



**King's College Hospital**  
NHS Foundation Trust

Princess Royal University Hospital  
King's College Hospital NHS Foundation Trust

Major post-partum haemorrhage re-audit  
and review of current practice

Bromley Health Scrutiny Sub-Committee submission – July 2024

## 1. Introduction

Post-partum haemorrhage (PPH) is the most common complication of childbirth, and it is defined as the loss of 500ml or more of blood from the genital tract within 24 hours of the birth of a baby. PPH is classified as minor (500-100ml) and major (>1000mls). PPH can be divided into moderate (1000-2000ml) and severe (>2000ml).

Obstetric haemorrhage continues to be one of the major causes of maternal mortality in the UK. In 2019-2021, according to the MBRRACE-UK report, haemorrhage was the second direct cause of maternal mortality, with 17 maternal deaths. This represents an overall mortality rate of 0.80 per 100,000 maternities (95% CI 0.48-1.27), an increase from the previous triennium. Twelve women died (67%) after a birth by caesarean section.

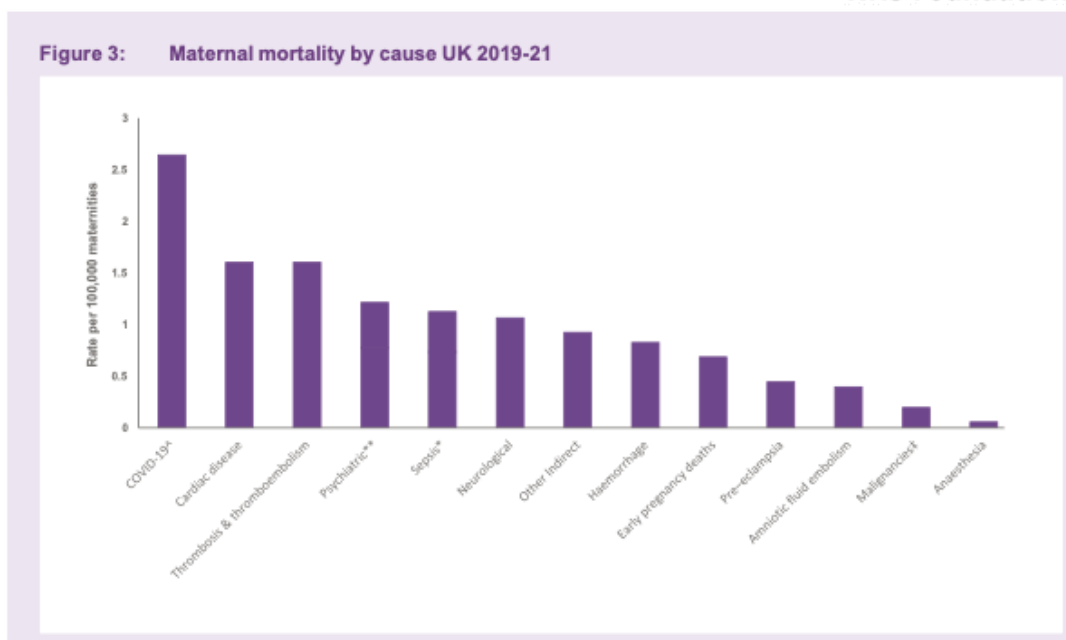
**Table 1: Direct deaths by type of obstetric haemorrhage 1994-2021**

Time period	Placental Abruption	Placenta Praevia / accreta	Postpartum haemorrhage		Uterine inversion	Total deaths from haemorrhage	Direct haemorrhage death rate per 100,000 maternities	
			Atony	Genital Tract Trauma			Rate	95% Confidence Interval (CI)
1994-6	4	3	5	5	0	17	0.77	0.45-1.24
1997-99	3	3	1	2	0	9	0.42	0.19-0.80
2000-2	3	4	10	1	0	18	0.9	0.53-1.42
2003-5	2	3	9	3	0	17	0.8	0.47-1.29
2006-8	2	2	3+1	(0/1)	1	9	0.39	0.18-0.75
2009-12†	2	1	7	7	0	17	0.49	0.29-0.78
2013-15†	3	9	9	1	0	22	0.88	0.55 - 1.33
2016-18†	3	3	2	4	2	14	0.58	0.32 – 0.97
2019-21†	4	6*	4	4	0	18	0.80	0.48 – 1.27

†Figures for UK and Ireland. All other figures are UK only.

\*2 placenta praevia alone, 4 accreta/increta/percreta

Saving Lives, Improving Mother's Care. State of the National Themed Report. MBRRACE-UK. Mothers and Babies: Reducing Risk through Audits and Confidential Enquires across the UK. October 2023.



The previous audit showed an increase in major obstetric haemorrhages (MOH) (blood loss >1500ml) at the rate of 5.5%, which was above the benchmark (3.3%) in the maternity department of Princess Royal University Hospital. Several measures were taken to address this issue, such as reinstating PPH practical training sessions in local PROMPT courses and monitoring annual attendance by all multi-professional team members.

The decision has been made to conduct a retrospective re-audit examining the data on MOH cases at PRUH over the last two years and, after analysing the data, make recommendations on reducing rates of major PPH.

## 2. Aims and objectives

The aim is to examine the causes of MOH and associations, which would explain the reasons for the increase in its rates. The analysis of subgroups (vaginal deliveries, caesarean sections, instrumental deliveries) will be performed to examine the rates and compare them to data from the previous audit.

## 3. Methods

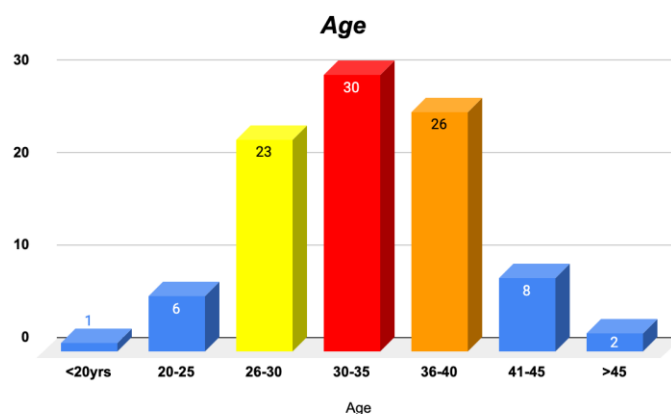
It is a retrospective audit of the data on all cases of women who delivered babies at PRUH from 1<sup>st</sup> January 2023 to 31<sup>st</sup> September 2023. Inclusion criteria were all cases with blood loss of  $\geq 1500$  ml, a cross-site definition of major PPH at maternity departments of King's College Hospital NHS Foundation Trust, including the PRUH. The data was generated using the local electronic record system Badgernet, which used an audit tool spreadsheet with Microsoft Excel. The data were analysed using the same Excel software and statistical methods, followed by drawing conclusions and making recommendations based on the findings.

#### 4. Results and data analysis

Over nine months in 2023, there were 2731 deliveries, and major PPHs accounted for 107 (3.9%) cases, a significant improvement from 2021 when the rate was 5.5%.

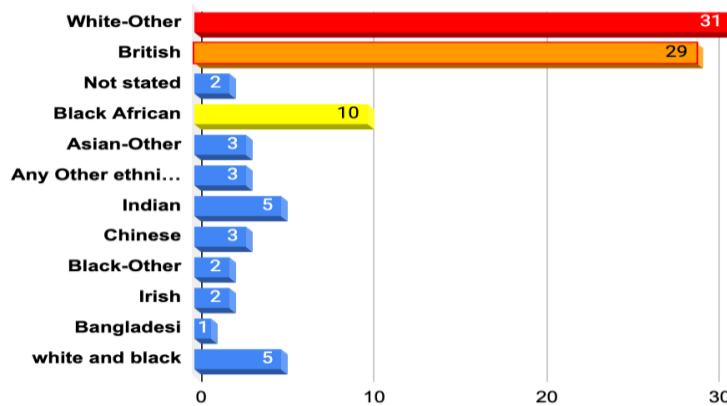
##### 4.1 Maternal age

The maternal age range was between 19 and 53 years, with a mean age of 33.4.



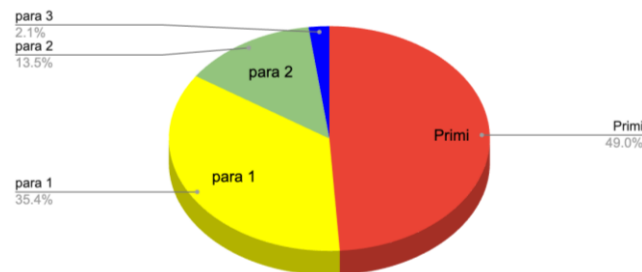
##### 4.2 Ethnic origin

The most common ethnic origin in a group of patients was White-others (31%), British (29), not stated (n=37), Black African (10%), Indian (5%), White and Black (5%).

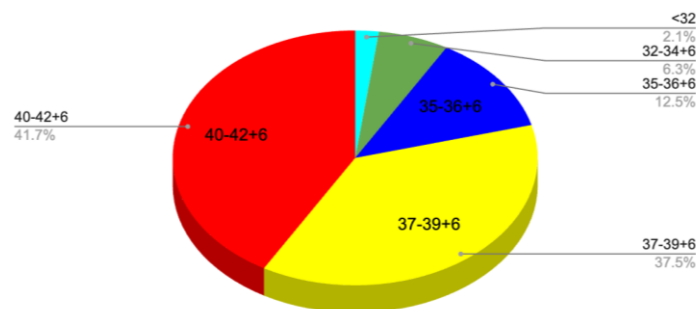


#### 4.3 Parity and gestation age

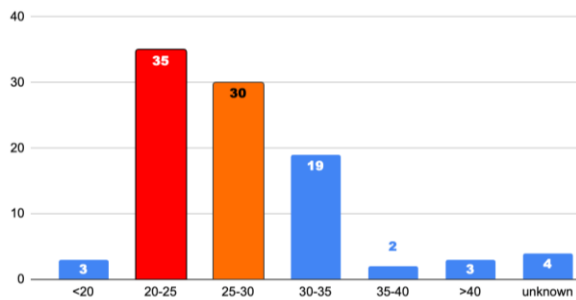
Most women who experienced major PPH were para 1 (49%) and para 2 (35%).



The highest number of MOH was observed in women at 37-39+6 weeks gestation (37.5%), followed by mothers giving birth at 40-42+6 weeks (41.7%).

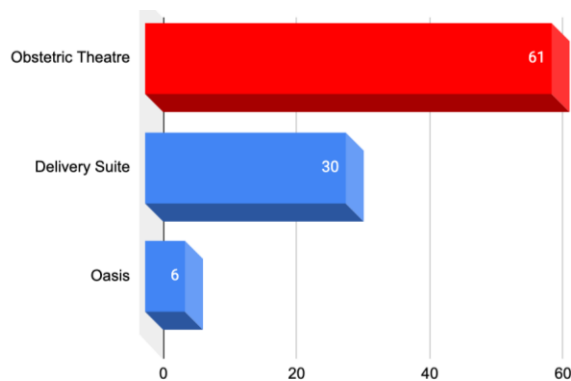


#### 4.4 Body Mass Index



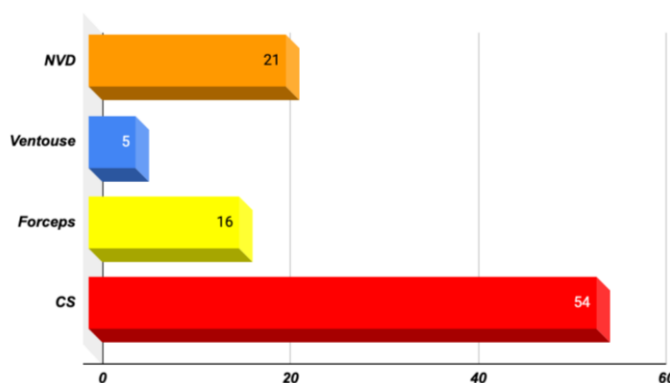
The highest proportion of patients (75%) with MOH had a 20-30 kg/m<sup>2</sup> BMI.

#### 4.5 Place of birth



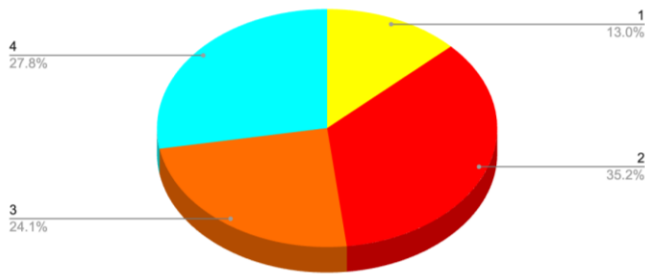
The highest proportion of MOH occurred in obstetric theatre (61%) and delivery suite (30%).

#### 4.6 Mode of birth



Caesarean section accounted for 54% of major obstetric haemorrhage, followed by vaginal delivery 21%, assisted delivery with forceps 16% and ventouse 5%.

#### 4.7 Grade of caesarean sections



MOH was more common in category two caesarean section patients (35.2%), and a similar proportion was in category four (27.8%) and category three sections (24.1%).

- Cat 1      n=108      MOH n=7  
                                6.48%
- Cat 2      n=443      MOH n=21  
                                4.74%
- Cat 3      n=218      MOH n=15  
                                6.88%
- Cat 4      n=460      MOH n=20

#### 5. Subgroup analysis

Caesarean sections accounted for 54% of MOH in 2023, compared to 40.4% in 2021. The total caesarean section rate in 2021 was 34.9%; in 2022, it was 45%. The proportion of elective sections has increased from 14.4% to 16.8%. The trend to increase is also seen in emergency sections from 20.7% to 28.1%. In 2021, of all MOH in the caesarean section group, 29.7% of cases were in patients with elective sections, and 70.1% were related to emergency sections. In 2023, the trend in proportion was similar between elective (31.8%) and emergency section groups (68.2%).

MOH rate in the instrumental deliveries group was also similar between 2021 and 2023, 24.6% and 21%, with forceps accounting for 17.2% and 16% and ventouse 7.4% and 5%.

Mode of delivery	%,		%, MOH,	
	2021	2023	2020-2021	2023
Caesarean section	35.1%	45%	40.4%	54%
- Emergency	20.7%	28.2%	28.3%	40.2%
- Elective	14.4%	16.8%	12.0%	13.8%
SVD	50.0%	42.5%	34.4%	21%
Instrumental delivery	13.7%	12.9%	24.6%	21%
- Forceps			17.2%	16%
- Ventouse			7.4%	2%

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Table 1. Relation between mode of delivery and proportion/numbers of MOH.

2023	Total n=	MOH n=	% MOH	SVD		Ventouse		Forceps		CS	
				n=	%	n=	%	n=	%		
Jan	301	11	3.65	4/124	3.2%	0/23	0%	2/24	8.3%	4/130	3.0%
Feb	256	6	2.34	4/115	3.47%	2/12	16.6%	0/19	0.0%	0/110	0.0%
Mar	314	11	3.5	2/126	1.58%	1/12	8.3%	2/29	6.9%	6/147	4.1%
Apr	286	4	1.4	1/127	0.78%	0/9	0.0%	0/24	0.0%	3/126	2.4%
May	338	18	5.3	5/146	3.42%	1/24	4.2%	2/22	9.0%	10/146	6.8%
Jun	318	16	5.0	3/138	2.17%	1/10	10%	2/27	7.4%	10/143	7.0%
Jul	315	16	5.0	1/134	0.74%	0/12	0%	2/27	7.4%	13/142	9.1%
Aug	300	18	6.0	0/123	0.0%	1/13	7.6%	3/26	11.5%	14/138	10.1%
Sep	303	7	2.3	2/129	1.5%	0/14	0%	2/26	7.7%	3/134	2.2%
	<b>2731</b>	<b>107</b>	<b>3.9</b>	<b>22/1162</b>	<b>1.9%</b>	<b>6/129</b>	<b>4.6%</b>	<b>15/224</b>	<b>6.7%</b>	<b>63/1216</b>	<b>5.2%</b>

Table 2. MOH rates concerning the mode of delivery.

There was a significant decrease in rates of MOH in the vaginal delivery group (1.9%) and overall (3.9%) in 2023 compared to 2021 (Table 1, table 2 and table 3).

### MOH rates 2021 vs 2023

	2021	2023
SVD	3.7%	1.9%
AVD	6.5%	5.9%
CS	6.0%	5.1%
Total	5.5%	3.9%

Improvements were also seen in rates of MOH in caesarean section and instrumental delivery. This could be because the maternity department has strengthened training in the recognition and management of postpartum haemorrhage (PPH) by incorporating sessions on PPH in the local PROMPT course. This yearly course is compulsory for all staff members delivering maternity care. PROMPT attendance is monitored prospectively and booked in advance for all staff members yearly.



Also, all staff members are monitored for their MOH rates and supported by additional training when they become outliers compared to their peers. Staff members showing low rates of MOH will be involved in teaching, where they can share with colleagues their knowledge and skills in the prevention and management of PPH.

#### Conclusion

The rates of MOH at PRUH have shown significant improvements over the past year, with a major reduction amongst the vaginal delivery group. Although some reduction was noted in the caesarean and assisted vaginal delivery cohort, further measures must be deployed to ensure further decline in rates. A reaudit is in progress to assess MOH rates in 2024.

#### Recommendations

It is important to continue PPH training for all staff working in the maternity department as part of the compulsory yearly PROMPT course, with continuous prospective monitoring of compliance. Additional training must be provided to staff members who show higher rates of MOH by organising local courses or encouraging them to attend regional and national courses.

To conduct a retrospective audit of MOH rates in the maternity department of PRUH for 2024.