

Optimising Postpartum Haemorrhage (PPH) Management at a High Risk Obstetric Centre: A multidisciplinary approach to embed OBSCymru principles

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INTRODUCTION

We present a multifaceted approach to optimising post-partum haemorrhage (PPH) management at a tertiary centre for complex pregnancies including placenta accreta spectrum (PAS). In 2023, our institution was placed in the top quartile for major PPH >1500ml (national average 3% versus our institution 4.9%). This prompted the formation of a multidisciplinary PPH working group to identify local challenges and system problems to drive improvements in processes. A range of measures were implemented including co-location of Fibrinogen Concentrate on the delivery suite, TEG training of all staff with an increase in usage, earlier escalation of evolving haemorrhage and improvements in blood loss measurement. The OBSCymru¹ work informed guidance updates with a unified drive to implement the 4 stage approach to PPH Management. Changes were publicised through PPH awareness weeks. Additional education and training drives emphasised the key principles of early escalation, blood loss measurement and involvement of the senior MDT. Analysis of major obstetric haemorrhage data (MOH defined as blood loss over 1500ml) for 2024 Vs 2023 showed reduction in blood loss, blood component transfusion, and critical care (ICU) admission for PPH. Usage of Tranexamic Acid (TXA), thromboelastography (TEG) and Fibrinogen concentrate (FC) increased, with use of TEG guiding targeted transfusion .

METHOD

This Quality Improvement Project was registered with the Trust Clinical Audit Department

We developed a PPH Working Group which consisted of key stakeholders from obstetrics, anaesthesia, midwifery, haematology and transfusion. There was consensus across this group that the ObsCymru 4 Stage Approach to PPH Management should be adopted. In addition to updating PPH and Risk Assessment Protocols alongside Transfusion Guidelines for PPH, the PPH working group identified local challenges to implementation including;

- Inconsistent escalation of evolving PPH
- Varying accuracy of blood loss measurement : In Theatre and Delivery Rooms
- Access and unfamiliarity with Point of Care Coagulation Testing: TEG
- Inconsistent and delayed access to Fibrinogen concentrate at the point of need.
- Staff culture and fatigue towards PPH at a high risk bleed centre Following the identification of these factors, a series of coordinated, multifaceted measures were implemented between October 2023 – December 2024 as demonstrated below

IMPLEMENTING THE OBSCYMRU 4 STAGE APPROACH TO PPH MANAGEMENT *(Developed alongside MDT PPH Working Party)*

Stage 0: Risk Assessment

Stage 1: 500ml Blood Loss

Stage 2: 1000ml Blood Loss

Stage 3: 1500ml Blood Loss

PPH Guideline + Risk Assessment Protocols modified to incorporate Key ObsCymru principles
alongside midwifery and obstetrician teams

PPH Awareness Weeks
(2 per year)
to promote change and educate MDT

Trust Transfusion Guideline for Major Obstetric Haemorrhage adapted to align with ObsCymru Principles

SPECIFIC FOCUS AREAS

MIDWIFE EMPOWERMENT
Protocolised
Senior MDT presence at
500ml in Delivery Room
1L in Theatre

USE OF POINT OF CARE TESTING: TEG
Developed alongside Haematology and Blood Transfusion

IMPROVING BLOOD LOSS MEASUREMENT
Developed alongside Midwifery and Theatre Teams

Protocolised Early Point of Care Testing:
**Perform TEG at 1L Blood Loss
Repeat to ascertain trends**

Whiteboards available in each room to document MBL

2 persons at delivery to ensure prompt weighing of blood loss

Scaled Blood Collection Bags

Theatre Training optimal drape positioning

TRANEXAMIC ACID
Developed alongside Midwifery and Theatre Teams

TEG access and training provided to all delivery suite MDT including non anaesthetists

FIBRINOGEN CONCENTRATE CO-LOCATION
Developed alongside Haematology + Blood Transfusion

Delivery Suite and Birth Centre
In Situ Simulation

Baseline time in motion study: Non-bleeding delivery suite patient for fibrinogen concentrate (congenital hypodisfibrinogemia)

Blood bank Fibrinogen to Delivery Suite: 30 minutes
Fibrinogen constituted and given: 40 minutes
Total time Request to Administration: **70 minutes**

Fibrinogen Concentrate Co-Location Trial Agreed

**Criteria for Fibrinogen Concentrate Use on Delivery Suite
DEVELOPED WITH HAEMATOLOGY + BLOOD BANK**
Ongoing MOH with Haemodynamic Instability when appropriate PPH management has already been instigated e.g. TXA / Uterotonics / RBC / Blood Products
OR
TEG: CFF A10 ≤17mm (Low functional fibrinogen)
OR
Lab Fibrinogen <2g/L
OR
Blood Loss >3L and Ongoing (Presumed deficiency)

Obstetric Specific Guidance on Fibrinogen Concentrate Dosage in PPH
TEG : CFF A10 10-17mm Give 4g
TEG: CFF A10 >10mm Give 6g

Fibrinogen Concentrate reconstitution training provided

Ongoing usage audit to ensure appropriate use without haem approval

TXA 1g at 500ml Blood Loss
Repeated at 30min if ongoing bleeding

Fibrinogen Concentrate: 'Decision to Give' to Administration Time: If decision time not recorded, time of birth used as surrogate for start of bleeding
Time of Birth → Time Administered (minutes):
Mean 160
Median 79
Range 62-420

Fibrinogen Concentrate Use
19g (4 cases)
98g (16 cases)

Midwifery Education and Training to empower and increase midwifery confidence in independent administration

Our results demonstrate positive change in PPH escalation and management alongside more appropriate use of TEG, fibrinogen concentrate and blood products despite an increased high risk caseload. The trial of fibrinogen concentrate co-location on labour ward has been a success; with appropriate use and patient benefit demonstrated. The reduction in blood product use and increased RBC:FFP ratio reflects earlier control of PPH and alongside increased TEG usage, a more individualised use of the appropriate blood product. This is further demonstrated by the reduction in FFP usage and increase in appropriate fibrinogen concentrate use. Furthermore, our local "Pack B" Product Release no longer automatically defrosts cryoprecipitate during PPH Pack B request, to minimise wastage. Our local findings mirror the wider ObsCymru QI findings of reduced product usage and improved outcomes, demonstrating the impact of multiple small improvements and the value of close MDT working relationships with senior MDT 'buy-in' to make a measurable impact on patient outcomes.

RESULTS

We observed an increase in MOH Activations, TEG Usage and FC Usage. Alongside this, there was a 34% reduction in blood component transfusion in MOH, with the biggest reduction seen in cryoprecipitate and FFP usage. The pRBC:FFP ratio increased, which may indicate more targeted transfusion of coagulation products. We suggest that earlier escalation, increased TEG use and immediate availability of FC at the point of need has facilitated this. These improvements have occurred despite a 43% increase in PAS cases during 2024.

Year	2023 (Total 4163 Births)	2024 (Total 3892 Births)	% Change
MOH (>1.5L) "2222" Activations	61	79	+29.5%
Mean EBL	2955 (SD 1703)	2771 (SD 1935)	-6%
Median EBL	2400	2200	-8.3%
% Transfused of Issued Blood Components in MOH			
pRBC	50	44	-12%
Platelets	90	78	-13%
FFP	86	48	-44%
Cryoprecipitate	79	31	-60%
pRBC:FFP Ratio	2.75:1	5:1	
ICU admission for PPH reasons (total LW to ICU admissions)	4 (8)	2 (5)	-50%
TEG Use (total samples run)	930	1580	+58%
Fibrinogen Concentrate: 'Decision to Give' to Administration Time: If decision time not recorded, time of birth used as surrogate for start of bleeding Time of Birth → Time Administered (minutes):			
Mean	160	28	-82%
Median	79	28	-64.5%
Range	62-420	0-57	
Fibrinogen Concentrate Use	19g (4 cases)	98g (16 cases)	

DISCUSSION

Our results demonstrate positive change in PPH escalation and management alongside more appropriate use of TEG, fibrinogen concentrate and blood products despite an increased high risk caseload. The trial of fibrinogen concentrate co-location on labour ward has been a success; with appropriate use and patient benefit demonstrated. The reduction in blood product use and increased RBC:FFP ratio reflects earlier control of PPH and alongside increased TEG usage, a more individualised use of the appropriate blood product. This is further demonstrated by the reduction in FFP usage and increase in appropriate fibrinogen concentrate use. Furthermore, our local "Pack B" Product Release no longer automatically defrosts cryoprecipitate during PPH Pack B request, to minimise wastage. Our local findings mirror the wider ObsCymru QI findings of reduced product usage and improved outcomes, demonstrating the impact of multiple small improvements and the value of close MDT working relationships with senior MDT 'buy-in' to make a measurable impact on patient outcomes.

REFERENCES

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