARRIVE group were more likely to need assisted ventilation at birth (3.5% vs 2.8%; adjusted odds ratio, 1.28 [1.26–1.30]) and >6 hours (0.6% vs 0.5%; adjusted odds ratio, 1.36 [1.31–1.41]). The neonates in the post-ARRIVE group

Tranexamic acid

- Recent Cochrane review of 10 randomised controlled trials (RCTs) reported that blood losses >400 mL or >500 mL and >1000 mL were less common in women who received tranexamic acid compared with placebo or no intervention (risk ratios 0.52 (95% confidence interval 0.42 to 0.63) and 0.40 (0.23 to 0.71), respectively)

- Cardiff and Some American state PPH prevention bundles have proposed tranexamic acid use with ongoing PPH along side 1st treatment dose of PPH after prophylaxis

Carbetocin (synthetic oxytocin analogue)

- Cochrane review of 11 RCTs concluded that use of carbetocin statistically significantly reduced the need for therapeutic uterotonics (risk ratio 0.62 (0.44 to 0.88) compared with oxytocin for women who underwent caesarean section but not for vaginal delivery.

- There was no robust evidence to suggest that carbetocin was better than oxytocin in reducing postpartum haemorrhage, and its cost effectiveness remains unclear

Summary – Reduction of PPH

- Optimisation of antenatal care – diet, exercise, anemia and perineal care
- Avoid unnecessary interventions
- Cautious and appropriate use of Induction and induction agents, oxytocin to reduce interventions
- Improve operative training/ techniques- instrumental and caesarean sections
- Reduce tears/ episiotomies; Suture ASAP with appropriate assistance
- Consider individualised prophylaxis of PPH and timing of tranexamic acid (research)
- Optimise 4 stage management of PPH.

PPH: An Anaesthetist's Perspective

Dr Catherine Collinson

Consultant Anaesthetist

NHS Lothian

Reducing Unnecessary Variance in PPH Mx

- OBS Cymru
  - national quality improvement project
  - aimed to reduce morbidity associated with PPH
  - introduced a care bundle of structured multi-professional team interventions into all 12 obstetric units in Wales.
- Clinically and statistically significant reductions in massive haemorrhage across Wales
  - 29% fall in the number of women progressing from moderate to massive PPH.
  - number of women exposed to RBC transfusion fell by 22%
  - the number of units of RBC transfused for PPH decreased by 26%.
- Work of the project is now embedded into everyday practice

Reducing Unnecessary Variance in PPH Mx

NHS Lothian

Healthcare Improvement Scotland

Scottish Patient Safety Programme

Bell *et al. BMC Pregnancy and Childbirth* (2021) 21:377
https://doi.org/10.1186/s12884-021-03853-y

BMC Pregnancy and Childbirth

RESEARCH ARTICLE Open Access

Reduction in massive postpartum haemorrhage and red blood cell transfusion during a national quality improvement project, Obstetric Bleeding Strategy for Wales, OBS Cymru: an observational study

Sarah F. Bell[1†], Rachel E. Collis[1†], Philip Pallmann[2], Christopher Bailey[3], Kathryn James[1], Miriam John[4], Kevin Kelly[3], Thomas Kitchen[1], Cerys Scarr[5], Adam Watkins[6], Tracey Edey[7], Elinore Macgillivray[6], Kathryn Greaves[8], Ingrid Volikas[3], James Tozer[9], Niladri Sengupta[10], Iolo Roberts[3], Claire Francis[5] and Peter W. Collins[11*]

Abstract

Background: Postpartum haemorrhage (PPH) is a major cause of maternal morbidity and mortality and its incidence is increasing in many countries despite management guidelines. A national quality improvement programme called the Obstetric Bleeding Strategy for Wales (OBS Cymru) was introduced in all obstetric units in Wales. The aim was to reduce moderate PPH (1000 mL) progressing to massive PPH (≥ 2500 mL) and the need for red cell transfusion.

Methods: A PPH care bundle was introduced into all 12 obstetric units in Wales included all women giving birth in 2017 and 2018 ($n = 61{,}094$). The care bundle prompted: universal risk assessment, quantitative measurement of blood loss after all deliveries (as opposed to visual estimation), structured escalation to senior clinicians and point-of-care viscoelastometric-guided early fibrinogen replacement. Data were submitted by each obstetric unit to a national database. Outcome measures were incidence of massive PPH (≥ 2500 mL) and red cell transfusion. Analysis was performed using linear regression of the all Wales monthly data.

OBS Cymru Paperwork

Date/Time	Documentation of concerns, deviations & other information

PPH Post-event Checklist

WHO sign-out completed? *Yes / No / NA (Patient did not require care in theatre)*
Have all drugs been prescribed and signed for? *Yes / No / NA*

Post-event Re-bleed Risk Assessment
Syntocinon infusion running or required? *Yes / No* Time expected to finish ___:___
Vaginal pack insitu? *Yes / No* Planned removal time ___:___
Bakri Balloon insitu? *Yes / No* Planned removal time ___:___
Can NSAID be given? *Yes / No / Not yet*
Thromboprophylaxis plan: LMWH *Yes / No* Time of first dose: ___:___
TEDS *Yes / No*

Post-event Monitoring Requirements
Level of post-event care required *(circle applicable)* Level 1 Level 2 *(HDU)* Level 3 *(ICU)*
Post-op bloods *(FBC/Coag/U&E)* to be taken at *Time:* ___:___ Plan to transfuse if Hb < _____
PV loss monitoring required? *Yes / No* Frequency of monitoring _____
Urine output monitoring required? *Yes / No* Frequency of monitoring _____

MOH stand down *Yes / No / NA*
Any blood/products to return to blood bank? *Yes / No / NA*
If the MOH protocol was activated before stage 3 *or* not activated at stage 3 then please detail reason(s) why:

Does a Datix form need completing? *Yes / No*
If yes record:
- Datix form number _____
- Person responsible for completing Datix form _____

Does the case need **highlighting to OBS Cymru Champion**? *Yes / No* *(triggers include MBL ≥1000ml, ROTEM performed, blood products given)*

Has the event been discussed with the patient? *Yes / No*
Has **written information** been provided to the patient? *Yes / No*
Does a **formal team debrief** need to take place? *Yes / No*

Completed by: _____ *(Please print)* *Date:* _____ *Time:* __:__ *Location* _____

Working together to reduce harm from Postpartum Haemorrhage

OBSCYMRU Obstetric Bleeding Strategy for Wales 1000 LIVES A I O FYWYDAU

Postpartum Haemorrhage Management Checklist

Designed to be used in maternity settings. This is not a comprehensive guideline but a checklist to facilitate an appropriately escalating multidisciplinary team approach to postpartum haemorrhage and as an aid to documentation.

Patient addressograph

Stage 0

PPH Risk Assessment
Complete for all women on admission (including LSCS)

Most recent Hb = _____ Plt =_____ *Result Date: __/__/__*

PPH Risk Assessment *Tick if applicable*

Antenatal - "Increased risk" *if any of the following are met:*	
Anaemia or bleeding disorder (Hb <95, plt < 100)	
BMI <18 or >35 or Booking Weight <55Kg *If low weight/BMI – do you need to calculate the circulating blood volume?*	
≥ 5 previous vaginal births	
Previous uterine surgery	
Previous Postpartum Haemorrhage >1L	
Multiple pregnancy or estimated fetal weight >4.5kg	
Abnormal placental implantation	
Polyhydramnios	
Known Abruption or Antepartum Haemorrhage	

Please make an on-going assessment of the following risk factors throughout labour and delivery

Perinatal - "Increased risk" *if any of the following are met:*	
Suspicion of chorioamnionitis / Sepsis	
Labour augmented with syntocinon	
Prolonged labour	
Instrumental delivery	
Retained products of conception	

Plan to measure & record all blood loss
(for pool deliveries estimation may be required)

Act
If woman at increased risk is:
She suitable for EI blood or 2 units Xmatch? *Yes / No*
IV access required? *(at least 16 Gauge)* *Yes / No*

Treat
Planned an active 3rd stage management? *Yes / No*

Completed by: _____ *(Please print)*
Date: _____ *Time:* __:__ *Location* _____

Stage 1

>500ml ongoing blood loss
SVD & Instrumental deliveries

Get Help *Time* *Initial*
Notify midwife in charge
Name: _____ time arrived: __:__
Request HCA to assist with measurement

Other staff present	***Designation***	***Time Arrived***	***Initial***

Act *Performed by* *Time* *Initial*

Measure Blood Loss *(cumulative measurement)*			
Record observations on MEOWS *every 10 min*			
IV access *at least 16 Gauge*			

What is the cause of bleeding?
Tone, Trauma, Tissue, Thrombin *(please circle cause(s))*

Treat *Performed by* *Time* *Initial*

Uterine massage			
Give uterotonics *(record on over page & prescribe)*			
Inspect genital tract			
Empty bladder			
Check placenta & membranes			
Bimanual compression			

If bleeding stopped:
- **Please record MBL here _____ ml**

Completed by: _____ *(Please print)*
Date: _____ *Time:* __:__ *Location* _____

Bell SF, *et al. BMJ Open Qual* 2020; 9:e000854. doi: 10.1136/bmjoq-2019-000854

OBS Cymru Paperwork

Stage 2 >1000mL blood loss *OR* clinical concern (eg. Abruption or concealed bleeding) *OR* abnormal vital signs RR > 30, HR ≥120, BP ≤90/40mmHg, SpO2<95%

Progress to here from stage 1 if SVD / instrumental delivery. Re-start here after stage 0 if LSCS

Get Help

		Time arrived:	Other staff:		Time arrived:
MW in charge	Name:	time: __:__	Name:	Designation:	time: __:__
Obstetrician	Name:	time: __:__	Name:	Designation:	time: __:__
Anaesthetist	Name:	time: __:__	Name:	Designation:	time: __:__
HCA	Name:	time: __:__			

Act

	Performed by	Time	Initial
Measure & record cumulative blood loss			
Record observations on MEOWS *every 10 min*			
2nd IV access (*at least 16 Gauge*) & fluid bolus			
Take bloods — Point of care tests - ROTEM, venous lactate, venous Hb; Lab test - FBC, Coag, XMatch, U&E			

Initial VBG Test Results			Initial ROTEM Test Results	
Time:	*Hb =*	*Lactate =*	*FIBTEM A5 =* (*Aim ≥ 12mm*)	*EXTEM CT =* (*Aim < 75 sec*)

Review causes *(circle all identified)* Tone / Trauma / Tissue / Thrombin

Treat

	Performed by	Time	Initial		Performed by	Time	Initial
Review uterotonics *(record on page 3)*				Empty bladder			
Give tranexamic acid (*1g IV, if no CI's*)				Foley catheter inserted			
Bimanual compression				Inspect genital tract			
Consider ranitidine				Repair genital tract			
				Check placenta & membranes			

If bleeding stopped ensure PPH post-event checklist completed & Management plan written in notes

Completed by: _____ *(Please print)* *Date:* _____ *Time:* __:__ *Location* _____

If bleeding *ongoing* transfer patient to theatre *time arrived:* ___:___

Stage 3 >1500mL blood loss *OR* ongoing clinical concern

Act

	Performed by	Time	Initial
Communicate current measured blood loss to team			
Activate MOH protocol			
Inform Obstetric and Anaesthetic consultants			
Order blood and coagulation products as per MOH and ROTEM protocol - *Do you need to discuss the case with a haematologist?*			

Review causes *(circle all identified)* Tone / Trauma / Tissue / Thrombin

Treat

	Performed by	Time	Initial
Review uterotonics *(Record on page 3)*			
Consider repeat tranexamic acid if bleeding ongoing (*1g IV, if no CI's*)			
Consider advanced surgical techniques *(Document on page 4)*			

Additional Staff Present: **Time arrived:** **Time arrived:**

Name: _____ *Designation:* _____ *time:* __:__ *Name:* _____ *Designation:* _____ *time:* __:__

Name: _____ *Designation:* _____ *time:* __:__ *Name:* _____ *Designation:* _____ *time:* __:__

Once bleeding stopped ensure PPH post-event checklist completed & Management plan written in notes

Completed by: _____ *(Please print)* *Date:* _____ *Time:* __:__ *Location* _____

Page 2

Working together to reduce harm from Postpartum Haemorrhage

Record of Uterotonics used

Please record all uterotonics used here and prescribe on medication or anaesthetic chart

Drug	Dose (*please circle route*)	Time	Drug	Dose	Time
Oxytocin	10 units IM *or* 5 units IV		Carboprost (*caution in asthma*)	250microg IM (*repeat up to every 15min*)	
Other			Carboprost	250microg IM	
Ergometrine (*caution in HTN/PET*)	500 microg IV or IM		Carboprost	250microg IM	
Syntometrine (*caution in HTN/PET*)	500 microg/5 units IM or IV		Carboprost	250microg IM	
Oxytocin INF	40 units over 4hr IV		Carboprost	250microg IM	
Other			Carboprost	250microg IM	
Misoprostol			Carboprost	250microg IM	
Misoprostol			Other		

Blood & Blood products transfused

Time	Product given	Time	Product given

Measured cumulative blood loss

Time	Blood Loss (ml)	Running Total (ml)

Total Measured Blood Loss = _____ml

Record of further blood test results

(Please do not duplicate records of blood results recorded in stage 2)

	Further VBG Test Results		Further ROTEM Test Results	
Time Taken	*Hb*	*Lactate*	*FBTEM A5* (*Aim ≥ 12mm*)	*EXTEM CT* (*Aim < 75 sec*)

Page 3

Bell SF, *et al. BMJ Open Qual* 2020; 9:e000854. doi: 10.1136/bmjoq-2019-000854

OBS Cymru:
4 pillars of PPH management

- Risk assessment
- Early identification by means of measuring blood loss
- Multidisciplinary team working/ escalation
- ROTEM point of care testing

Which interventions mattered?

Intervention	Importance to practice change, n = 29 (1- not important, 5- most important) Median (IQR)
Quantitative measurement of blood loss	5 (4–5)
Team working	5 (3–5)
Point-of-care testing of coagulation	5 (3–5)
Paperwork proforma	4 (1–4)

'proactive rather than reactive'
'consistent management'
'communication and team-working'.

Measuring blood loss

- Quantitative measurement of blood loss alone does not improve outcomes
- BUT, when integrated into a care bundle, real time accurate knowledge of blood loss acts as an enabler to prompt teams to escalate care according to guidelines
  - Culture change in theatre verbalising measured blood loss rather than just writing it on the board
  - PPH trolley with scales
  - Suction in the pouch and switched on for forceps deliveries in LW rooms

"Ensure that the response to obstetric haemorrhage is tailored to the proportionate blood loss as a percentage of circulating blood volume based on a woman's weight"

MBRRACE

NHS Lothian

Healthcare Improvement Scotland

Every Person Every Time — Scottish Patient Safety Programme

Blood loss should be considered in the context of maternal blood volume

Women with a smaller blood volume will decompensate more rapidly from a given quantity of bleeding.

Inexact science, 100ml/kg at term

Increase awareness by whole theatre team.

Talk about estimated circulating volume doing WHO checklist, write 10/ 20% of this and patient's starting Hb on the board

Empowered to suggest a MOH call at that threshold

Maximum Allowable Blood Loss Estimation Calculator for Maternal Haemorrhage

MABLE-MH

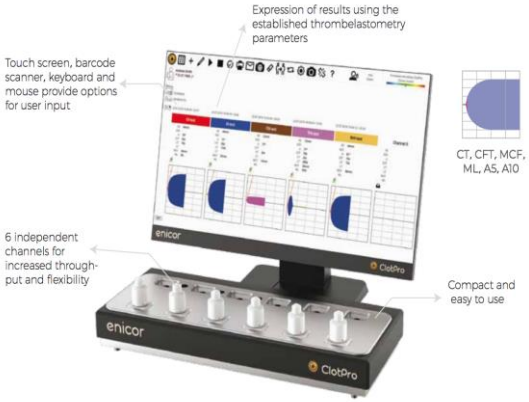
- Whilst this approach is more tailored than relying on volume of blood loss alone, it does not take into account the haemoglobin concentration prior to haemorrhage
- Dr Andy Clark from Crosshouse and a team of co-investigators across Scotland are aiming to collect data on 2000 women undergoing caesarean section, this is likely to be taking place in your hospital at present.
  - primary objective: develop and test a linear regression model to accurately calculate an allowable blood loss to reach a transfusion trigger
  - secondary objective: assess accuracy of other theoretical approaches to allowable blood loss calculations proposed in literature

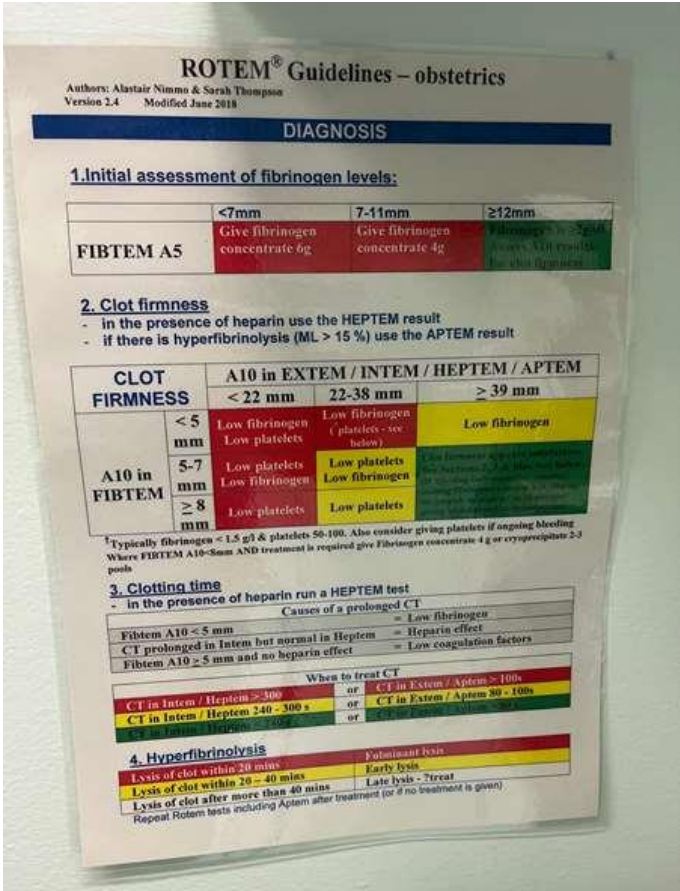
"Coagulation factors should be administered promptly"

MBRRACE

- Pregnancy is a prothrombotic state
- For a given blood loss, we see coagulopathy less frequently in PPH than other major haemorrhages
- Certain PPH aetiologies where coagulopathy is much more likely e.g. abruption
- Important that we identify and correct coagulopathy
- Coagulation screen lab processing times limit its utility in the acute setting

Near patient/ point of care coagulation testing





ROTEM® Guidelines – obstetrics

Authors: Alastair Nimmo & Sarah Thompson
Version 2.4 Modified June 2018

DIAGNOSIS

1.Initial assessment of fibrinogen levels:

	<7mm	7-11mm	≥12mm
FIBTEM A5	Give fibrinogen concentrate 6g	Give fibrinogen concentrate 4g	

2. Clot firmness
- in the presence of heparin use the HEPTEM result
- if there is hyperfibrinolysis (ML > 15 %) use the APTEM result

CLOT FIRMNESS		A10 in EXTEM / INTEM / HEPTEM / APTEM		
		< 22 mm	22-38 mm	≥ 39 mm
A10 in FIBTEM	< 5 mm	Low fibrinogen Low platelets	Low fibrinogen (platelets - see below)	Low fibrinogen
	5-7 mm	Low platelets Low fibrinogen	Low platelets Low fibrinogen	
	≥ 8 mm	Low platelets	Low platelets	

†Typically fibrinogen < 1.5 g/l & platelets 50-100. Also consider giving platelets if ongoing bleeding
Where FIBTEM A10<5mm AND treatment is required give Fibrinogen concentrate 4 g or cryoprecipitate 2-3 pools

3. Clotting time
- in the presence of heparin run a HEPTEM test

Causes of a prolonged CT	
Fibtem A10 < 5 mm	= Low fibrinogen
CT prolonged in Intem but normal in Heptem	= Heparin effect
Fibtem A10 ≥ 5 mm and no heparin effect	= Low coagulation factors

When to treat CT		
CT in Intem / Heptem > 300 s	or	CT in Extem / Aptem > 100s
CT in Intem / Heptem 240 - 300 s	or	CT in Extem / Aptem 80 - 100s
CT in Extem / Heptem > 100 s	or	CT in Extem / Aptem 70 - 80s

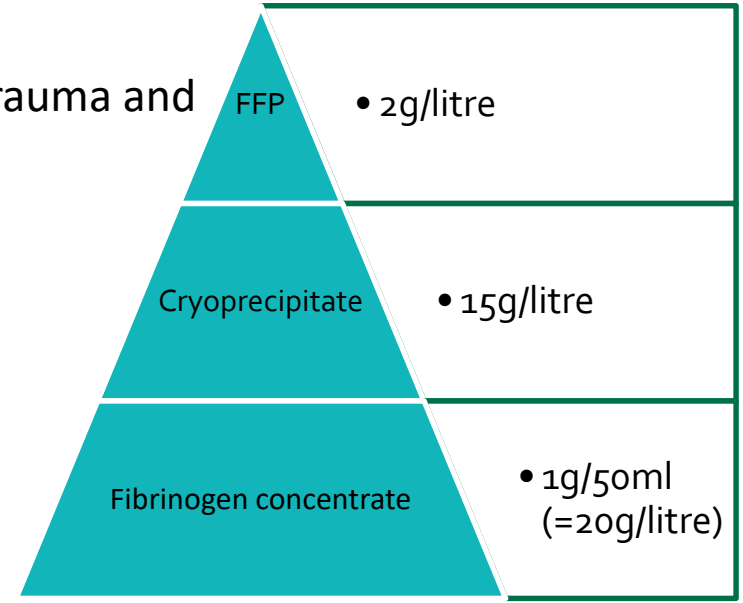
4. Hyperfibrinolysis

Lysis of clot within 20 mins	Fulminant lysis
Lysis of clot within 20 – 40 mins	Early lysis
Lysis of clot after more than 40 mins	Late lysis - ?treat

Repeat Rotem tests including Aptem after treatment (or if no treatment is given)

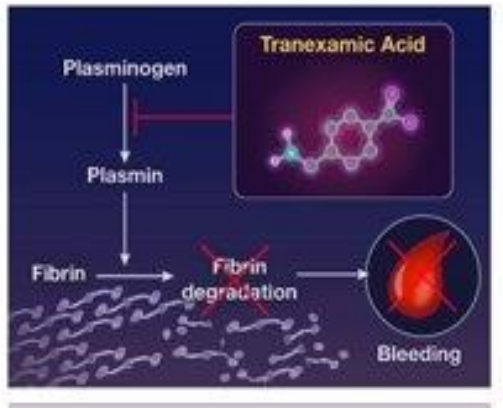
Importance of fibrinogen

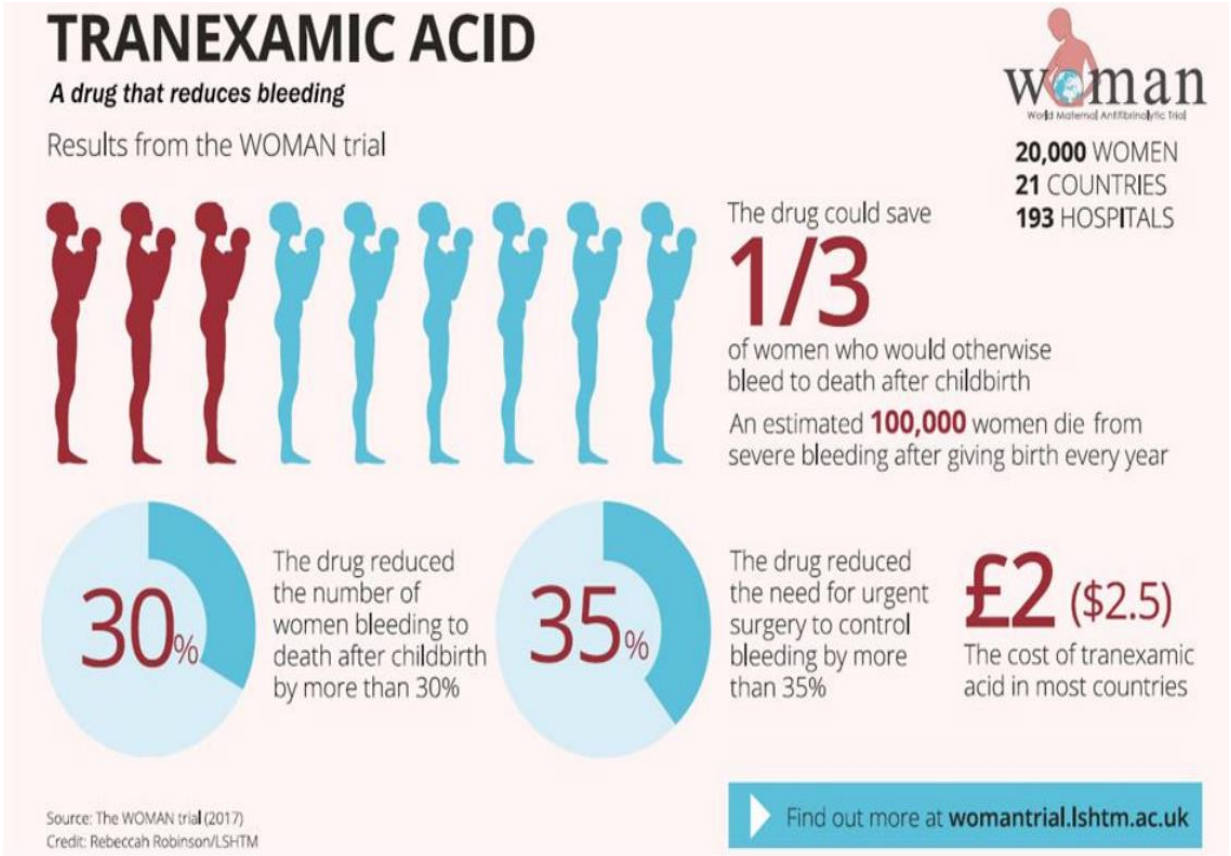
- The ability to form a clot depends on fibrinogen.
- Plasma fibrinogen concentration in pregnancy is supra-normal 4-6g/l (2-4 g/l non pregnant)
- Low serum fibrinogen is a strong predictor of life-threatening bleeding in both trauma and PPH
- Fibrinogen declines rapidly during bleeding



Tranexamic Acid

- Tranexamic acid was invented by husband and wife research team Shosuke and Utako Okamoto working in Japan in the 1950s and early 1960s.
- Their objective was to identify a drug that would reduce maternal death from post-partum haemorrhage.

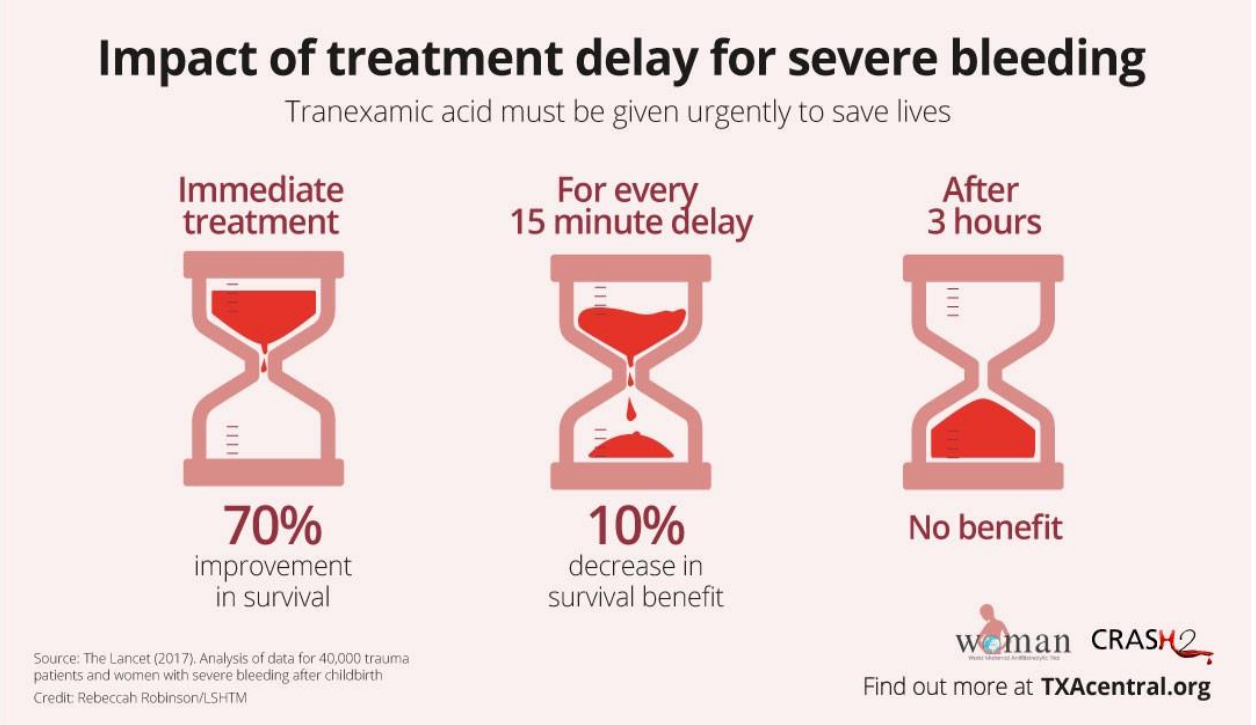




WOMAN Trial

BUT It is just one part of PPH management...
Early resuscitation, escalation, source control and management of coagulopathy remain the most important interventions

Does timing matter?



By reducing bleeding, tranexamic acid has the potential to prevent the hypoxia and acidosis that accompanies severe bleeding, but it must be given before tissue damage is irreversible.

Does TxA have a role in PPH prevention?

- Prophylactic administration of a uterotonic agent is recommended to reduce the risk of postpartum hemorrhage.
- Tranexamic acid has emerged in the past decade as another candidate drug to prevent blood loss after childbirth.
- Effective treatment with no significant increase in thrombosis, naturally started to think about using it to prevent PPH.

- TRAAP study: Tranexamic Acid for the Prevention of Blood Loss after Vaginal Delivery
- Among women with vaginal delivery who received prophylactic oxytocin, the use of tranexamic acid did not result in a rate of postpartum hemorrhage of at least 500 ml that was significantly lower than the rate with placebo.
- TRAAP2 Study: Tranexamic Acid for the Prevention of Blood Loss after Cesarean Delivery
- Among women who underwent cesarean delivery and received prophylactic uterotonic agents, tranexamic acid treatment resulted in a significantly lower incidence of calculated estimated blood loss greater than 1000 ml or red-cell transfusion by day 2 than placebo, but it did not result in a lower incidence of hemorrhage-related secondary clinical outcomes. Potential increase in the rate of thromboembolism.

WOMAN-2 trial

- WOMAN-2 trial is now underway to see if giving tranexamic acid can prevent PPH and other severe outcomes in women with moderate and severe anaemia.
  - 1g tranexamic acid within 15 minutes of cord clamping
  - Looking to recruit 10 000 patients mainly in Africa and Asia. (8500)
- Over one-third of pregnant women in the world are anaemic and many are severely anaemic.
- More susceptible to uterine atony due to impaired oxygen transport to the uterus

Key Resources

ihub.scot/spsp

ihub.scot/TheEoSC

@ihubscot #spsp247 #TheEoSC

@mcqicspsp

his.pspcontact@nhs.scot

his.mcqic@nhs.scot

Thank you


EVERY PERSON
EVERY TIME
SCOTTISH
PATIENT
SAFETY
PROGRAMME