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## Reducing Post-Partum Hemorrhage and Maternal Mortality in Makueni County through the introduction of Heat Stable Carbetocin

County:	<b>Makueni County</b>		
Sector/s:	<b>Health</b>	<b>Sub-sector/Theme:</b>	<b>Obstetrics</b>
Keywords: (for search in the online platform)	<b>Post-partum Hemorrhage</b> <b>Heat-Stable Carbetocin</b> <b>First response bundle</b> <b>PROMPTS</b> <b>Maternal Mortality</b>		
Target Audience:	<b>Counties</b>		
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### Introduction

Excessive blood loss of 500 ml or more within 24 hours after childbirth, referred to as postpartum hemorrhage (PPH) is a critical condition responsible for most maternal deaths globally. This significant health concern is primarily caused by four major factors, often summarized as the "Four T's": Tone, Trauma, Tissue, and Thrombin.

1. **Tone (Uterine Atony):** (70%) The most common cause. This occurs when the uterus fails to contract adequately after delivery leading to continuous bleeding.
2. **Trauma (Lacerations):** (20%) Physical injuries to the birth canal, including tears or lacerations can result in substantial blood loss.
3. **Tissue (Retained Placenta)** (10%) Retained placental fragments can prevent the uterus from contracting properly, causing persistent bleeding.
4. **Thrombin (Coagulopathy)** (<1%) Blood clotting disorders or coagulopathies can impede the body's ability to form clots exacerbating bleeding.



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<sup>1</sup>In Kenya, bleeding during pregnancy (Obstetric hemorrhage) is responsible for 40% of maternal deaths. This high mortality rate underscores the urgent need for improved maternal healthcare services and interventions to address and manage these complications effectively. To achieve the Sustainable Development Goals, (SDGs) indicators on maternal health, Kenya is working towards reducing maternal deaths from 355/100,000 to less than 100 deaths/100000 live births by the year 2030, contributing to the global commitment to reduce it to less than 70 maternal deaths /100000 live births. Factors contributing to this include limited access to quality prenatal and postnatal care, poor quality of maternal health medicines, inadequate healthcare infrastructure, shortage of skilled healthcare professionals and limited translation of national guidelines to practice.

<sup>2</sup>Sub-Saharan African and South Asian countries account for 87 of global maternal deaths. Obstetric hemorrhage is the leading cause of maternal mortality, accounting for 27% of all maternal deaths occurring worldwide each year. Most of these deaths are due to postpartum hemorrhage. This high mortality rate is exacerbated by factors such as poverty and cultural practices that encourage home births, which often lack the necessary medical support and interventions to manage severe bleeding. Even for those who seek medical care, the quality of drugs used, such as oxytocin, can be substandard.

According to Torloni (2020), there is a widespread challenge of quality of maternal health medicines in low-resource settings. Overall, 48.9% of 1,890 samples of medicines that cause the uterus to contract (uterotonics) to prevent excessive bleeding after birth, from 19 studies failed quality tests. Failures rates were 75% for ergometrine and nearly 40% each for oxytocin and misoprostol. <sup>3</sup>Additionally, because blood loss is often estimated visually, 46.9% and 49% of PPH is missed (Champion's Trial data) and (E-MOTIVE trial data) respectively. Calibrated obstetric drapes is a recently recommended innovation to address this challenge.

In Kenya, the development of Human Resources for Health remains a significant challenge. Despite efforts to improve healthcare delivery, there are persistent issues related to the training, retention and distribution of skilled healthcare professionals. These challenges contribute to gaps in service provision and can impact the quality of care particularly in rural and underserved areas.

Makueni is one of the Counties in Kenya that has previously experienced high numbers of postpartum hemorrhages and maternal deaths due to PPH. To address this challenge, the County department of health in collaboration with Jhpiego (Accelerating Measurable Progress and Leveraging Investment

<sup>2</sup> <https://pubmed.ncbi.nlm.nih.gov/25103301/>

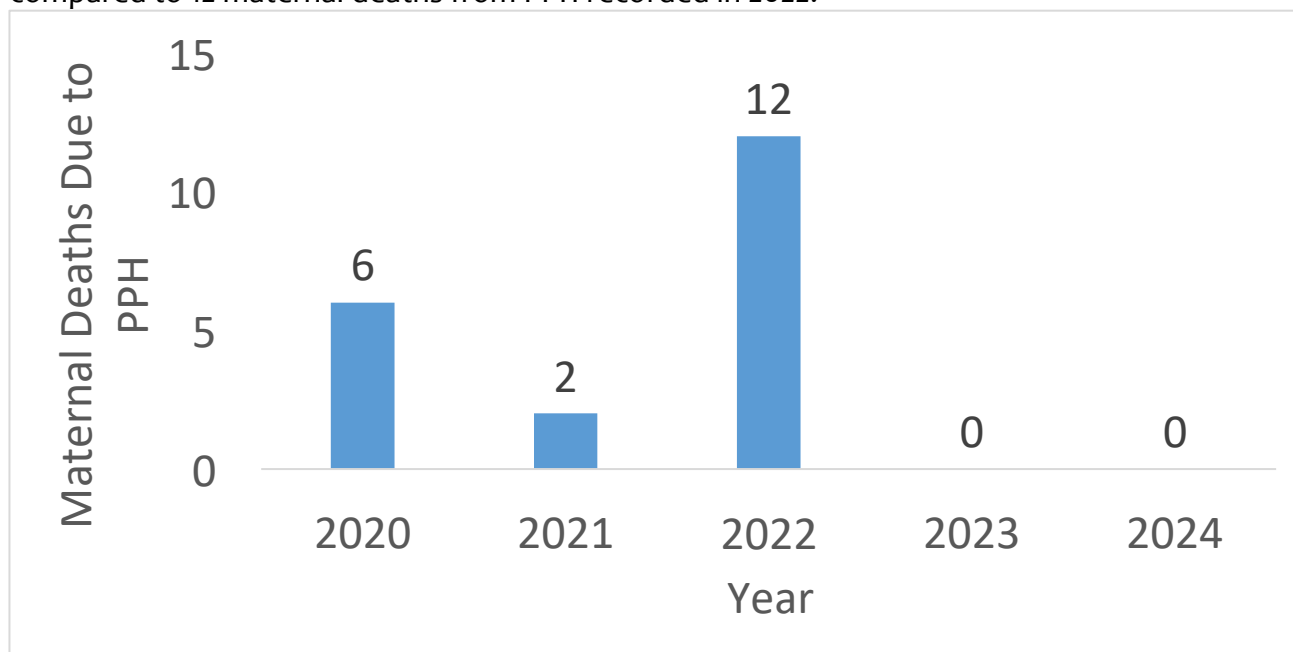
<sup>3</sup> <https://www.who.int/publications/i/item/9789240085398>



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for -Postpartum Hemorrhage Impact project) has introduced recently recommended PPH innovations including use of Heat-Stable Carbetocin (HSC) for PPH prevention and the first response bundle (Massage of the uterus, Oxytocics drugs, Tranexamic acid, Intravenous fluids, Examination and Escalation (MOTIVE) for PPH treatment in 36 health facilities accounting for 92% of births in the County. Heat-stable carbetocin is a long-acting derivative of oxytocin that does not require cold-chain transportation and storage, making it a practical solution for settings with limited cold chain. Additionally, heat stable carbetocin gives a four times longer uterine contraction compared to oxytocin. This intervention has contributed to zero maternal deaths due to PPH in 2023 and 2024 compared to 12 maternal deaths from PPH recorded in 2022.






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Sharing Kenya's Devolution Solutions

Postpartum indicator chart 2023 in Makueni level 5 hospital

 <b>MAKUENI COUNTY</b>	
<b>Wauni wa Kwika Nesa na Ulungalu</b>	
<b>POST-PARTUM HEMORRHAGE KEY INDICATORS CHART</b>	
FACILITY NAME:	
INDICATOR:	YEAR: 2023
	JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1. Skilled deliveries (SVD)	169 138 180 169 160 165 183 140 208 196 171 169
2. Skilled deliveries (Caesarean section)	105 86 84 73 72 102 109 96 118 104 113 109
3. Skilled deliveries (Breech)	03 03 02 03 00 01 3 02 02 02 03 01
4. Skilled deliveries (Assisted Vaginal Delivery)	00 00 03 00 00 02 1 00 00 00 00
5. Total skilled deliveries (SVD, CS, Breech & AVD)	277 227 269 245 232 270 296 238 328 302 286 279
6. Number of women who received Oxytocin immediate postpartum for PPH prevention. (Within 1 minute of delivery)	277 227 269 245 232 270 296 238 328 302 286 279
7. Number of women who received HS carbocin immediate postpartum for PPH prevention. (Within 1 minute of delivery)	00 00 00 00 00 00 0 0 0 0 00 00
8. Number of women who received Misoprostol immediate postpartum for PPH prevention. (Within 1 minute of delivery)	00 00 00 00 00 00 0 0 0 0 00 00
9. Total number of women receiving any uterotonic immediate postpartum for PPH prevention. (Row 6, 7 & 8)	285 237 276 259 242 270 296 238 328 302 286 279
10. Total number of women experiencing maternal complications (APH, PPH, Ruptured uterus, Sepsis, Eclampsia, Obstructed labor and FGM associated complications)	16 19 11 20 18 24 24 18 15 15 14 15
X 11. Total number of Post-Partum hemorrhage (PPH) cases	08 11 07 11 10 19 10 14 08 12 10 7
12. Number of PPH related complications (PPH cases with complications)	00 00 00 01 01 00 0 00 00 00 00 00
13. Number of PPH cases referred out to another health facility for comprehensive care	00 00 00 00 01 00 0 00 00 00 00 00
14. Number of PPH cases referred in - for comprehensive care	02 01 00 03 01 02 3 03 02 03 01 01
15. Number of facility maternal deaths (any cause)	00 00 00 01 01 00 0 00 00 00 0 00
16. Number of facility maternal deaths due to PPH	00 00 00 01 01 00 0 00 00 00 00 00
17. Maternal deaths audited	00 00 00 01 01 00 0 00 00 00 00 00





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### Post partum indicator chart 2024

MAKUENI COUNTY		PPH KEY PERFORMANCE INDICATORS CHART						Unitaid SAVE LIVES FASTER					
FACILITY NAME:		YEAR: 2024											
INDICATOR:		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1. Skilled births (SVD)		141	154	186	238	173	148						
2. Skilled births (Caesarean section)		117	92	120	77	86	98						
3. Skilled births (Breech)		01	01	01	01	1	1						
4. Skilled births (Assisted Vaginal Delivery)		0	0	00	00	0	0						
5. Total skilled births (SVD, CS, Breech & AVD)		259	247	307	216	259	247						
6. Number of women who received Oxytocin immediately after childbirth for PPH prevention. (Within 1 minute of birth)		21	0	02	02	6	0						
7. Number of women who received Heat Stable Carbetocin immediately after childbirth for PPH prevention. (Within 1 minute of birth)		247	247	304	212	259	248						
8. Number of women who received Misoprostol immediately after childbirth for PPH prevention. (Within 1 minute of birth)		0	0	00	00	0	0						
9. Total number of women receiving any uterotonic (Oxytocin, HSC & Misoprostol) immediately after childbirth for PPH prevention. (Row 6, 7 & 8)		259	247	304	214	259	248						
10. Total number of Post-Partum hemorrhage (PPH) cases		11	10	07	04	6	8						
11. Total number of women experiencing maternal complications (APH, PPH, Ruptured uterus, Sepsis, Eclampsia, Obstructed labor and FGM associated complications)		22	16	09	15	8	21						
12. Number of PPH related complications (PPH cases with complications)		0	0	00	00	0	0						
13. Number of PPH cases treated with uterotonic (Oxytocin, Misoprostol, Ergometrine) and Tranexamic acid (IV fluids used)		11	10	07	04	6	8						
14. Number of PPH cases referred out to another health facility for comprehensive care		01	0	00	00	0	00						
15. Number of PPH cases referred in - for comprehensive care			02	03	01	0	0						
16. Number of facility maternal deaths (any cause)		0	0	01	00	0	0						
17. Number of facility maternal deaths due to PPH		0	0	00	00	0	0						
18. Maternal deaths audited		0	0	01	00	0	0						

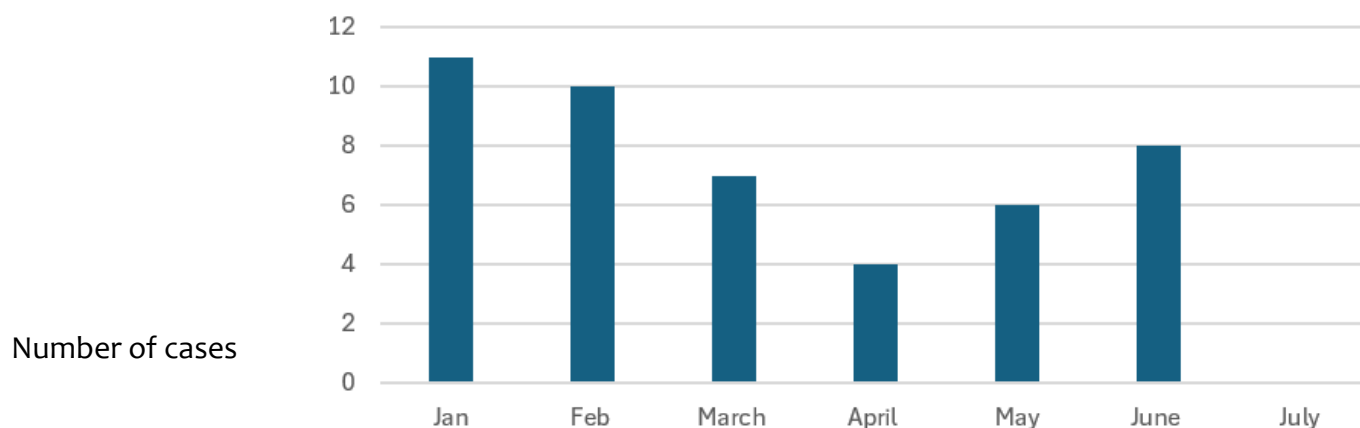


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## Post-Partum Key Indicators 2024

Jan-June



Additionally, the County, still in collaboration with Jhpiego (AMPLI-PPHI project), is enhancing the dissemination of timely information to pregnant women and their families. A total of 45 community influencers and 40 assistant County Commissioners are creating awareness among community members in Makueni County on importance of hospital births, identification of danger signs during pregnancy and child birth among other health messages.

These awareness creation efforts promote informed decision-making, health seeking behavior and potentially improve overall maternal and child health outcomes.

### Implementation of the practice

- In 2022, the County faced 12 maternal deaths due to postpartum hemorrhage, prompting a search for a solution.
- From 2022, Makueni County in partnership with Jhpiego (AMPLI-PPHI project), introduced PPH innovations (use of Heat-Stable Carbetocin (HSC) for PPH prevention and the first response bundle (Massage of the uterus, Oxytocics drugs, Tranexamic acid, Intravenous fluids, Examination and Escalation (MOTIVE) for PPH treatment). This promising initiative has contributed to reduction maternal deaths due to PPH from 12 to zero.
- The County is in the process of procuring 6,000 calibrated obstetric drapes and 250 mats to objectively measure postpartum blood loss among all women giving birth in Makueni County. Reusable mats can be used up to 99 times.



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- On 14<sup>th</sup> February 2024, the Governor of Makueni H.E Mutula Kilonzo Jnr was selected by the key stakeholders as the national champion for the fight against PPH in Kenya.

### Results of the practice

- **Reduced Maternal deaths due to PPH:** Use of Heat-Stable Carbetocin (HSC) for PPH prevention, use of calibrated obstetric drapes and administration of the first response bundle (Massage of the uterus, Oxytocics drugs, Tranexamic acid, Intravenous fluids, Examination and Escalation) within 15 minutes of detection of PPH has contributed to reduction of maternal deaths due to PPH.
- **Better health outcomes for Mothers and Children:** Comprehensive support and timely interventions have contributed to improved health and well-being as proven by the reduced number of PPH maternal deaths due to PPH. The health of a mother is strongly linked to the health of her baby.
- **Improved Maternal Care-Seeking Behavior:** Women are making more informed decisions regarding their health, guided by the information and support from the prompts system.

### Lessons learnt:

- Involving local leaders like Assistant County commissioners, chiefs, community influencers and village elders significantly boosts the success of health initiatives, as these influencers can effectively reach and educate the community.
- The addition of Heat stable carbetocin as one of the uterotonic options has the potential to change PPH trajectory in Kenya.
- Objective blood loss measurement for all women through calibrated obstetric drapes is a critical component in timely detection and treatment of PPH.
- Use of the first response bundle for PPH treatment improves maternal health outcomes. Combining medical interventions, such as PPH innovations, with information dissemination systems leads to better health outcomes.
- Educating women about their healthcare rights and what to do during pregnancy and postpartum empowers them to take control of their health and seek necessary care.

### Conclusion

The success of these programs show the importance of a holistic approach to healthcare, integrating medical solutions with continuous information dissemination and support.