



MINISTRY OF HEALTH

*Accounting for every Institutional Maternal and Perinatal Death
Strengthening the Health Care System Response*



The National FY 2021/2022 Annual Maternal and Perinatal Death Surveillance and Response (MPDSR) Report

September, 2022

Any part of this document may be freely reviewed, quoted, reproduced or translated in full or in part, provided the source be acknowledged. It should not be sold or used for commercial purposes or profit.

Government of Uganda, Ministry of Health: The National FY 2021/2022 Annual Maternal and Perinatal Death Surveillance and Response (MPDSR) Report.

Published by: Ministry of Health
PO Box 7272
Kampala, Uganda
Email: info@health.go.ug
Website: www.health.go.ug

FOREWORD

Uganda has made some progress towards the reduction of maternal mortality from 438 per 100,000 live births to 336/100,000 live births (UDHS, 2016) which is close to the FY2021/22 target of 286 deaths per 100,000 live births (NDP III-FY2020/21-FY2024/25). However, the neonatal mortality rate stagnated at 27 deaths per 1,000 live births between 2011 and 2016 (UDHS, 2016), which is below the FY2021/22 target of 22 deaths per 1,000 live births (NDP III-FY2020/21-FY2024/25). In 2017, the Ministry of Health (MoH) adopted the WHO Maternal and Perinatal Death Surveillance and Response (MPDSR) guidelines and rolled them to all the districts as a key tool for quality improvement and accountability in maternal and newborn health.

The MPDSR system emphasizes continuous identification and reporting of maternal/perinatal deaths including zero deaths and using that information for Quality Improvement (QI) processes. The national MPDSR annual report 2021/2022 is a result of concerted efforts of health workers that have been involved in notifying, reviewing, reporting, and following up on responses through both the sub-national and national maternal/perinatal death and response (MPDSR) committees. There has been an improvement in the reporting rates of maternal and perinatal deaths notification and reviews over the last six financial years (2016-2022). Notification of maternal deaths has improved from 34% to 97.9% and reviews of maternal deaths improved from 27% to 89.8%. Notification of perinatal deaths has improved from 11.74% to 52.9% while the review of perinatal deaths improved from 1.5% to 42.2% over the last six financial years (2016-2022).

The improvement has been a result of weekly follow-up with all facilities that reported any maternal and perinatal deaths by the national MPDSR secretariate and subsequent capacity-building efforts at the subnational level plus decentralization of data entry of maternal and perinatal death reports.

The main purpose of the report is to learn from every maternal and perinatal death and identify feasible means to prevent avoidable similar deaths in the future. The MPDSR process should, therefore, engage various stakeholders in planning for services aimed at improving the MNHs' quality of care.

I finally want to appreciate the MPDSR committees at different levels of health care, development and implementing partners, professional associations, and all the individuals who have contributed to the development of this report.



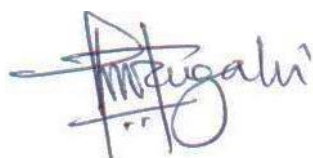
Dr. Henry G. Mwebesa
DIRECTOR GENERAL HEALTH SERVICES

ACKNOWLEDGMENT

The ministry of health acknowledges the efforts of districts and health facilities in conducting maternal and perinatal death reviews and submitting findings to the ministry headquarters. MPDSR is a quality improvement tool, and the ministry has mainstreamed it as a key strategy to the reduction of maternal and new-born mortality, the national MPDSR committee is commended for its guidance on the whole process.

I acknowledge the following people for their contribution in the entire process of writing the report: Dr Henry G. Mwebesa, Dr Nakiganda Blandina, Dr Mutumba Robert, Dr Paul Isabirye, Mr Bruno Ssemwanga, Dr Joseph Katetemera, Dr Hellena Kasaija, Dr Brenda Kharono, Dr Richard Kagimu, Dr Bonnie Wandera, Dr Dan Murokora, Dr Deogratias Migadde, Dr Victoria Nakibuuka, Mr Ssensalire Rajab, Mr Ngobya Brian, Sr Jane Frances Acam, Mr Akena Stephen, Ms Pamela Kyohairwe, Dr John Paul Bagala, Dr Olive Sentumbwe-Mugisa, Dr Frank Kaharuza, Dr Richard Mwesigwa, Dr Arnold Muwonge, Dr Denis Kintu, Dr Ebong Chris, Mr Wilberforce Mugwanya, Mr Rogers Kagimu, Mr Patrick Walugembe, Mr Lugodha Leo, Dr Emmanuel Odeke, Dr Eleanor Nakintu and Dr Bwaga Ibrahim.

The ministry also applauds the collaborative support and technical input of development and implementing partners notably: WHO, UNFPA, World Bank/URMCHIP, UNICEF, USAID, and its partners: SITES, MCHN-Activity, RHITES-SW, and RHITES-N Lango; CUAMM, BAMA, and all the institutions and organizations that have supported the process of institutionalizing MPDSR. Similarly, the ministry acknowledges the contribution of the National Safe Motherhood Experts Committee (NASMEC), the Association of Obstetricians and Gynaecologists of Uganda (AOGU), and the Uganda Paediatric Association (UPA) for the role they played in supporting the process.



Dr. Richard Mugahi

ASSISTANT COMMISSIONER HEALTH SERVICES, REPRODUCTIVE & INFANT

ABBREVIATIONS

CHAI	Clinton Health Access Initiative
CUAMM	Doctors with Africa
DHIS	District Health Information System
DHO	District Health Officer
HMIS	Health Management Information System
ICD	International Classification of Diseases
IMMR	Institutional Maternal Mortality Rate
IPMR	Institutional Perinatal Mortality Rate
MOH-SP	Ministry of Health Strategic Plan
MPDSR	Maternal and Perinatal Death Surveillance and Response
NDP	National Development Plan
NIRA	National Identification and Registration Authority
OPD	Outpatient Department
RHITES	Regional Health Integration to Enhance Services
SDG	Sustainable Development Goal
SITES	Strategic Information Technical Support
SVD	Spontaneous Vaginal Delivery
UDHS	Uganda Demographic Health Survey
UNFPA	United Nations Population Fund
UNICEF	United Nations Child Education Fund
USAID	United States Agency for International Development
URMCHIP	Uganda Reproductive Maternal Child Health services Improvement Project.
WHO	World Health Organization

TABLE OF CONTENTS

FOREWORD	ii
ACKNOWLEDGMENT	iii
ABBREVIATIONS.....	iv
LIST OF FIGURES	vii
LIST OF TABLES.....	viii
CHAPTER ONE	I
1.1 Introduction	1
1.2 Theme, Goal, and Objectives of the Report.....	1
1.2.1 Theme:	1
1.2.2 General Objective:	2
1.2.2.1 Specific objectives	2
1.3 The account of how MPDSR Guidelines have been implemented	2
CHAPTER TWO: UGANDA'S PROGRESS IN MPDSR IMPLEMENTATION DURING FY2021/2022	4
2.1 Sustaining the Maternal and Perinatal Death Surveillance and Response efforts	4
2.2 Health System Response to Preventable causes of Maternal and Perinatal Deaths.....	6
2.3 Highlights based on the 3 Delays Model.....	13
2.4 Collaborative learning and adaptation	17
2.4.1 National MPDSR collaborative learning and adaptation	18
2.4.2 Implementation of the MPDSR national learning platforms	18
CHAPTER THREE: ANALYSIS OF THE REPORTED AND REVIEWED MATERNAL AND PERINATAL DEATHS	22
3.1 Introduction	22
3.2 Institutional maternal deaths	22
3.2.1 National trends in Institutional maternal deaths notified, reported, and review rates.	22
3.2.2 Regional trends in Institutional maternal deaths reported, notifications and review rates.	24
3.2.3 District level Institutional maternal deaths reported and review rates.	26
3.2.4 Institutional maternal deaths reported by health facility level	27
3.2.5 Causes of maternal deaths.....	28
Deep-dive analysis of maternal deaths due to haemorrhage	30
Causes of death by region.....	31
Maternal deaths by age category	33
Leading maternal deaths by health facility level	33
Characteristics of maternal deaths reported / reviewed	34
3.3 Institutional Perinatal Deaths	40

3.3.1 National trends in Institutional Perinatal Mortality Rates (per 1000 births).....	40
3.3.2 Institutional Perinatal Mortality Ratio by Region	42
3.3.2 Institutional perinatal deaths reported, notifications and review rates by District.	45
3.3.4 Perinatal death outcomes by level of care	46
Perinatal death reviews by level of care	47
3.3.5 Characteristics of the perinatal deaths reviewed	48
3.3.5 Causes of perinatal deaths	48
Maternal characteristics of the perinatal deaths reviewed.....	49
Avoidable/modifiable factors by the level of care.....	54
CHAPTER FOUR: DISCUSSION	56
4.1 Institutional Maternal Deaths	56
WHY ARE MOTHERS AND BABIES STILL DYING?	60
CHAPTER FIVE: RECOMMENDATIONS.....	63
APPENDICES:.....	68
Appendix I: Case Studies	68
Strengthening Maternal and Perinatal Death Surveillance Response (MPDSR) improves Quality of Care: A case of Anyeke HCIV, Oyam District.....	68
KCCA's experience while employing the hub and spoke model to improve Maternal and Perinatal outcomes in Kampala city.....	71
MAMA RESCUE SYSTEM: INCREASING ACCESS TO TRANSPORT DURING LABOUR USING A MOBILE CLOUD APPLICATION.....	74
Appendix II: Avoidable factors identified during maternal death reviews by region	76
Appendix III: Referral patterns to Kawempe National Referral Hospital.....	78
Appendix IV: Illustrates the milestones achieved in institutionalizing MPDSR in Uganda	79
Appendix V: National Annual_FY2021/2022_MPDSR Report Data Set	80

LIST OF FIGURES

Figure 1: Stakeholder Collaboration	7
Figure 2: Ten Re-functionalized HC IVs in FY2021/2022	8
Figure 3: Showing national trends in Institutional maternal deaths reported, death notifications and review rates.	23
Figure 4: Map showing Institutional Maternal Mortality Ratio per 100,000 deliveries by district	26
Figure 5: Map showing the proportion of maternal deaths reviewed by districts (FY2020/21 and FY2021/22)	27
Figure 6: Institutional Maternal Mortality Ratio by Health facility level FY2019/20, FY2020/21 and FY2021/22	28
Figure 7: Causes of Maternal Death, (n=1096) FY 2021/2022 and Comparison across FY2018/19, FY2019/20, FY2020/21 and FY2021/22	29
Figure 8: Classification of Haemorrhage Cases, n=444	30
Figure 9: Five Leading Causes of death by maternal age category FY2021/22	33
Figure 10: Showing five leading causes of maternal deaths by Health Facility level, FY2021/22	34
Figure 11: Parity of maternal deaths reviewed, FY2021/22	34
Figure 12: HIV and Syphilis testing cascades status among maternal deaths reviewed in FY21/22	35
Figure 13: Mode of delivery and birth outcomes of the Maternal deaths reviewed FY2021/22	35
Figure 14: Birth outcomes of the Maternal deaths reviewed FY2021/22	36
Figure 15: Average duration of stay (Hours) between admission and death	36
Figure 16: Labour experience and Partograph use among maternal deaths reviewed in FY21/22	37
Figure 17: Avoidable factors	38
Figure 18: Perinatal death type contribution	40
Figure 19: Trends in Perinatal Death Notifications and Reviews (FY2016/17 to FY20	40
Figure 20: Trends in Institutional Perinatal Mortality Rates (per 1000 births) in Uganda (FY16/17 to FY21/22)	41
Figure 21: Showing Institutional Perinatal Mortality per 1000 births during FY2021/22	45
Figure 22: Map showing the proportion of perinatal deaths reviewed and reported by districts	46
Figure 23: Causes of Reviewed Early Neonatal Deaths during FY2021/2022 (n=4558)	48
Figure 24: ANC Contact visits of Mothers whose Perinatal deaths were reviewed, (n=11,403)	50
Figure 25: Showing HB Testing during ANC for mothers with reviewed perinatal deaths	51
Figure 26: Showing Partograph use among reviewed perinatal deaths by type	53
Figure 27: Mode of Delivery by Perinatal Death Type (%)	53
Figure 28: Showing Decision to Incision Interval among perinatal deaths delivered through C/S by Facility Level	54

LIST OF TABLES

Table 1: FY2021/22 Key national level MPDSR accomplishments	9
Table 2: FY2021-22 Key Sub-national MPDSR accomplishments	10
Table 3: Examples of MPDSR accomplishment by Health System Building Blocks.....	11
Table 4: Highlights of the different recommendations linked to the 3-Delays framework and the actions taken at various levels.....	14
Table 5: Shared success stories from the weekly National presentations	19
Table 6: Maternal mortality by Age category	23
Table 7: Regional breakdown of maternal deaths reported, notified and reviewed for the last three financial years	24
Table 8: Causes of maternal deaths by region (* excludes unknown/undetermined cases)	31
Table 9: Breakdown of indirect causes of maternal death by age	33
Table 10: Duration of stay, between admission and death, by health facility level.....	37
Table 11: Avoidable factors identified during maternal death reviews by Health facility level	39
Table 12: Showing the IPMR by Region between FY2020/21 and FY2021/22	42
Table 13: Showing the Perinatal Death Notifications and Reviews by Region between FY2020/21 and FY2021/22	43
Table 14: Showing Perinatal mortality rates by level of Health Facility	47
Table 15: Perinatal Deaths Reported and reviewed FY2021/22.....	47
Table 16: Perinatal Deaths Reviewed by Birth Weight (BWT)	48
Table 17: Trends in the leading causes of Neonatal deaths over the past 4 years (FY 18/19-FY21/22)	49
Table 18: Showing maternal characteristics associated with perinatal deaths reviewed (n=11403) ..	49
Table 19: Mother's Parity by Age.....	50
Table 20: Showing complications experienced during pregnancy	52
Table 21: Referral status	54
Table 22: Showing avoidable/modifiable factors by the level of care.....	55
Table 23 Avoidable factors identified during maternal death reviews by region	76
Table 24: Showing avoidable/modifiable factors at regional level (n=11063)	77
Table 25: National Annual_FY2021/2022_MPDSR Report Data Set.....	80

CHAPTER ONE

1.1 Introduction

Globally, the health of women, children, and adolescents is critically important to almost every area of human development and progress. Every *Woman Every Child* (EWEC) global strategy provides an opportunity to improve the health of women, children, and adolescents in all countries. Ending preventable maternal and perinatal mortality is a global priority under the Sustainable Development Goals - 2030 (SDG) agenda. The aim is to reduce the average global Maternal Mortality Ratio (MMR) to less than 70 maternal deaths per 100,000 live births and neonatal mortality to at least 12 deaths per 1000 live births by 2030. Uganda has made progress towards the reduction of maternal mortality from 438 per 100,000 live births (UDHS, 2011) to 336/100,000 live births (UDHS, 2016) although neonatal mortality rate has stagnated at 27 deaths per 1,000 live births. Despite this reduction in mortality, the country needs to accelerate its efforts towards reducing maternal mortality ratio to 211/100,000 live birth and neonatal mortality to 15 deaths per 1,000 live births (MOH Strategic Plan 2020/21-2024/25).

Emphasising this further from the monthly HMIS 105 reports that indicated 1226 maternal deaths reported between July 2021 and June 2022 indicating that the country loses 3 mothers per day. Similarly, the monthly HMIS 105 reports of the same period indicated an average of 74 perinatal deaths occurring daily; of which 20 are newborn deaths. However, reporting on maternal and perinatal deaths that occur in the community remains a challenge. There is need to strengthen community surveillance and tracking of maternal and perinatal deaths to accurately determine the maternal and perinatal deaths occurring at community level and leverage the community engagement strategy to strengthen VHT reporting of maternal and perinatal deaths.

Achieving SDG goal 3 targets will require ensuring access to safe, effective, quality, and affordable care for women and children. In 2015, WHO made improving the quality of care for women and children a priority for reducing preventable maternal and child deaths as well as a reduction in implementation costs. Improved quality outcomes are delivered by both health-service providers and communities/service users. Communities play critical roles and responsibilities in identifying their own needs and preferences and in managing their health with appropriate support from health-service providers. Additionally, they influence policy formulation around the quality of care and how health services are provided to them.

1.2 Theme, Goal, and Objectives of the Report

1.2.1 Theme:

Accounting for every Institutional Maternal and Perinatal Death: Strengthening the Health Care System Response

1.2.2 General Objective:

To document the health care systems response and strategies towards reducing maternal and perinatal mortality.

1.2.2.1 Specific objectives

- (i) To assess the magnitude and trends of maternal and perinatal mortality.
- (ii) To describe the avoidable factors associated with maternal and perinatal deaths.
- (iii) To provide accountability in form of RESPONSE actions taken at the national and subnational levels towards reduction of maternal and perinatal deaths.
- (iv) To share best practices in form of success stories, abstracts and case studies to spread learning on the use of MPDSR as a quality improvement tool for reduction of maternal and perinatal deaths.
- (v) To provide ACTIONABLE recommendations for MPDSR implementation during FY2022/2023.

1.3 The account of how MPDSR Guidelines have been implemented

Uganda is committed to ending preventable maternal and perinatal deaths, through various interventions including MPDSR. In 2017, MoH launched the adapted WHO guidelines on MPDSR as part of the national efforts to address the high maternal and newborn mortality and morbidity. This was followed by the capacity building of health workers, district leaders, and stakeholders on the guidelines. Facilities and districts established MPDSR committees which lead implementation of MPDSR activities at each level.

At the national level, the national MPDSR committee coordinates and guides MPDSR implementation in the country through routine program evaluation, disseminating empirical evidence, and action-oriented recommendations. This committee has adopted weekly analysis of MPDSR efforts across the country reflected in the weekly bulletin and shares feedback through a weekly national MPDSR stakeholders meeting. This has generated timely targeted support to subnational actors.

Efforts in FY 2021/22 have been focused mainly on improving implementation of response actions through conducting targeted clinical mentorships to address skills gaps, setting up blood collection and distribution centres at regional referral hospitals to avail more blood; targeted recruitment and deployment of anaesthetic officers, neonatologists and neonatal nurses; provision of critical MNCH equipment to targeted facilities; national real-time confidential inquiry meetings; weekly MNCH stakeholders' meeting; provision of life-saving commodities such as uterotonics, anticonvulsants among others. However, gaps still remain in the quality of recommendations, follow up and implementation of RESPONSE actions at all levels.

Uganda's maternal mortality ratio (MMR) has continued to reduce over the last six financial years. This is attributed to the government's commitment to reducing preventable maternal and perinatal deaths. Despite the strong political will, many maternal and perinatal deaths remained either unrecorded or were misclassified. Together with its partners, MOH has made tremendous progress in strengthening the death reporting system in m-track and DHIS2. The multi-sectoral collaborations have seen the Ministry Transition from National Annual Reporting to Weekly National Reporting and Engagement with over 250 MNCH stakeholders and partners across the country.

Building on the FY2020/21 efforts to strengthen the utilization of facility collected data to drive change as well as link the data to actionable recommendations, FY2021/22 has been a response-focused year. Previously, the annual report has been the main source of information on year-long MPDSR, but the emphasis on data utilization and increased data demand has seen a shift in the quality of data notified, reported and reviewed. The leading goal is to ensure every maternal and perinatal death is recorded and reported accurately. This has seen MOH-RCH share over 106 data visualization summaries, dashboards and detailed reports with its stakeholders to strengthen data-guided responses and actions across the country.

Uganda's MPDSR system operates at facility, district, regional and national levels. This FY has seen many districts and facilities sustain the practice of conducting averagely 10-12 monthly MPDSR meetings from the previously stated quarterly meetings, with the aim of meeting monthly to review and address recommendations in real-time. These districts continue to support by various Implementing Partners in the 15 MoH regions in conducting timely reviews and respond to the recommendations. These District and Facility MPDR committee findings for the weekly surveillance are disaggregated by facility, district and regional levels. Minutes and responses from the reviews are shared in the Ministry of Health National Weekly MPDSR meetings with approximately 150 to 300 participants in attendance. These meetings have greatly contributed to the improvement in timely reporting, notification, review and response. Below are some of the local recommendations arising from the MPDSR reviews and the various actions taken to address them.

CHAPTER TWO: UGANDA'S PROGRESS IN MPDSR IMPLEMENTATION DURING FY2021/2022

2.1 Sustaining the Maternal and Perinatal Death Surveillance and Response efforts

MPDSR in FY 2021/2022



Improved Health Center
IV Functionality



Adaptation of Regional
Weekly MPDSR Meetings
[KAMPALA-KCCA]



Collaborative Learning
& Adaptation [CLA]



National Sub-
Committee Weekly
Meetings [Perinatal

The FY 2020/21 MPDSR report elaboratively highlighted Uganda's journey to addressing the high maternal and perinatal mortality rates over the last 21 years.¹ The various multi-stakeholder involvement and support throughout all the regions in the country, coupled with government requirements of mandatory reporting and notification of all maternal and perinatal deaths and establishment of MPDSR committees at national, regional and facility levels has seen the country achieve tangible and sustainable reductions in maternal and perinatal mortality in the recent years. These efforts continue to guide MPDSR implementation across all Health care levels, leading to the development and dissemination of four consecutive annual MPDSR reports (FY2017/18, FY2018/19, FY2019/20, FY2020/21).

Over the last six years, Uganda has made considerable positive progress towards meeting the MOH Strategic Plan 2020/21-2024/25 target for reducing IPMR and IMMR. As of FY21/22, Uganda is at 84.7/100,000 deliveries (*see chapter 3 for results*) as compared to a set target of 63/100,000 deliveries for the same year.

Having a standardised mortality audit and/or review approach has set the stage, and facilitated MNCH quality improvement processes in service delivery. The targeted support by MOH-RCH department has seen many districts re-functionalize their MPDSR committees through developing context-specific systems for MPDSR review committees ranging from paper-based tracking tools to well-designed databases, dashboards, and mobile applications. The need for a centralised coordinated system has initiated national conversations and efforts to standardise MPDSR response-tracking, some of which will be highlighted further in this report. Furthermore, this calls to question.

How has the health System responded to reducing preventable maternal & perinatal deaths?

The FY2020/21 report highlighted the evidence around quality-of-care benefits of MPDSR reviews, which led to increased attention and enhanced efforts to better understand and address the main causes of maternal and perinatal deaths across the country. Emphasis was then put on health facilities, the main producers of the data, to create functional MPDSR committees that have

¹ See illustration on the milestone achieved in institutionalizing MPDSR in Uganda ([Appendix IV](#))

continued to comprehensively assess and review maternal and perinatal deaths and eventually identify opportunities for prevention.

The MOH-RCH department re-functionalized MPDSR committees across all health system levels, and this was largely catalysed by the national weekly meetings that birthed action-oriented sub-committees. Several sub-committees' success stories and dissemination events were showcased in these national weekly meetings.

Specifically, MOH has primed the various regions to achieve actionable outcomes by adopting unique strategies tailored to local needs and contexts using data driven mentorships and MOH guided stakeholder engagement. These efforts have been attributed to multisectoral approaches [NIRA, Anaesthesia & Emergency Medicine, MOH-SCAPP, DHI, UBTS, MOH-Engineering Department, UBOS, etc] and catalytic strategies to address the identified gaps and challenges, making it possible to envision a health system in which real-time response to issues is prioritised.

2.2 Health System Response to Preventable causes of Maternal and Perinatal Deaths

Globally, literature has shown that qualified and motivated human resources are a critical component for adequate maternal and perinatal health service provision. Despite the documented benefits of a responsive healthcare workforce, Uganda continues to grapple with human resources (HR) shortages especially in rural areas that are also commonly resource limited.

Despite the improvements in maternal and neonatal healthcare service delivery, the causes of maternal and perinatal deaths over the last 3 decades are glaringly similar. The focus on achieving the Sustainable Development Goals (SDGs), has been a leading motivation for Uganda to accelerate efforts to improve maternal and newborn outcomes. The Ministry of Health (MoH) in collaboration with its partners are contributing to the reduction of maternal and perinatal mortality through adaption of innovative strategies for improving performance at all levels as a means of addressing HR related shortages.

Previously, tremendous efforts have been geared towards surveillance and collection of mortality statistics whereas the response arm of MPDSR remained challenged by the inadequate data utilization for decision making. Therefore, the global consensus on the benefits of accurate information on causes of deaths through mortality reviews has been key to strengthening MPDSR implementation and informing efforts to end preventable maternal and perinatal deaths.

FY 2021-2022 Highlights The Response Story

- The main MPDSR target has been sustaining 100% Maternal Death reviews across all health facilities in the country.
- The country hit 100% Maternal death reviews for 8 weeks out of 52.
- Perinatal Death Reviews have improved but still remain low across the country.
- There has been a notable increase in percentage of reviewed perinatal deaths, with one of the weeks reporting 45% perinatal deaths reviews.

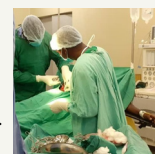
DATA DEMAND & USE

- Various Data Analytics disseminated to key stakeholders and Partners nationally
- 52 MPDSR Weekly Infographic Reports
 - 52 Interactive MPDSR Dashboards
 - 52 Detailed Action-focused reports from facilities



CEmONC FUNCTIONALITY

- 10 Functionalized Health Center IVs
- 10 Health Center IVs in 8 districts across 7/14 MoH regions
- Re-functionalization of Blood Collection Centres
- at Regional Referral Hospitals e.g. at Kabale RRH



QUARTERLY REPORTS

- The country made effort to meet WHO's recommendation of MPDSR quarterly monitoring and progress reports.
- 3/4 quarterly reports were disseminated to stakeholders



CLA & CME Credits

- COLLABORATIVE LEARNING & ADAPTATION
- 10/14 MoH Regions shared MPDSR Success stories and challenges with National MCH stakeholders
 - National MPDSR Meetings were accredited for Continuous Medical Education for all Health Care Workers [Doctors, Nurses, Midwives]



ESSENTIAL COMMODITIES & SUPPLIES

- Partner support towards provision of essential commodities. For example:
 - Blood Refrigerator donated by UNFPA
 - Operating Beds, sundries and tools provided by USAID in Kampala



IMMR

- Institutional Maternal mortality ratio:
- 84/ 100,000 deliveries. Improvement from 92.1 (FY 2020-21) and 99.7 (FY 2019-20)

IPMR

- Institutional Perinatal Mortality Rate
- IPMR of 18.5/1,000 [FY 2021-2022] total births. A reduction from 20.2/1,000 [FY 2020-2021] total births registered in the previous year.



NATIONAL ADVOCACY EVENTS

- AWARENESS FOR ECLAMPSIA/PRE-ECLAMPSIA
- May 2022 was PET awareness month, and registered the least number of PET cases throughout the FY 2021-22
 - Launch of the Essential Newborn Clinical Care Guidelines for Uganda



22 NATIONAL WEEKLY CONFIDENTIAL INQUIRIES FOR HC IV & III

- These were born from the National Weekly meetings to address facility specific challenges at HC IVs and HC IIIs as a measure of reducing Maternal and perinatal mortality
- KCCA has adopted the MPDSR Weekly meetings to address MPDSR issues in complex urban settings



In this year's annual MPDSR report, we build on the previous FY 2020/21 efforts around creating functional MPDSR committees nationally, sub-nationally and across health centres, to accelerate MPDSR implementation in Uganda. The goal is to use the already well-established and coordinated committees in the health facilities and in the different regions to strengthen implementation of the recommendations arising from the reviews.

Figure 1: Stakeholder Collaboration



MOH STRATEGIC STAKEHOLDER COLLABORATION FOR MPDSR

MoH -RCH Department's intentional efforts to build a dialogue friendly environment to discuss the gaps around MPDSR implementation with external stakeholders like the politicians, private sector and media has contributed to stakeholder buy-in, accountability and follow-up on the various response actions.

Conducted an Implementing Partner and Stakeholder mapping for all 14 MoH regions with the aim of tracking existing MPDSR work nationally and preventing replication of efforts across IPs. This multistakeholder process has been very instrumental in the sustainable outcomes arising from the implementation of recommendations across the regions discussed in this years' report. Different Implementing partners and bilateral organizations have contributed to the achievements.

Example in Point, while non- exhaustive include:

Government Sector [RHI Division, National Medical Stores-NMS, Uganda Blood Bank Transfusion Services-UBTS, SCAPP, NIRA, DHI, Surveillance, District Local Governments-DLGs, KCCA, etc],

Academic & Research Institutions: Makerere University- MaKSPH, MaK CHS, Gulu University, Lira University, Mbarara University, JCRC, IDI],

Bilateral & Multilateral Organizations [USAID, World Bank, WHO, UNICEF, UNFPA, CDC, etc],

INGOs & NGOs [FHI360, Uganda Health Federation-UHF, AMREF, JSI, Save the Children, URC, EGPAF, Intra-Health, Baylor]

CSOs and CBOs [CUAMM, Samaha, SDS, etc],

Private Sector [Stanbic Bank, Rotary, MTN-Uganda]

Media [NTV Media, NBS, etc],

Health Facilities and Communities [RRHs, General Hospitals, Health Centres IV & III]

Religious Bodies: [UPMB, UCMB, etc]

Figure 2: Ten Re-functionalized HC IVs in FY2021/2022

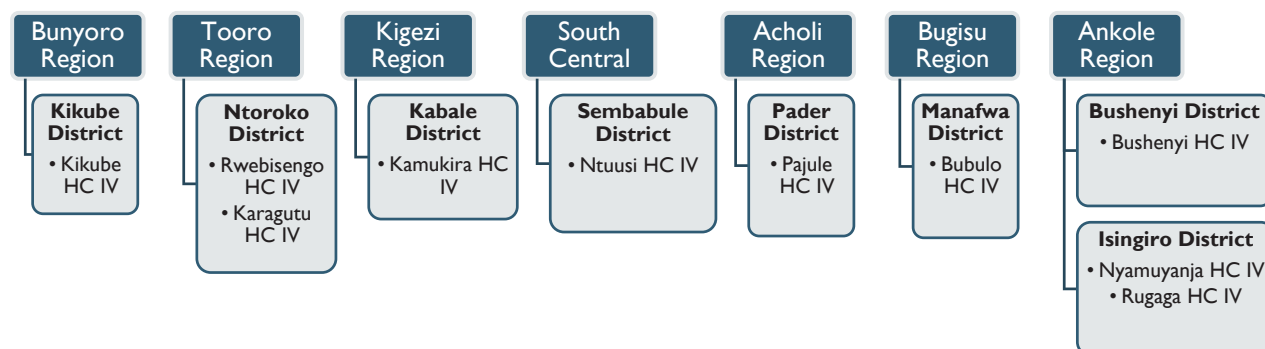


Table 1: FY2021/22 Key national level MPDSR accomplishments

Key accomplishments	• Backlog of death reviews: MOH requested the Assistant District Health Officers (ADHOs) for MCH to follow up and support health facilities with pending death reviews to clear the backlog and capture the reports into the DHIS-2 Events Report App. The number of pending reviews for maternal deaths reduced and in Q2, hit 100% for 6 consecutive weeks. • Timeliness of death reviews among the 14 regional referral hospitals (RRHs): The National MPDSR Committee has continued to urge for timeliness of death reviews since October 2021 through the NASMEC sub-committees. Specifically, the neonatal sub-committee on a weekly basis engaged the RRHs to review at least more than half of their reported perinatal deaths. Timely audits of perinatal death reviews are still lagging but have generally improved nationally. • National real-time virtual confidential inquiry meetings: The MOH-RCH department initiated weekly engagements of all HC IVs and IIIs that reported any maternal death to understand deeper the circumstances around the death and planned actions to address the identified gaps in care. The respective districts through the ADHO-MCH were tasked to follow-up on the implementation of the proposed actions. • Blood transfusion services: The death reviews highlighted gaps in availability of blood and blood products. UBTS working with partners facilitated the expedited functionalization of Blood Collection and Distribution Centres by providing blood refrigerators and configuring the computerized blood tracking system in the districts of Kabale, Nebbi, Ntoroko and Mityana among others. • Functionalization of HC IVs as the first-line Comprehensive Emergency Obstetric and Newborn Care (CEmONC) facilities: The MOH, HC IV in-charges, and medical officers held stakeholder discussions in January 2022 to further improve the functionality of HC IVs, and 10 health facilities were supported by the NMS and partners in six regions (Bunyoro, Karamoja, Tooro, Bukedi, North Central, and Kampala). <i>[Fig 2 shows some of the re-functionalized Health Centre IVs in the country]</i> • Functionalize Newborn Intensive Care Units (NICUs) and Special Care Units (SCUs) in Mityana District: The Newborn Steering Committee brought on board regional IPs to set up NICUs/SCUs in health facilities such as Mityana Hospital, Mwera HC IV, Ssekanyonyi HC IV, Kyantungu HC IV, Karugutu HC IV among others. • Mentorship from RRHs to Lower Facilities: To address knowledge and skills gap in providing BEmONC and CEmONC services, RRHs worked collaboratively with the MOH supported clinical mentorship teams to provide maternal and newborn care mentorships in all regions of the country.
---------------------	---

	• Recruitment of Anaesthetic officers: To address the shortage of anaesthetic officers, MOH engaged the district local governments to allocate a wage bill for their recruitment in the districts of Kikuube, Mayuge, Amuru, Pakwach districts among others. • Harmonize the Essential Maternal and Newborn Care Clinical Guidelines: MOH working with its stakeholders revised the EMNC guidelines to further enhance the capacity of health workers in providing quality maternal and newborn services. These were officially launched during PET awareness campaign in May, 2022 in Mbale District. • Comprehensive Caesarean Section Kit: MOH engaged the NMS to come up with a comprehensive caesarean section kit to be provided to CEmONC facilities. This kit will improve easy access to all equipment necessary for quality caesarean sections. • Preeclampsia Toxaemia (PET) Awareness Campaign: During the PET awareness month of May, MOH conducted a number of activities including advocacy, behavioural change communication (radio talk shows, TV shows), ground rounds and these were concluded by the commemoration event in Mbale district in May 2022. • World Prematurity Day Celebration: The World Prematurity Day celebrations were held in Kasese Bwera to raise awareness about Prematurity and the challenges of preterm babies. • Health information system: At least 50 weekly MPDSR reports (data visualization MPDSR summaries) from DHIS2 data disseminated to stakeholders across the country.
--	---

Table 2: FY2021-22 Key Sub-national MPDSR accomplishments

Key accomplishments	• Establish regional MPDSR digital and virtual platforms: Strengthen regional response by establishing two regional platforms so emerging issues can be discussed and actions generated. ○ A WhatsApp platform was set up in January 2022 to provide timely responses to key issues at CEmONC sites ○ Quarterly meetings with the HC IV and hospital managers were initiated. ○ Decentralized safe motherhood efforts through the establishments of local maternity and newborn systems e.g. Kampala Metropolitan (Wakiso, Mukono, Mpigi, KCCA), Bunyoro, Mubende among other high burden regions. • Knowledge exchange on MPDSR best practices: Promoted knowledge exchange among Kawempe National Referral Hospital and facilities in Tooro, Bunyoro, Acholi, Teso, North Central, Lira, Buikwe, and West Nile regions by sharing success stories and current implementation status in response to the issues flagged in the Weekly MPDSR Reports for action. • Improve the functionality of CEmONC sites
----------------------------	---

	○ Rwebisengo HC IV: A multidisciplinary team was formed by the MOH's RCH department to conduct a health facility assessment. The report led the Permanent Secretary (PS) to direct Kilembe Mines Hospital to provide an anaesthetic machine to Rwebisengo HC IV and working with the regional IPs provided on-site MNH and user training on the use of the anaesthetic machine. ○ Kikuube HC IV: MOH in partnership with Kikuube District Local Government and Partners functionalized the CEmONC site through recruitment of an anaesthetic officer and two theatre assistants; engagement of NMS to resolve supply issues for Bunyoro Region; repair and replacement of broken equipment in the theatre (e.g., theatre light); and provision of support supervision by the District and MOH senior leadership. ○ Kamukira HC IV: Kabale DLG in partnership with regional IPs supported procurement of critical equipment to functionalize the theatre (operating table, operating light, infant radiant warmer, autoclave 50ltrs, resuscitation table, three sets of c-section kits, and a patient monitor); and a biomedical engineer who supported installation of the equipment and provision user training. ○ Tororo General Hospital: MOH supported Tororo district to address the bottlenecks in receiving RBF funds which they later used to procure an autoclave for Tororo GH. ● Private Sector Involvement: The first Human Breast Milk Bank was launched at Nsambya Hospital-Kampala as a strategy to improve the newborn survival.
--	---

Table 3: Examples of MPDSR accomplishment by Health System Building Blocks

Health System Framework	Blocks	RESPONSE & RESULTS
Health Delivery	Service	Kiruhura District: Reduced Perinatal deaths due to timely support to lower facilities. Improved availability of resuscitation equipment at RBF supported facilities Improved timely mortality notifications of all deaths with maternal death reviews at 100%
		Apac District: prioritization of nurses to be trained in NICU (neonatal intensive care unit), re-arranging maternity and laboratory units. involvement of all cadres at the point of care/triage points.

Health System Blocks		RESPONSE & RESULTS
Framework		
		Kampala: Adoption of QI strategies. There is an improvement in timely referrals from peripheral facilities, improvement in PPH management and improvement in availing and administration of lung surfactant among neonates with RDS. Rubanda: Increased number of deliveries due to improved ANC services which resulted in Increased ANC attendance. Kampala Naguru-CUFH: 40% Reduction in maternal deaths from 20 FY 20/21 to 12 in FY 21/22. This has been attributed to Improved intrapartum care and monitoring on the ward, with partographs initiated at admission patient monitors were procured for both labor suite and postnatal wards Patient Privacy: To improve experience of care for mothers in labor, by improving Patient privacy with curtains placed in the labor suite, client satisfaction surveys have been conducted, client feedback sessions have been held with clients reporting better experience of care."
Health Workforce		Kabale District: Increased recruitment and appointment of Anaesthetic Officers Rubanda District: More midwives were recruited for Muko HC IV to address the HR gap. This contributed to the reduced delay in decision to incision time. More HC workers are intentional about attending CMEs which has resulted into better partograph use.
Health Systems	Information	Kampala District: Data utilization: Improvement In data quality and utilization: Monthly summaries are shared with MCH staff and perinatal death review data is up to date in DHIS2 for FY 2021/22
Access to essential medicines & supplies		Kampala: Received equipment from the Kampala region implementing partner (office chairs, patient bed, surgical and examination gloves, mama kits) to address the inadequate supplies in the health facilities. Rubanda District: In the recent year, there has been no stockout of essential supplies for delivery in Muko HC IV. The facility reported that they hadn't registered a maternal death in FY 2021/22
Health Financing	System	Rubanda: District Local Government procured ultrasound scan machine and CBC machine as well as extended the Muko HC IV postnatal ward from 4 bed capacity to 25 bed capacity

Health System Blocks		RESPONSE & RESULTS
Framework		
		Kalungu District: URMCHIP and RBF funds were used to support district biostatisticians training in timely data management. This has led to sustainable timely notification of both maternal and perinatal deaths in the recent months.
Leadership /Governance		Apac District: RHITES N-Lango & National Medical Stores [NMS] conducted NICU trainings that have led to improved perinatal outcomes in the region.
		Kampala: Kisenyi HC IV: 1:1 mentorship between junior cadres and seniors were started to

2.3 Highlights based on the 3 Delays Model

- **The First delay** entails delay in decision making at community level. The maternal deaths arising from the first delay were commonly due to, lack of partner support in making timely decisions to access a health facility. Many women still prefer delivering with traditional birth attendants in the community and this was one of the reasons seen in delayed referral to the health facility leading to preventable maternal deaths.
- **The second delay** entails challenges in the woman accessing a health facility despite making a timely decision to receive care. Focus being on uncoordinated referral processes between health facilities due to lack of ambulances and proper communication between the referring facility and referral facility. The 2nd commonest being financial constraints and lack of adequate means of transport. Transportation challenges heightened during the COVID-lockdown could have contributed to the maternal/perinatal mortality and morbidity.
- **Third Delay** usually arose from delayed intervention at the health facility. Majority of preventable maternal deaths were due lack of knowledge and skills in EmONC, lack of essential drugs like anticonvulsants lack of infrastructure and equipment, drug stock-outs, misdiagnosis, lack of blood and blood products.

Table 4: Highlights of the different recommendations linked to the 3-Delays framework and the actions taken at various levels

Delays	Theme/recommendation	Actions/Response
D1: Addressing delay in Seeking care Delay in Recognizing & Making Decision to Seek Care • Delay of Woman seeking Help • Lack of Partner Support • Inability to recognize Danger Signs • Family influence to deny permission to seek care	• Nwoya recommended District continuous sensitization on benefits of ANC attendance, birth preparedness, skilled birth attendant (SBA) deliveries	• This was done through targeted outreaches and community dialogues to address community avoidable factors
	• Community Health Education, Sensitization and Advocacy through disseminating information on maternal and perinatal deaths in the district.	• Radio talk shows and programs were initiated to disseminate information surrounding community deaths as well as discussions around early ANC attendance
	• Continued Traditional Birth Attendants (TBA) engagements to discourage home deliveries as well as have them take up community sensitization roles	• TBA sensitization meetings were held in various districts such as Pallisa with support from partners. TBAs were advised to stop home deliveries and move towards timely referral of mothers to the facilities.
	• Increase sensitization of TBAs on dangers of late referral	
	• Community Dialogue to improve male involvement and partner support during pregnancy • Address gender-based violence (GBV) that has continued to translate into poor partner support and denial of permission to seek care among mothers.	
D2: Addressing delay in reaching care	• To conduct follow-up to the lower facilities that are constantly referring to the facility. Esp. those from Wakiso district. Providing timely feedback	• Kawempe NRH & Kisenyi HC IV: Following the MPDSR seasons majority of the perinatal deaths registered (70%) are from referred clients coming from neighbouring districts. An in-depth analysis

Delays	Theme/recommendation	Actions/Response
Delay in reaching the health facility • Lack of transport from home to facility • Lack of transport between facilities • First seeking informal treatment (TBA) • Refusal of transfer to higher facility	to referring health facilities on the importance of timely referrals • Referral facilities should provide feedback to referring facilities to address issues surrounding late referrals. • Strengthen links with lower health facilities to avoid referral delays.	on the deaths pointed to the delay to effect a referral from the referring facility and wrong pre-referral treatment esp. for pregnancy induced hypertension. • The MPDSR committee selected the targeted facilities in Wakiso conducted a mentorship on pre-referral management of mothers and addressed the missing aspects in the BeMONC case management for Cure Pharm health center, one of the referring facilities. • This has since improved on the quality of the referrals being received from the facility thus improving the survival rate as no avoidable deaths are being registered.
D3: Addressing delay in receiving care Delay in receiving appropriate healthcare • Lack of blood supplies & Commodities • Inadequate health staff • Refusal of treatment or admission	• Kiruhura District: Address the issue of inadequate critical and skilled staff at lower health facilities that refer to the main hospital • Conduct Support Supervision and mentorship visits to top-referring facilities to improve on patient outcomes by the time of referral • Recruit critical cadres to address Inadequate Health Staff at some high volume KCCA facilities to handle the high patient load especially over weekends and night-time. • Lack of essential commodities such as HMIS reporting tools for timely death reporting and notification	Health Facility Actions • Clinical Mentorships and Support Supervision was conducted at HC IIIIs • China Naguru Friendship Hospital and Kawempe National Referral Hospital conducted mentorship visits to the facilities that were referring most from Kampala and trainings were conducted on partograph use and better referral documentation. • URMCHIP and NMS supported NICU training activities in Apac District which has led to a reduction in perinatal deaths. • Mbarara Regional Referral Hospital: Reduced unclassified perinatal deaths attributed to review of all patients within the first 2 hours after delivery.

Delays	Theme/recommendation	Actions/Response
Lack of skills or expertise	- Data Quality challenges with incomplete patient documentation such as lack of partograph monitoring leading to challenges in assessing causes of death and their contributing factors - Need to engage private healthcare facilities to avoid delays in referral - Functionalise district and facility MPDSR Committees - Ensure timely notification and review of deaths - Improve staff skills in handling emergency obstetric and Newborn care. - Utilize data to Conduct Quarterly Performance Review Meetings and Mentorships to identify poor performing facilities and their challenges. - Advocacy among politicians and local leaders to lobby for essential commodities such as oxygen cylinders and concentrators.	- The USAID partner has supported HR placements to various health facilities that help to address critical HR gaps. Majority are now absorbed through the district service commissions. - Kawempe NRH, KCCA facilities, Regional RRH: Various IPs provided reporting tools such as notification and review forms to improve timely data capture. District Actions - With support from USAID, KCCA recruited additional medical officers at Kisenyi and Kawala HCIVs to provide 24-hour services needed at CEmONC facilities. - Sheema, Ibanda, Oyam and Lira: The districts have conducted 12 monthly MPDSR committee meetings with the District Health Teams that have resulted in improvement in notification and reporting. - Mbale: From the Mentorship visits at lower facilities, midwives identified with skill gaps were attached to Mbale Regional Referral Hospital for on-site training and supervision. - Pallisa & Buhweju: Reporting tools were procured and distributed to lower facilities with insufficient supply as well as training on proper partograph use conducted. - Maracha District: HR positions filled through DLG recruitment [Example: ADHO position filled, 4 midwives recruited] - Pallisa: Through mentorships at the lower facilities, midwives from these facilities attend the MPDSR reviews at the hospitals to address issues specific to their facilities.

2.4 Collaborative learning and adaptation

- a) **Death Identification:** Nationally, MoH through the weekly meetings has spearheaded the process of documenting all maternal and perinatal deaths and linking the reviews to actionable recommendations. This strong political will has been at the forefront of capturing MPDSR success stories across the country and using the lessons learned in other regions through the CSO mentorships. The lessons learned are captured weekly and shared across various DHO, ADHO, Regional Referral Hospital, and Health facility fora by email and innovative information sharing social media platforms. While capturing of community deaths remains a challenge, IPs are working with various facilities to support confidential inquiries on the causes of the community deaths. Various districts like Kiruhura continue to struggle with inadequate human resource at HC III coupled with delayed referrals from the community to the health facilities.
- b) **Data capture:** Nationally, MoH has worked with its partners to ease the access and utilization of MPDSR weekly data submitted into DHIS2. This has been done through the weekly extraction of mortality data submitted into m-track. This data is then summarised into user friendly interactive dashboards and graphic summaries that are then disseminated by email as well as presented and shared in the weekly meetings. The Response component of the MPDSR process has been tackled through weekly follow-up phone calls to facilities that reported or notified maternal and perinatal deaths. From these calls, information and data around probable causes of deaths, modifiable factors, review status and recommendations are summarised into a report that is discussed and shared with relevant stakeholders across the country.

The national reports have adopted the 3-Delays model to classify the modifiable factors and link them to relevant actions. These MPDSR data, findings and documents are disseminated to different sectors, levels of care and management through virtual meetings, Technical Working Group meetings, and emails.

- c) **Data analysis and Use:** The analysed and summarised MPDSR information is shared on a weekly basis which coincides with National Weekly MPDSR meetings. These meetings are chaired by the Commissioner and head of the NASMEC Safe Motherhood Committee. Various cadres are invited to the meetings such as different MoH departmental Commissioners, IPs, CSOs, DHOs, ADHOs, Director General Health Services, academicians and Development partners.
- d) **Recommending Solutions:** The National MPDSR committee has continued to work with all key stakeholders by nominating responsible persons for the short-term recommendations that arise during the meetings. The recommendations are prioritized following the weekly issues that surround the maternal and perinatal deaths presented

e) Implementing recommendations: Various individuals or IPs are assigned to follow up on specific recommendations arising from each of the weekly meetings. Great efforts have gone into innovating strategies of following up implementation of recommendations and action points. This has seen many healthcare workers take up ownership to ensure actions are addressed. Amidst these great leaps and bounds in MPDSR, issues such as a standard documentation system for tracking follow-up of specific recommendations made by districts and facilities.

Amidst these successes, the country continues to face barriers to implementing mortality reviews. Some of these barriers include; Inadequate communication linkages between referring and referral facilities, Insufficient Human Resource across all levels of the Healthcare System, lack of updated clinical management protocols and guidelines among staff providing care, Insufficient community engagement and linkages to health facilities and inadequate essential supplies and commodities at BEmONC and CEmONC facilities.

The National MPDSR committee has adopted the strategy of sharing success stories from different regions around the country. By the close of FY 2021/22, over 10 success stories from various regions and Districts were shared during the weekly national MPDSR review meetings. This same platform is utilized to share challenges and experiences in MPDSR from facilities, districts, and regions.

2.4.1 National MPDSR collaborative learning and adaptation

Implementing Partners continue to support the development and roll-out of national MPDSR guidelines and relevant trainings needed for implementation. Various partners have supported regions and facilities to functionalize their MPDSR systems and improve timely and quality maternal and perinatal death notifications and reviews. Ten out of the 14 MoH regions have shared MPDSR success stories and competing challenges.

2.4.2 Implementation of the MPDSR | national learning platforms

Learning for Action

- In the context of merging clinical efforts, public health and research, strategic committees have instituted to provide technical guidance, direction and support towards mitigating mortality-related factors. While these groups are related in many ways, they each independently support specific components of the maternal neonatal and child health cascade. These communities of engagement platforms support MoH's goal of how to best achieve SDG 3 component of the national Maternal and Perinatal outcomes related to coverage, quality of care, scale-up of high-impact interventions. These meetings have yielded actionable information for better scale-up of evidence-based MNCH practices by addressing system bottlenecks and to accelerate progress toward reducing maternal, neonatal, and child mortality. The collaborative learning and sharing agenda are guided by data from the MPDSR issues over the past years. Obstetric Haemorrhage with a focus on PPH and Hypertensive disorders have continued to

contribute to the high mortality rates in the country. This guided NASMEC's eight broad themes on Obstetric Haemorrhage, Hypertensive disorders of Pregnancy, Antenatal Care, Prematurity, Maternal COVID-19 Vaccination, COVID-19 in Pregnancy, Infections in Pregnancy, NCDs in Pregnancy. Under each of these themes, various presentations and success stories have been shared across the country with various MNCH practitioners, local stakeholders, and implementers. These presentations are linked to the broader theme with emphasis on Implementation, Quality of Care, Health Systems Strengthening (HSS), Community engagement, data demand, dissemination and Scale-up. These presentations have strengthened collaboratives across local stakeholders and Implementing partners.

Table 5: Shared success stories from the weekly National presentations

REGIONAL MPDSR SHARED STORIES FOR FY 2021/22	
The National Weekly Platform aims to: • Create an evidence-based and action guided learning platform. • Support regions that are in the process of adopting functioning MPDSR initiatives • Develop innovative strategies from various regional experiences on tracking response • FY 2021/22 has seen the following 10 regions share their various stories as highlighted.	
REGION	THEME _TOPIC_ PRESENTATION
KIGEZI REGION	
MPDSR Best Practices & Kabale RRH MPDSR Support	Functionalizing of the HC IV operation theatres • Coordinate regional MPDSR meetings. • MPDSR support supervision and mentorship to lower health facilities like Muko HC IV, Kamukira HC IV, Hamurwa HC IV and Rubaare HC IV in Ntungamo
KARAMOJA REGION	
MPDSR Progress and Challenges in the region Benefits of Clinical Mentorship	• The Capacity to supervise quality MPDSR meetings built among all the ADHO- MNCH in the region • All the ADHOs in the region participate in the weekly virtual MPDSR coordination meetings • Printing and distribution of the MPDSR tools, guidelines and protocols was supported through the mentorship program • Improvement in the reviews of institutional maternal deaths and entry into DHIS2 from 71.4% in Q1 to 100% in Q2. • Peer to peer learning approaches in the region were initiated with support by Moroto RRH
WEST NILE REGION	
Clinical Skills Mentorship for MPDSR	• MPDSR SMART Responses • Signed PPH Activity Framework • SDS PPT: Provision of Consultancy Services for Clinical Skills Updates Mentorship for Reproductive, Maternal, Newborn, Child & Adolescent Health (RMNCAH) in West Nile
TESO REGION	

Teso Sub-Region	• Hands-on mentorship of facility Teams in district hospitals and HCIVs across the region on management of common complications to reduce referrals to regional hospital • Taking death reviews to the lower facilities where the cases came from and conducting mentorship about the cause of deaths. • No Name, No blame game • Conducting mentorship and support supervision in high volume facilities on emergency obstetric care and encouraging them to do the same for the lower facilities within their districts.
BUKEDI REGION	
Clinical Mentorship Updates	• National Clinical Mentorship Updates: Samasha PPT Presentation: Clinical Skills Updates & Mentorship for RMNACH In Busoga and Bukedi Region
TOORO REGION	
Ntoroko District	▪ Establishment and equipping of 2 NICU sites at Karugutu and Rwebisengo HCIVs ▪ Partner support through • capacity building through onsite mentorships • supervision by DHO's office and health facility monitoring • DHO's office to constitute MPDSR committees at all levels - Support district during review of maternal and perinatal deaths both at health facility and community levels
Rwebisengo HC IV	• Completion of Rwebisengo HCIV theatre (at 97%) with support from partners • Rwebisengo HCIV received a new ambulance with support from MoH
Other efforts in the region	• Addressing MPDSR processes ▪ Mtrack reminders for Kyenjojo ▪ Sharing data with facilities on unnotified and audited cases for Kyenjojo ▪ MPDSR committee meetings and actions for improvement for Kyenjojo.
BUNYORO REGION	
Hoima Sub-Region	• Early referrals been made to avoid the near miss and deaths • Regular district MPDSR meetings done regularly- Hoima • Increased deliveries in the facilities led to reduction maternal deaths • Advocacy done in monthly MPDRS meeting at the district has led to acquisition of an ambulances in Kakumiro, Hoima and Kibaale
ACHOLI REGION	
Gulu RRH	• Involving administration in implementing action plans developed during MPDSR – A case of Gulu Regional Referral Hospital.
Pajule HC IV	• Functionalization of Pajule HC IV
BUSOGA REGION	
Iganga Hospital	• Iganga Hospital – MNCH Improvement Strategies
SOUTH CENTRAL REGION	
Mubende RRH	• MPDSR Updates • Clinical Mentorships

NORTH CENTRAL REGION	
Masaka RRH	Clinical Mentorship to functionalize HC IVs • Several formal trainings with certification in operative and emergency obstetric surgery for MOs and midwives in essential obstetric skills • Engaging partners in funding of essential equipment purchase for operating theatres and establishment of NICUs • Advertising for and recruiting essential/critical staff for functioning of theatres especially Drs, anesthetic assistants, and officers plus theatre assistants • Setting up of regular meetings and feedback between the RRH, IPs, District executive and political leadership and HC IV /Health Sub-District staff,
LANGO REGION	
Lango Region	• MPDSR Implementation Progress & Successes
NATIONAL UPDATES	
MoH and Partner Presentations	• MOH: Presentation on the management of PPH using Heat Stable Carbetocin - What Health workers and Health managers need to know. • UNICEF: Maternity High Dependence Units: Experiences of setting up and functionalization in nine (9) hospitals in the West-Nile region and Kawempe NRH - UNICEF. • Status of Newborn Health in Uganda • MakSPH: Developing a peer-support intervention to improve post-discharge care and outcomes of preterm babies in Uganda • Birth and Death Registration-NIRA • ADHO's Group-ANC Model PPT • CSO: Presentation made by the BAMA team on using 'Beyond the numbers' as a community-level strategy to understand maternal deaths. • Anesthesia Department: Spinal Anesthesia for Caesarean Delivery Assessment Tool [SACDAT]

CHAPTER THREE: ANALYSIS OF THE REPORTED AND REVIEWED MATERNAL AND PERINATAL DEATHS

3.1 Introduction

This chapter looks at the maternal and perinatal death reports, death notification and death review trends and contributing factors in the reporting period of Financial Year 2021/2022 (FY21/22).

A total of 1,226 maternal deaths were reported through the monthly health facility reports (HMIS 105). Of these, 1,195 (97.5%) were notified and 1,096 (89.4%) were reviewed and electronically entered into the e-HMIS/ DHIS2 events report.

A total of 26,999 perinatal deaths were reported (HMIS 105). Of these, 14,285 (52.9%) were notified and 11,403 (42.2%) were reviewed and entered into the e-HMIS/ DHIS2 events report

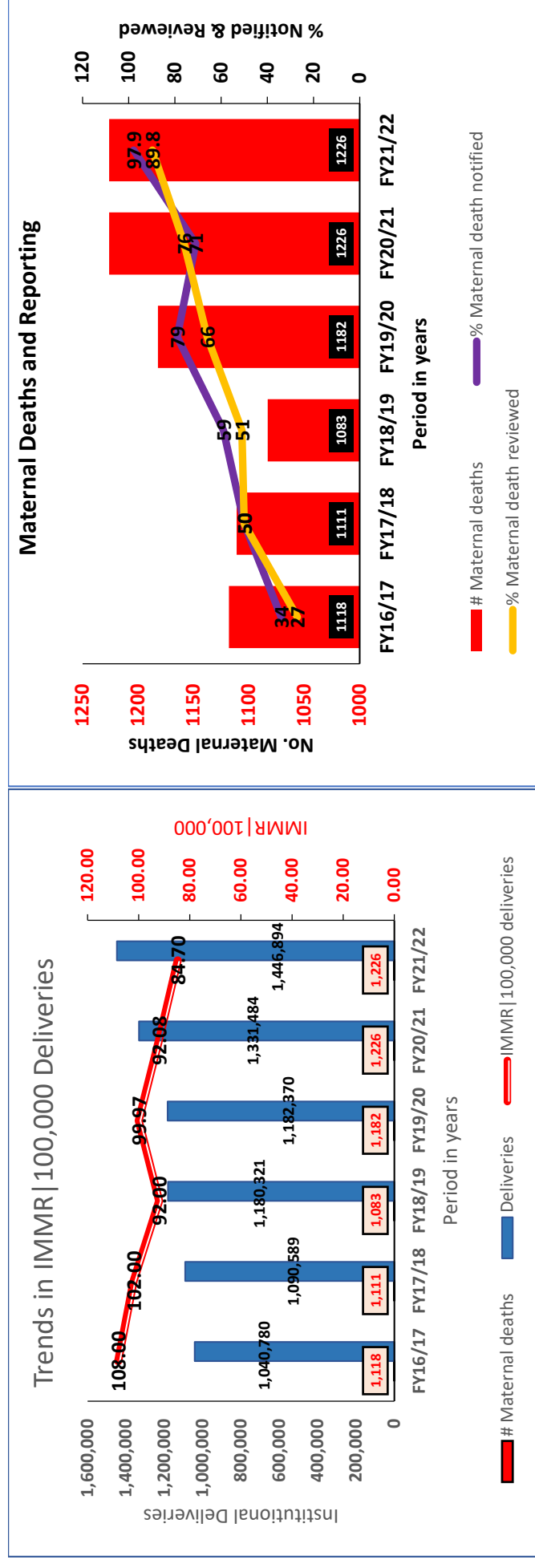
3.2 Institutional maternal deaths

3.2.1 National trends in Institutional maternal deaths notified, reported, and review rates.

During the FY2021/22, the health facility deliveries increased by 115,410 (8.67%) from 1,331,484 (FY20/21) to 1,446,894 (FY21/22) while the number of maternal deaths remained unchanged at 1,226 over the past two financial years (FY20/21-FY21/22). This translates into an Institutional Maternal Mortality Ratio (IMMR) of 84.7/100,000 deliveries, a reduction from 92/100,000 deliveries registered in the previous year (FY20/21).

Over the past six years (2016-2022), the IMMR has reduced by 21.57% (from 108 to 84.7 per 100,000 deliveries), maternal death notification increased by 63.9% (from 34% to 97.9%) and maternal deaths reviews increased by 62.8% (from 27% to 89.8%). A 16% reduction in IMMR was noted between FY2019/20 and FY2021/22. [see Figure 3]

Figure 3: Showing national trends in Institutional maternal deaths reported, death notifications and review rates.



Data source: DHIS2, FY2016-2022.

Table 6: Maternal mortality by Age category

maternal age category	FY2019/20		FY2020/21		FY2021/22	
	No. (proportion) of maternal deaths	IMMR/100,000 deliveries	No. (proportion) of maternal deaths	IMMR/100,000 deliveries	No. (proportion) of maternal deaths	IMMR/100,000 deliveries
≤ 19 Yrs	131 (11.1%)	61.3	148 (12%)	63.2	122 (10%)	46.5
20 - 24 Yrs	301 (25.5%)	74.9	273 (22%)	60.5	272 (22%)	56.6
≥ 25 Yrs	750 (63.4%)	132.4	805 (66%)	125.4	832 (68%)	118.2
Total	1,182	99.97	1,226	92.4	1,226	84.7

During FY 2021/2022, 32% of the reported maternal deaths occurred among Adolescent girls and young women (AGYW), of which 10% occurred in the adolescent age group. In FY 2021/2022 there was a 2% reduction in maternal deaths among the adolescent age group compared to FY 2020/2021. The proportion of maternal deaths among the 20–24-year age group remained unchanged at 22%.

3.2.2 Regional trends in Institutional maternal deaths reported, notifications and review rates.

Table 7: Regional breakdown of maternal deaths reported, notified and reviewed for the last three financial years

SUB-REGION	No. health facility Deliveries			No. Maternal deaths			Institutional Maternal mortality ratio/ 100,000 deliveries			% Maternal death notifications			% Maternal death reviews		
	FY19/20	FY20/21	FY21/22	FY19/20	FY20/21	FY21/22	FY19/20	FY20/21	FY21/22	FY19/20	FY20/21	FY21/22	FY19/20	FY20/21	FY21/22
Acholi	53,174	57,712	65,143	48	62	67	90.3	107.4	102.9	96.0%	81.0%	104.5%	98.0%	74.0%	97.0%
Ankole	94,642	100,558	111,388	80	91	91	84.5	90.5	81.7	71.0%	73.0%	126.4%	56.0%	85.0%	113.2%
Bugisu	59,664	80,103	100,244	63	89	67	105.6	111.1	66.8	98.0%	100.0%	106.0%	83.0%	108.0%	103.0%
Bukedi	69,313	86,257	91,236	41	39	39	59.2	45.2	42.7	80.0%	64.0%	89.7%	83.0%	82.0%	87.2%
Bunyoro	73,133	82,106	89,770	106	105	102	144.9	127.9	113.6	87.0%	85.0%	87.3%	64.0%	50.0%	68.6%
Busoga	96,143	118,805	124,806	88	105	93	91.5	88.4	74.5	80.0%	71.0%	86.0%	94.0%	89.0%	87.1%
Kampala	85,611	83,320	87,966	177	187	196	206.7	224.4	222.8	94.0%	70.0%	98.5%	59.0%	79.0%	95.9%
Karamoja	28,187	33,712	33,702	24	28	23	85.1	83.1	68.2	58.0%	75.0%	108.7%	58.0%	104.0%	108.7%
Kigezi	47,658	50,778	55,478	45	46	30	94.4	90.6	54.1	78.0%	91.0%	106.7%	67.0%	98.0%	100.0%
Lango	64,565	74,143	78,765	60	44	55	92.9	59.3	69.8	83.0%	75.0%	107.3%	75.0%	111.0%	105.5%
North Central	122,455	140,424	148,430	107	132	122	87.4	94.0	82.2	67.0%	49.0%	68.0%	46.0%	61.0%	68.9%
South Central	122,476	132,504	145,614	109	84	122	89.0	63.4	83.8	68.0%	57.0%	88.5%	39.0%	40.0%	64.8%
Teso	63,005	72,128	74,030	52	37	58	82.5	51.3	78.3	29.0%	43.0%	106.9%	104.0%	105.0%	89.7%
Tooro	101,931	111,680	126,099	99	89	76	97.1	79.7	60.3	70.0%	78.0%	118.4%	33.0%	47.0%	98.7%
West-Nile	100,413	107,254	114,223	83	88	85	82.7	82.0	74.4	87.0%	58.0%	97.6%	93.0%	72.0%	97.6%
Uganda	1,182,370	1,331,484	1,446,894	1,182	1,226	1,226	99.97	92.1	84.7	78.0%	71.0%	97.5%	66.0%	76.0%	89.4%

** Additional details of all maternal death reviews conducted in FY18/19 were not reported and not included in the FY18/19 tally. ** Data extracted on 29th Aug, 2022

Key (IMMR)

	≤63/100,000
	>63-90/100,000
	>90/100,000

Data Source: DHIS2 FY2019/20-FY2021/22

Key Notifications & Reviews

	>84
	84 - 65
	<65
	> 100

In FY2021/22, three out of fifteen regions (Bukedi, Kigezi and Tooro) achieved the IMMR target of 63/100,000 deliveries (MoH Strategic Plan, 2020/21-2024/25). However, twelve regions did not achieve the target. Kampala had a disproportionately higher IMMR compared to the rest of the regions in the last three financial years. Acholi and Bunyoro IMMR have been staggeringly high in the last three financial years, with Bunyoro making a slight improvement.

There has been improvement in maternal death notification across all regions in FY2021/22 with Bukedi, Teso, West Nile and South central among regions with great improvement. North Central region lags with 68.6% maternal death notification. Overall, there's a noticeably improvement in maternal death reviews across all regions. However, South Central Region maternal death reviews have remained low for the last three financial years.

In FY2021/22, 61% (83) of the districts achieved the annual MOH Strategic Plan (2020/21-2024/25) IMMR target of 63/100,000 deliveries.

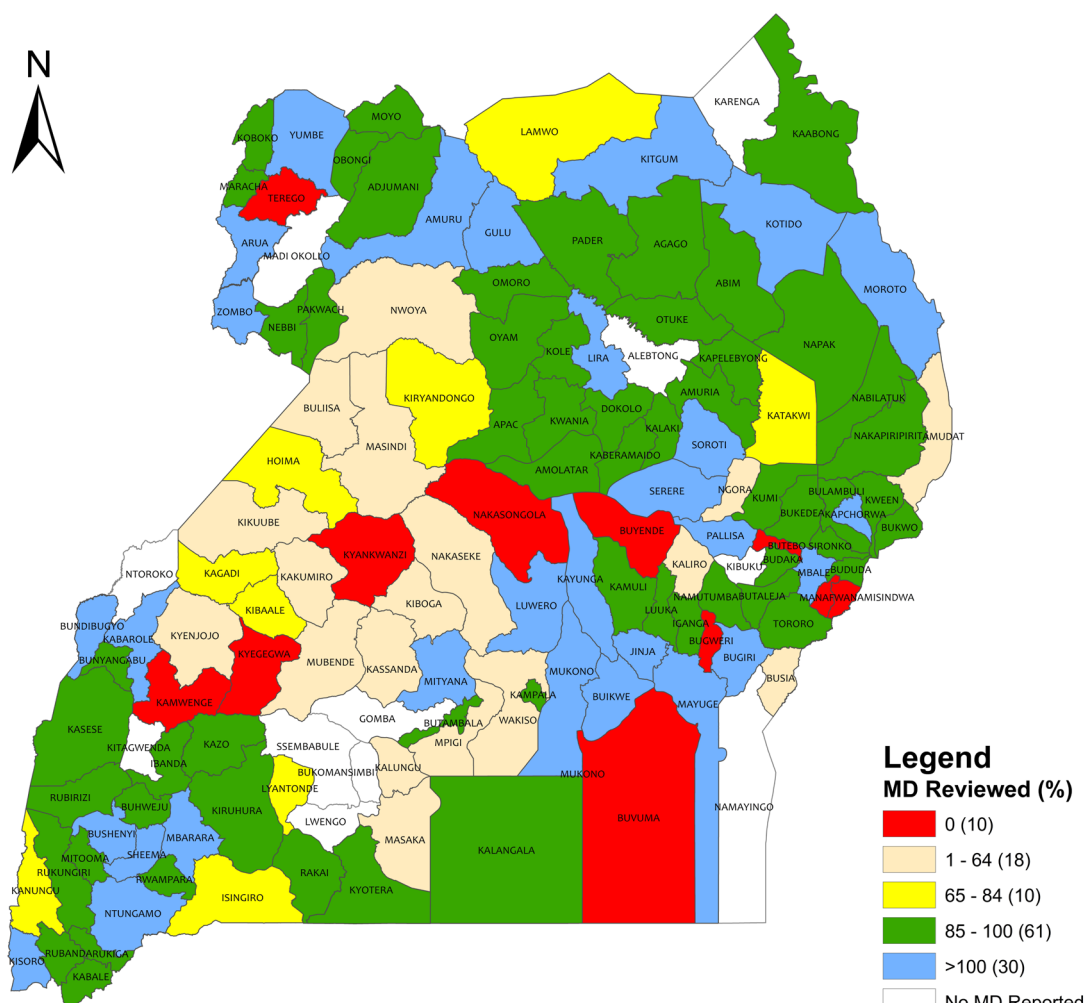
Figure 4: Map showing Institutional Maternal Mortality Ratio per 100,000 deliveries by district



During FY2021/22, Sixty-one districts (44.85%) achieved the MOH Strategic Plan 2020/21-2024/25 of 85% maternal deaths review while twenty-nine districts (21%) reviewed more than 100% of their reported maternal deaths.

There was a 50% reduction in the total number of districts which did not review reported maternal deaths from 20 (FY2020/21) to 10 districts (Bugweri, Buvuma, Buyende, Kamwenge, Kyankwanzi, Kyegegwa, Manafwa, Nakasongola, Namisindwa and Terego) (FY2021/22).

Figure 5: Map showing the proportion of maternal deaths reviewed by districts (FY2020/21 and FY2021/22)

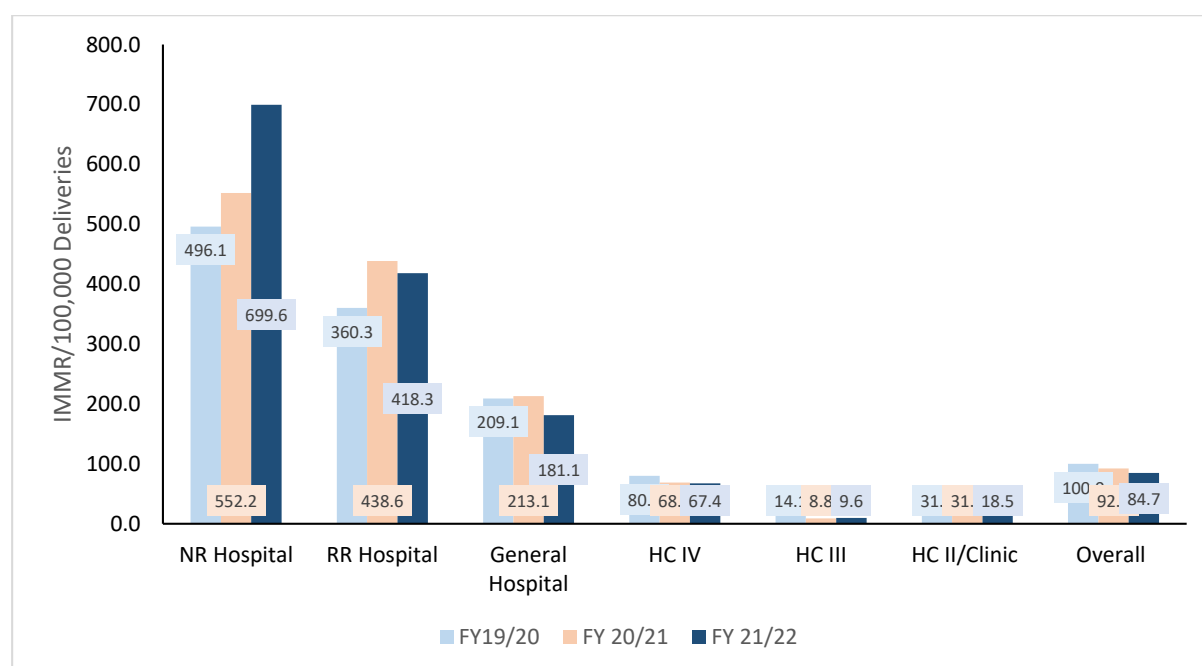


Data Source: DHIS-2 Events report (2021/2022)

3.2.4 Institutional maternal deaths reported by health facility level

Overall, the IMMR has reduced over the past three financial years from 100/100,000 (FY2019/20) to 84.7/100,000 deliveries (FY2021/22), a 15.3% reduction. There was generally a decreasing trend in IMMR except for the NRH which has shown an increasing trend over the past three financial years (FY2019/20-FY2021/22). The IMMR at the NRH in the FY2021/22 is ten times (699.6/100,000 deliveries) higher than the national IMMR target of 63/100,000 deliveries. The IMMR was six times and three times higher than the national target of 63/100,000 deliveries at RHH and GH respectively in the FY2021/22. However, the lower health facilities (HC III and HC II/Clinics) had their IMMR below the national target, while the HC IV had their IMMR slightly above.

Figure 6: Institutional Maternal Mortality Ratio by Health facility level FY2019/20, FY2020/21 and FY2021/22

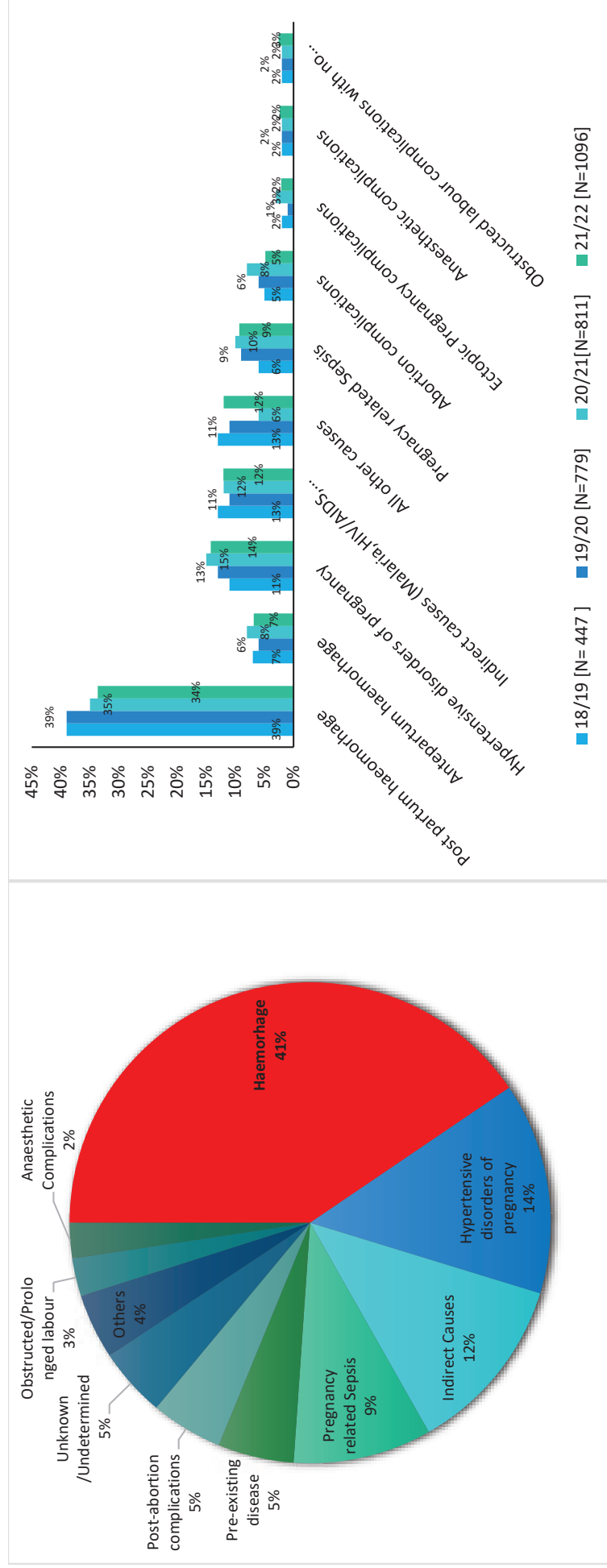


Data source: DHIS2, FY2019/20-FY21/22.

3.2.5 Causes of maternal deaths

Haemorrhage was the leading cause of maternal deaths accounting for 41% of cases in the FY2021/22. Hypertensive disorders of pregnancy followed at 14%, indirect causes including malaria, HIV/AIDS, severe anaemia, COVID-19 and other infections (12%), pregnancy-related sepsis 9%, abortion Complications 5%. The remaining 19% was contributed by other causes including pre-existing diseases (5%), obstructed/prolonged labour (3%), anaesthetic complications (2%), unknown/undetermined causes (5%) and others (4%).

Figure 7: Causes of Maternal Death, (n=1096) FY 2021/2022 and Comparison across FY2018/19, FY2019/20, FY2020/21 and FY2021/22



The proportional contribution of the causes of maternal deaths are largely unchanged over the past four financial years (FY2018/19-FY2021/22). However, there was a downward trend in the proportion of women who died from PPH over the same period. Post abortion complications dropped from 8% (FY2020/21) to 5% (FY2021/22).

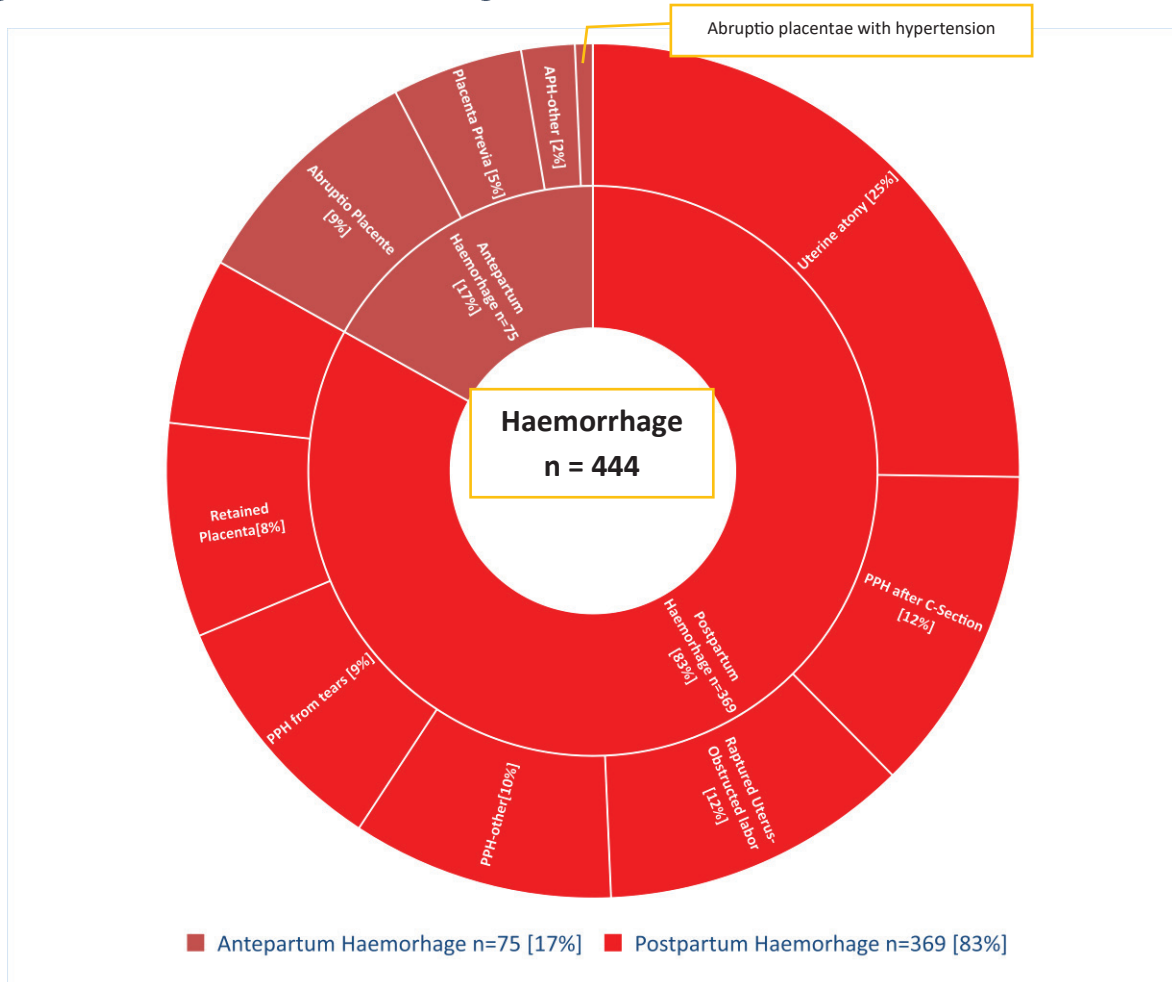
Maternal deaths due to antepartum haemorrhage, Hypertensive disorders of pregnancy, pregnancy related sepsis and ectopic pregnancy complications, each reduced by 1%.

Deep-dive analysis of maternal deaths due to haemorrhage

Postpartum haemorrhage accounted for 83% of all maternal deaths due to haemorrhage (FY2021/22). A quarter (25%) of all PPH deaths were because of Uterine atony.

Among the APH-related maternal deaths, abruptio placentae was the leading cause at 9%, followed by placenta praevia at 5%.

Figure 1: Classification of Haemorrhage Cases, n=444



Data source: DHIS2, 2021/2022

Causes of death by region

Table 8: Causes of maternal deaths by region (*excludes unknown/undetermined cases)

Region	Haemorrhage	Hypertensive disorders of pregnancy	Indirect Causes	Pregnancy related Sepsis	Pre-existing disease	Post-abortion complications	Others	Obstructed/ Prolonged labour	Anaesthetic Complications
Acholi	29.70%	18.80%	12.50%	10.90%	12.50%	9.40%	3.10%	0.00%	3.10%
Ankole	43.20%	13.70%	8.40%	9.50%	5.30%	5.30%	6.30%	4.20%	4.20%
Bugisu	41.80%	17.90%	16.40%	3.00%	10.40%	3.00%	3.00%	1.50%	3.00%
Bukedi	50.00%	12.50%	18.80%	3.10%	3.10%	0.00%	0.00%	3.10%	9.40%
Bunyoro	38.50%	15.40%	10.80%	16.90%	1.50%	1.50%	9.20%	4.60%	1.50%
Busoga	49.40%	19.00%	12.70%	6.30%	2.50%	7.60%	1.30%	0.00%	1.30%
Kampala	43.50%	24.50%	8.20%	7.60%	4.90%	3.30%	4.30%	1.10%	2.70%
Karamoja	22.70%	9.10%	22.70%	13.60%	13.60%	4.50%	9.10%	4.50%	0.00%
Kigezi	48.30%	10.30%	10.30%	6.90%	6.90%	3.40%	3.40%	10.30%	0.00%
Lango	41.10%	8.90%	16.10%	16.10%	3.60%	1.80%	8.90%	1.80%	1.80%
North Central	48.10%	10.10%	11.40%	13.90%	1.30%	5.10%	1.30%	5.10%	3.80%
South Central	56.60%	7.90%	10.50%	7.90%	3.90%	3.90%	3.90%	3.90%	1.30%
Teso	38.30%	4.30%	12.80%	10.60%	6.40%	10.60%	8.50%	4.30%	4.30%
Tooro	31.90%	14.50%	29.00%	8.70%	2.90%	2.90%	7.20%	1.40%	1.40%
West Nile	40.70%	11.10%	8.60%	13.60%	8.60%	12.30%	2.50%	2.50%	0.00%
National	41.00%	14.00%	12.00%	9.00%	5.00%	5.00%	4.00%	3.00%	2.00%

Across regions haemorrhage is still the leading cause of maternal deaths with South Central region having the highest mortality due to haemorrhage at 56.6% closely followed by Bukedi at 50%. Karamoja and Acholi regions had the lowest mortality due to haemorrhage at 22.7% and 29.7% respectively. Hypertensive disorders of pregnancy were the second leading cause of maternal deaths with Kampala region having the highest at 24.5% and Teso region having the lowest at 4.3%.

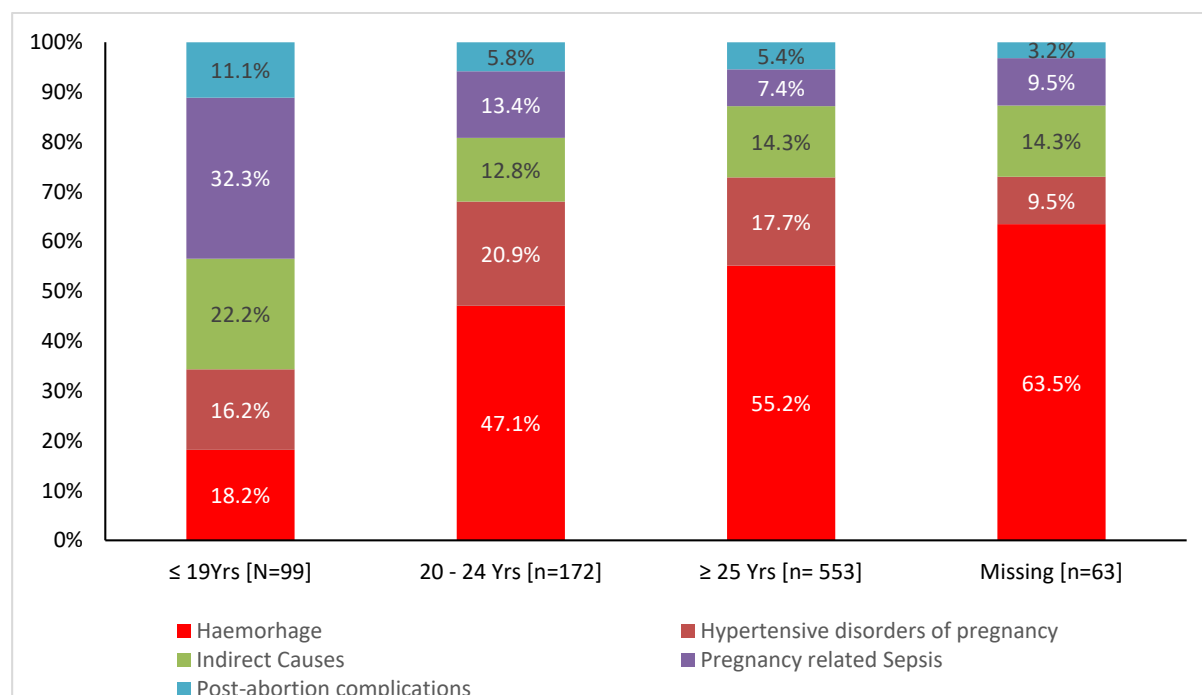
Pregnancy related sepsis as a cause of maternal death was highest in Bunyoro (16.9%) and Lango (16.1%) followed by North Central (13.9%), Karamoja (13.6%), West Nile (13.6%), Acholi (10.9%) and Teso (10.6%) whereas postabortion complications were highest in West Nile (12.3%), Teso (10.6%) and

Acholi (9.4%). Maternal mortality due to Anaesthetic complications were disproportionately high in Bukedi in 9.4% while obstructed/prolonged labour was highest in Kigezi (10.3%).

Maternal deaths by age category

Among women of 20 years and above, haemorrhage was the leading cause of death at 55.2% (≥ 25 yrs) and 47.1% (20-25 yrs). For mothers less than 20 years, pregnancy related sepsis was the leading cause at 32.3% followed by indirect causes at 22.2% (70% were due to malaria) and haemorrhage at 18.2%. Some of the data (7.8%) was incomplete.

Figure 9: Five Leading Causes of death by maternal age category FY2021/22



Data source: DHIS2, 2021/2022

Table 9: Breakdown of indirect causes of maternal death by age

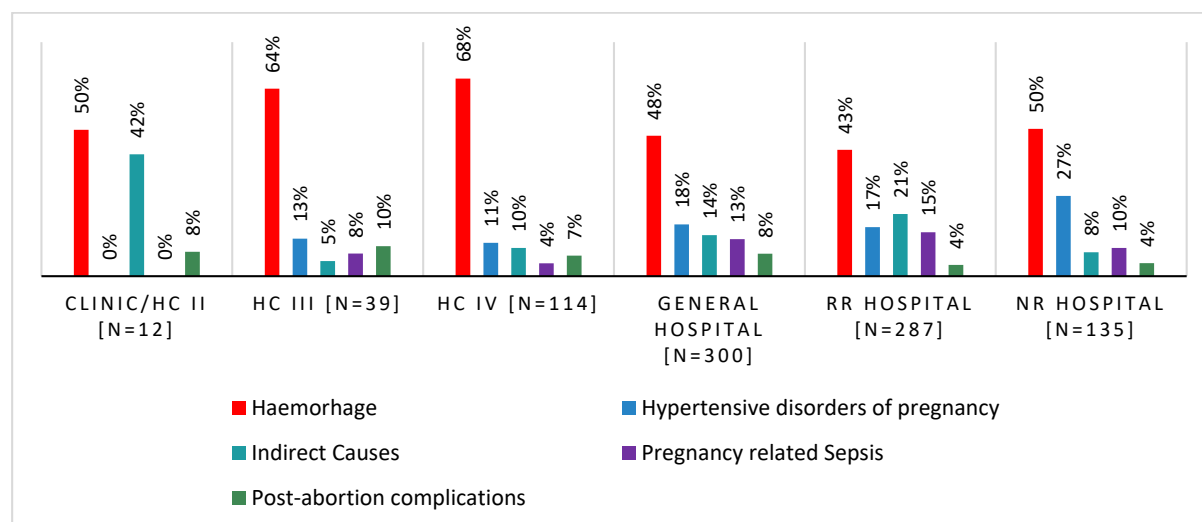
Age category	Malaria	HIV/AIDS complications	Severe anaemia	Others	COVID-19 Complications	Total
≤ 19Yrs	16 (72.7%)	1(4.5%)	3(13.6%)	2(9.1%)	-	22(16.7%)
20 - 24 Yrs	6(27.3%)	3(13.6%)	5(22.7%)	3(13.6%)	5(22.7%)	22(16.7%)
≥ 25 Yrs	15 (19.0%)	10(12.7%)	23(29.1%)	15(19.0%)	16(20.3%)	79(59.8%)
Missing	7(77.8%)	-	2(22.2%)	-	-	9(6.8%)
Total Indirect Causes	44 (33.3%)	14 (10.6%)	33 (25.0%)	20 (15.2%)	21(15.9%)	132(100%)

Indirect causes of maternal deaths included: malaria, HIV/AIDS complications, severe anaemia, COVID-19 complications among others. Malaria deaths contributed to 33.3% of the indirect causes. Among teenage mothers, 72.7% of the indirect causes were due to malaria. Overall, COVID-19 complications contributed to 15.9% of the indirect causes of maternal deaths.

Leading maternal deaths by health facility level

Haemorrhage was the leading cause of death across all levels of health care with the largest contribution at health centre IV and III levels.

Figure 10: Showing five leading causes of maternal deaths by Health Facility level, FY2021/22



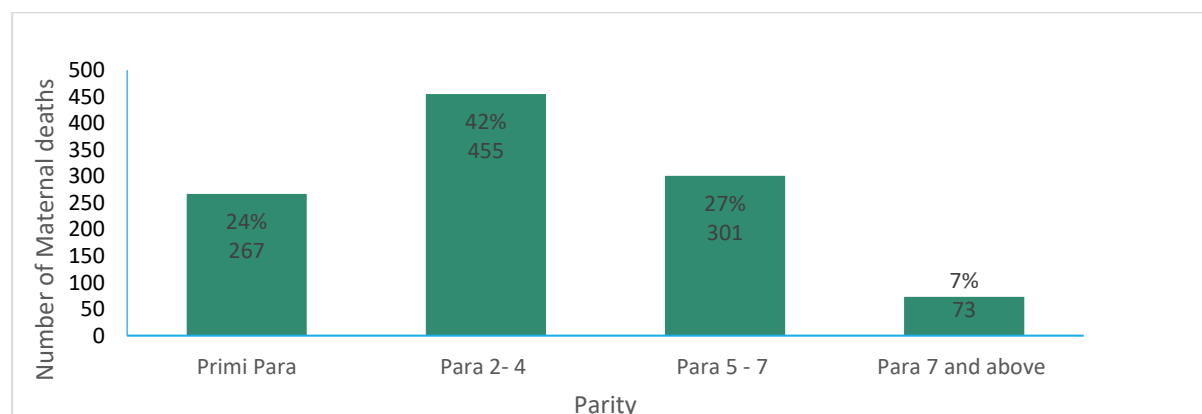
Data source: DHIS2, 2021/22.

Characteristics of maternal deaths reported / reviewed

(i) Parity

Among the maternal deaths reviewed, majority (42%) had a parity between 2 to 4 followed by those with parity of 5 to 7 (27%). Twenty four percent (24%) of the maternal deaths were among women carrying their first pregnancy.

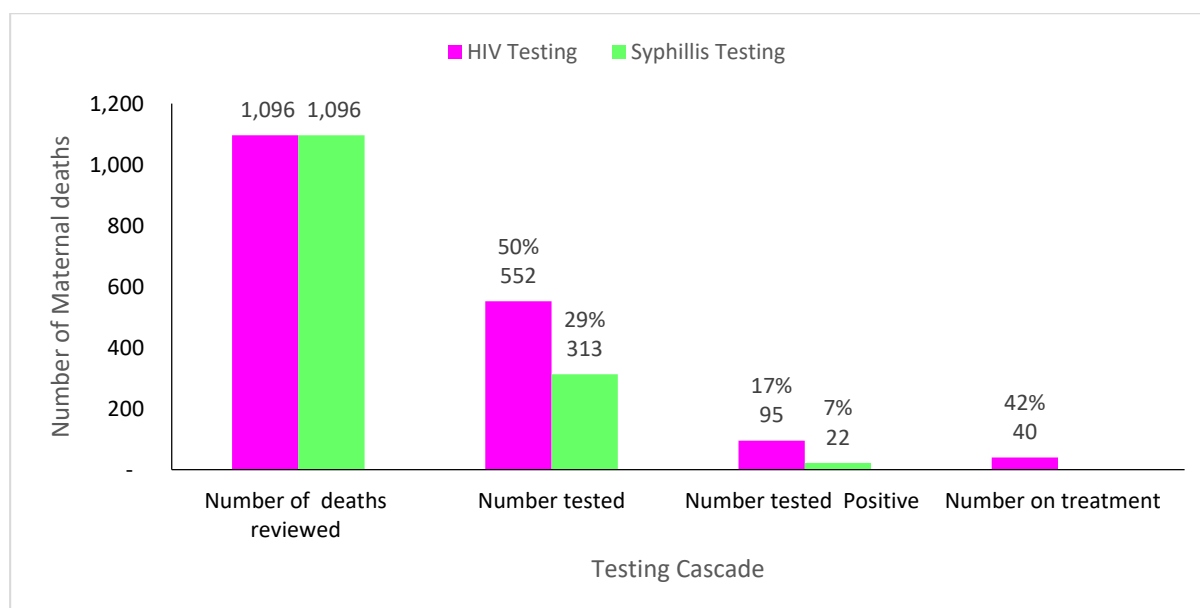
Figure 11: Parity of maternal deaths reviewed, FY2021/22



(ii) HIV and Syphilis Testing

Antenatal testing for HIV and syphilis was done among 50% and 29% respectively of the 1096 maternal deaths. Of those tested for HIV and syphilis, 17% and 7% were positive. About 42% of the tested HIV mothers had been enrolled in care and were on ART.

Figure 12: HIV and Syphilis testing cascades status among maternal deaths reviewed in FY21/22

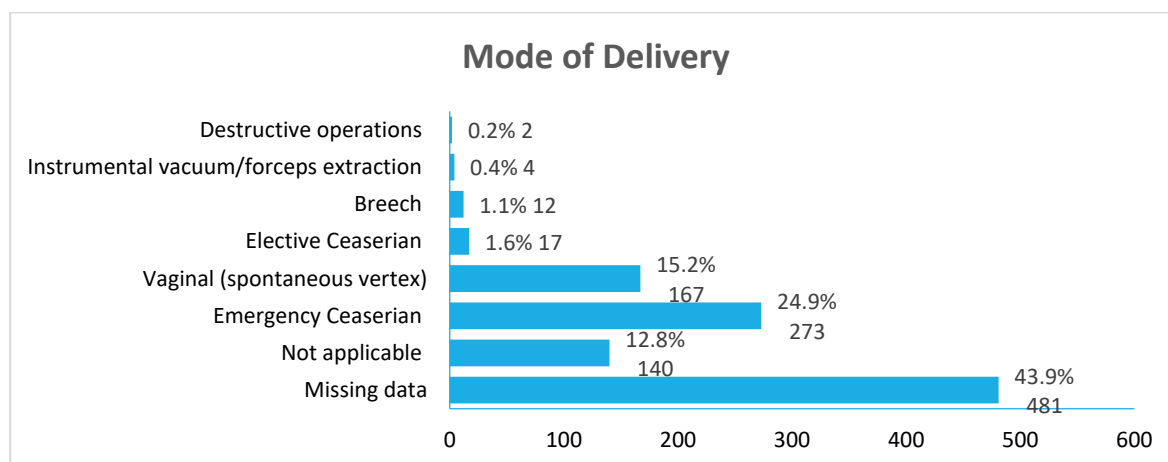


Data source: DHIS2, 2021/22.

(iii) Mode of delivery

During the FY2021/22, 24.9% of the maternal deaths reviewed were delivered by caesarean section whereas 15.2% had vaginal delivery. About 43.9% (481) of the maternal deaths reviewed had limited information to determine the mode of delivery.

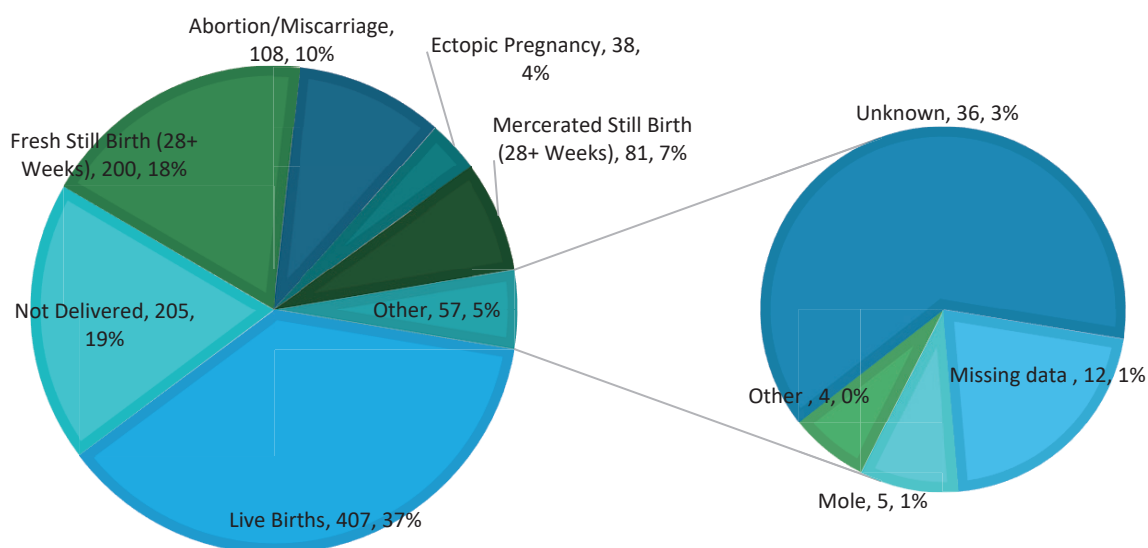
Figure 13: Mode of delivery and birth outcomes of the Maternal deaths reviewed FY2021/22



Data source: DHIS2, 2021/22

(iv) Birth outcome

Figure 14: Birth outcomes of the Maternal deaths reviewed FY2021/22



(v) Duration of stay

Overall, delivery information was available for 975 maternal deaths, with 11% of the death reviews having missing data. Among the reviewed 1096 maternal deaths, 19% died within 30 minutes of admission while 24% died between 1 – 6 hrs hours of stay.

Figure 15: Average duration of stay (Hours) between admission and death

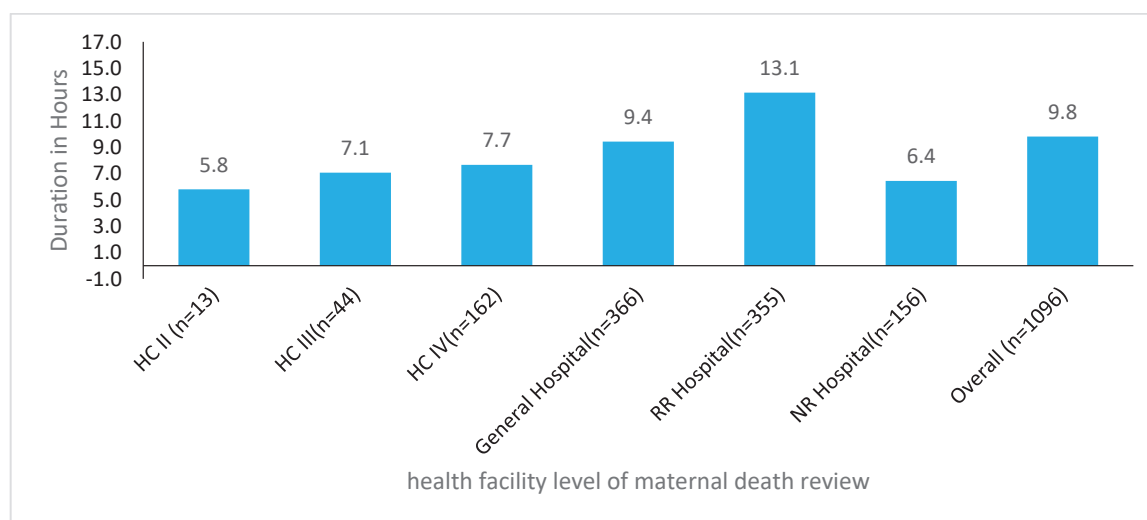


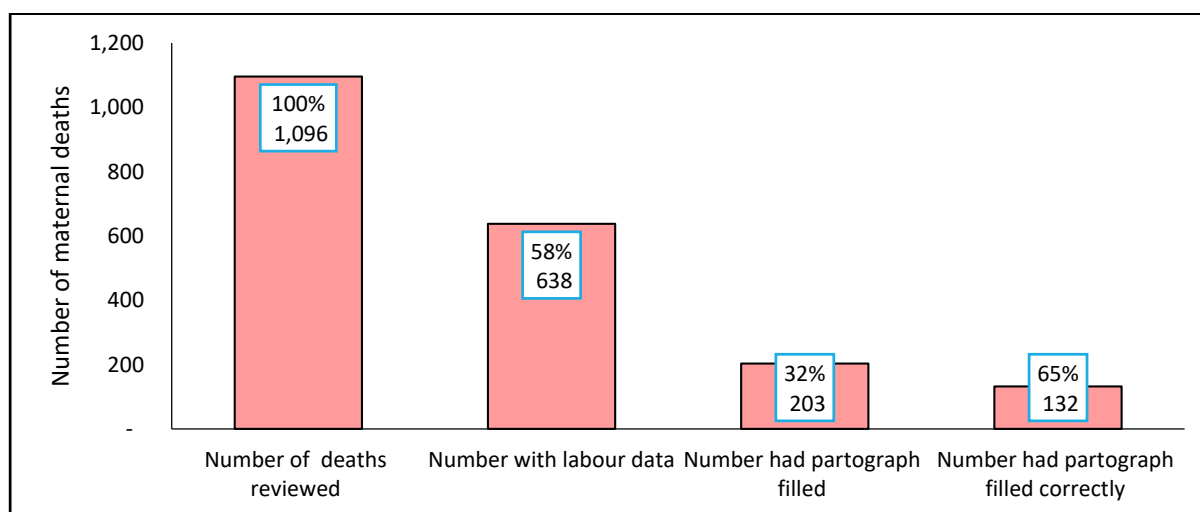
Table 10: Duration of stay, between admission and death, by health facility level

Duration	Health facility level						Overall
	HC II	HC III	HC IV	General Hospital	RR Hospital	NR Hospital	
< 1 Hr	4(31%)	5(11%)	30(19%)	76(21%)	69(19%)	28(18%)	212(19%)
1 - 6 Hrs	6(46%)	18(41%)	34(21%)	89(24%)	77(22%)	42(27%)	266(24%)
6 -24 Hrs	1(8%)	11(25%)	63(39%)	138(38%)	166(47%)	62(40%)	441(40%)
1- 2 days	(0%)	4(9%)	7(4%)	17(5%)	11(3%)	2(1%)	41(4%)
2 - 7 days	1(8%)	(0%)	2(1%)	8(2%)	3(1%)	(0%)	14(1%)
> 7 days					1(0%)		1(0%)
Missing data	1(8%)	6(14%)	26(16%)	38(10%)	28(8%)	22(14%)	121(11%)
Total	13(1%)	44(4%)	162(15%)	366(33%)	355(32%)	156(14%)	1096(100%)

(vi) Partograph use

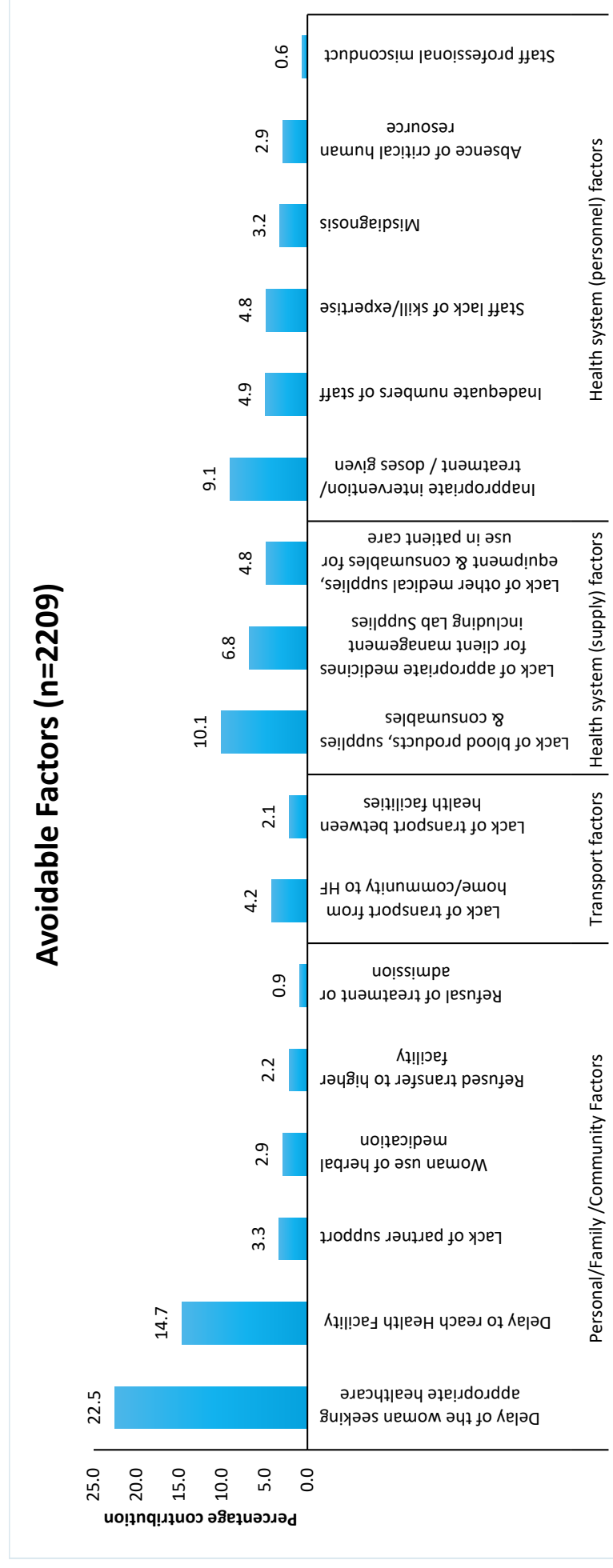
Of the reviewed maternal deaths who had documented labour (638), only 203 (32%) were monitored using a partograph; of these 132 (65%) were correctly filled.

Figure 16: Labour experience and Partograph use among maternal deaths reviewed in FY21/22



(vii) Avoidable factors at National Level

Figure 17: Avoidable factors



The contributing yet avoidable factors leading to maternal deaths were grouped under three (3) broad categories; i) Personal/Family /Community Factors, ii) Health system, and iii) Transport factors. Health system factors were the leading contributing factors to maternal deaths accounting for 47.2%; with personnel factors contributing 25.5% and supply related factors contributing 21.7%. Among supply related factors, Lack of blood products, supplies and consumables was the leading contributor (10.1%), while inappropriate intervention given, was leading among personnel factors. The second leading factor related to Personal/family/community factors, accounting for 46.5%. Among these, Delay of the woman seeking appropriate health care was ranked the highest at 22.5%. The third contributing cause of maternal death was Transport related factors with Lack of transport from home to health facility ranked at 4.2%.

Table 1 I: Avoidable factors identified during maternal death reviews by Health facility level

Delay model	Delay category	Delay	Clinic / HC II [N=10]		HC III [N=33]		HC IV [N=119]		Hospital [N=384]		RRH [N=265]		NRH [N=116]		Overall[N=927]	
			Number	% of reviews	Number	% of reviews	Number	% of reviews	Number	% of reviews	Number	% of reviews	Number	% of reviews	Number	% of reviews
Delay 1	Personal/Family /Community Factors	Delay of the woman seeking appropriate healthcare	7	70%	10	30%	59	50%	169	44%	113	43%	40	34%	398	43%
		Delay to reach HFs	4	40%	6	18%	29	24%	74	19%	51	19%	15	13%	179	19%
Refusal of treatment or admission		1	10%	1	3%	9	8%	17	4%	7	3%	5	4%	40	4%	
Woman use of herbal medication		1	10%	4	12%	16	13%	20	5%	8	3%	6	5%	55	6%	
Refused transfer to higher facility		1	10%	2	6%	8	7%	17	4%	8	3%	4	3%	40	4%	
Lack of partner support		3	30%	7	21%	36	30%	63	16%	30	11%	9	8%	148	16%	
Lack of transport from home/community to HF		2	20%	5	15%	20	17%	54	14%	18	7%	9	8%	108	12%	
Delay 3	Logistical Systems	Lack of transport between health facilities	5	50%	9	27%	23	19%	40	10%	10	4%	20	17%	107	12%
		Lack of blood products, supplies & consumables	1	10%	7	21%	33	28%	71	18%	57	22%	32	28%	201	22%
	Supply Health system factors	Lack of appropriate medicines for client management including Lab Supplies	1	10%	2	6%	10	8%	18	5%	22	8%	8	7%	61	7%
		Lack of other medical supplies, equipment & consumables for use in patient care	1	10%	3	9%	7	6%	26	7%	27	10%	10	9%	74	8%
		Misdiagnosis	1	10%	1	3%	10	8%	29	8%	20	8%	7	6%	68	7%
	Personnel health system factors	Inappropriate intervention/ treatment / doses given	3	30%	2	6%	19	16%	70	18%	60	23%	33	28%	187	20%
		Inadequate numbers of staff	3	30%	2	6%	22	18%	30	8%	25	9%	10	9%	92	10%
		Absence of critical human resource	1	10%	3	9%	12	10%	32	8%	29	11%	11	9%	88	9%
		Staff lack of skill/expertise	3	30%	1	3%	9	8%	32	8%	30	11%	18	16%	93	10%
Staff professional misconduct		0	0%	2	6%	3	3%	6	2%	10	4%	3	3%	24	3%	

Data source: DHIS2, FY2021/21

3.3 Institutional Perinatal Deaths

3.3.1 National trends in Institutional Perinatal Mortality Rates (per 1000 births)

During the FY2021/22, the total births increased by 131,604 (9.91%) from 1,327,830 (FY20/21) to 1,459,434 (FY21/22) while the number of perinatal deaths increased by 0.55% from 26,851 (FY20/21) to 26,999 deaths (FY21/22). This translates into an Institutional Perinatal Mortality Ratio (IPMR) of 18.5/1,000 total births, a reduction from 20.2/1,000 total births registered in the previous year (FY20/21).

Figure 18: Perinatal death type contribution

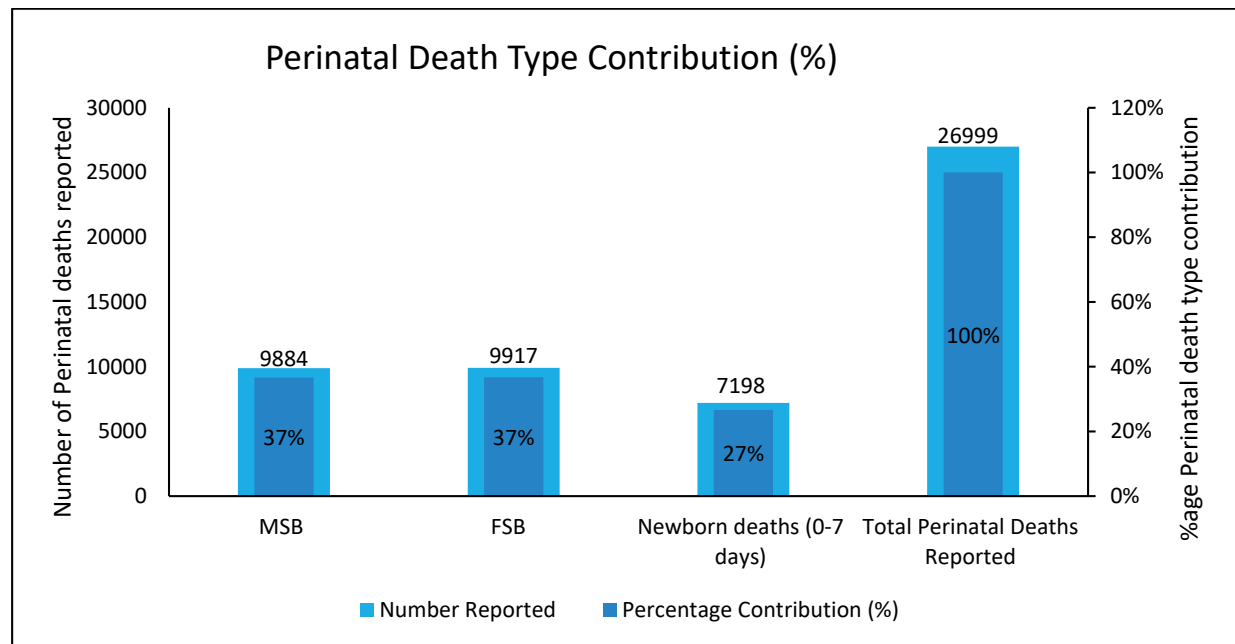
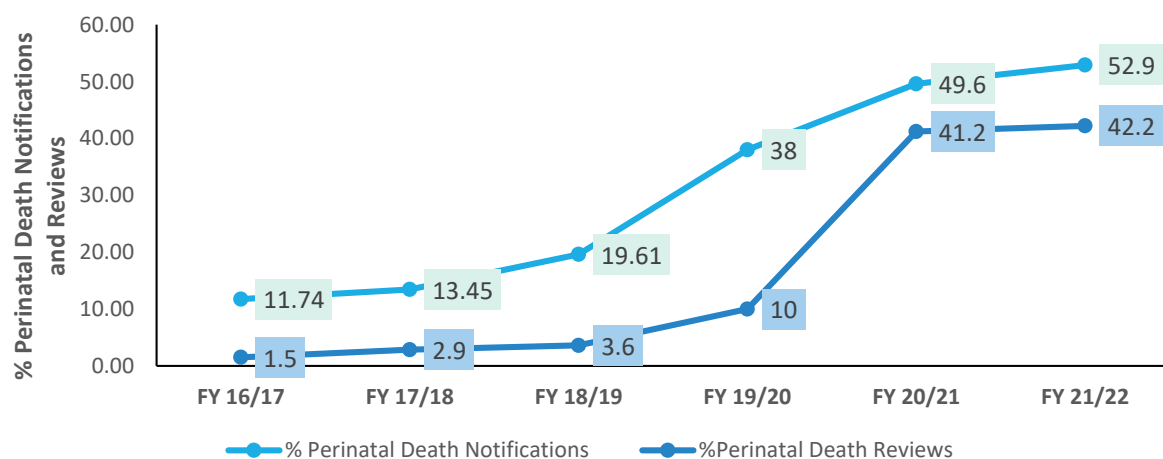


Figure 19: Trends in Perinatal Death Notifications and Reviews (FY2016/17 to FY2021/22)

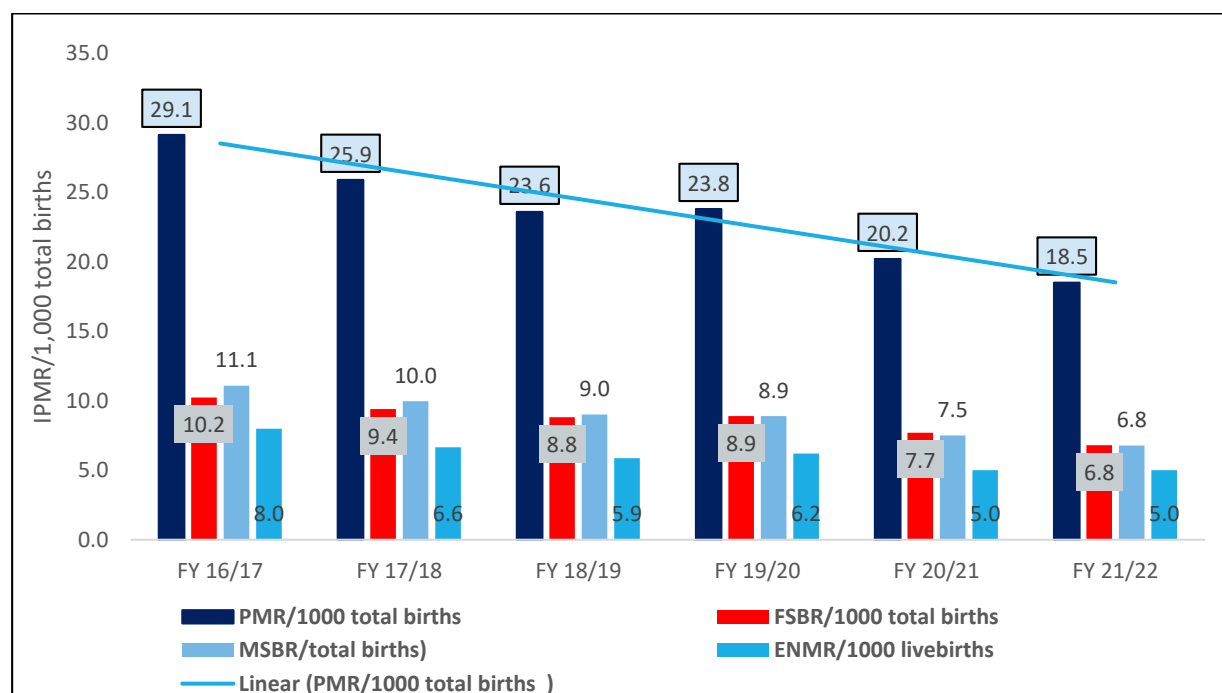


Data source: DHIS2, (FY2016/17 to FY2021/22)

Over the last six years, there is an observed five-fold increase in the perinatal death notification rate from 11.7% (FY16/17) to 52.9% (FY21/22). Similarly, there is a marked

improvement in the perinatal death reviews from 1.5% (FY16/17) to 42.2% (FY21/22). There has been a slight improvement in the perinatal death notification from 49.6% in FY 2020/21 to 52.9% in FY2021/22. This is nearly a 6.7% increase in notification between FY2021/22 and FY2020/21. Perinatal Death reviews improved from 41.2% to 42.2% in the same period.

Figure 20: Trends in Institutional Perinatal Mortality Rates (per 1000 births) in Uganda (FY16/17 to FY21/22)



Data source: DHIS2, FY2016/17 to FY2021/22

Over the past six financial years (FY2016/17-FY2021/22), the IPMR has reduced by 36.4% (from 29.1 to 18.5 per 1,000 total births). The greatest reduction has been registered among the Macerated and Fresh still birth. There was no change among the early neonatal deaths. A 22.3% reduction in IPMR was noted between FY2019/20 and FY2021/22.

3.3.2 Institutional Perinatal Mortality Ratio by Region

Table 12: Showing the IPMR by Region between FY2020/21 and FY2021/22

Region	Total Births		Deliveries in unit (Live births)		MSB/1000 Births		FSB/1000 Births		ENND/1000 Live Births		IPMR/1000 births		% Change in IPMR
	FY20/21	FY21/22	FY20/21	FY21/22	FY20/21	FY21/22	FY20/21	FY21/22	FY20/21	FY21/22	FY20/21	FY21/22	
Acholi	57,823	65,817	56,970	64,878	8.5	7.9	6.3	6.3	6.9	8.0	21.5	22.1	2.7
Ankole	100,833	113,116	99,338	111,712	7.4	6.1	7.4	6.3	3.1	3.7	17.9	16.0	-10.3
Bugisu	79,849	100,671	78,916	99,766	5.1	4.4	6.5	4.5	1.1	1.0	12.8	10.0	-21.8
Bukedi	86,349	91,892	85,520	91,052	4.6	4.5	5.0	4.6	2.8	2.3	12.4	11.4	-8.0
Bunyoro	79,482	90,743	77,787	89,121	9.5	7.5	11.9	10.4	4.9	5.0	26.1	22.8	-12.6
Busoga	119,084	125,914	117,208	124,144	7.9	7.1	7.9	7.0	5.1	5.4	20.7	19.4	-6.3
Kampala	84,225	89,253	82,142	87,234	12.9	11.9	11.8	10.7	15.9	16.6	40.2	38.8	-3.6
Karamoja	33,613	34,293	33,171	33,848	4.9	4.1	8.2	8.8	4.6	5.2	17.7	18.1	2.1
Kigezi	50,806	55,941	50,235	55,342	6.4	5.3	4.8	5.4	5.2	6.7	16.4	17.3	5.8
Lango	73,788	79,416	72,815	78,428	6.5	6.1	6.7	6.4	5.5	4.3	18.6	16.7	-10.3
North Central	139,749	149,389	137,195	146,905	8.9	8.2	9.3	8.4	4.7	4.4	22.9	21.0	-8.4
South Central	132,831	146,472	130,880	144,471	7.6	7.6	7.1	6.0	5.2	4.6	19.8	18.2	-8.4
Teso	72,460	74,745	71,657	73,922	5.6	5.6	5.5	5.5	3.5	3.2	14.5	14.2	-2.4
Tooro	109,887	127,028	108,241	125,528	7.1	5.5	7.9	6.3	3.6	3.1	18.5	14.9	-19.8
West Nile	107,051	114,744	105,471	113,282	7.4	6.9	7.4	5.9	4.5	5.1	19.2	17.8	-7.5
National	1,327,830	1,459,434	1,307,546	1,439,633	7.5	6.8	7.7	6.8	5.0	5.0	20.2	18.5	-8.5

FSBR, MSBR, ENND/1000	
	<6/1,000
	6-12/1,000
	>12/1,000

IPMR/1000	
	<=14/1000
	14-20/1000
	>20/1000

Data source: DHIS2, FY2020/21 – FY2021/22

Generally, there was a decrease in IPMR across all regions except Acholi, Karamoja and Kigezi. Regions of Bugisu, Tooro and Bunyoro have had the greatest decrease in IPMR between FY2020/21 and FY2021/22. Kampala has had a disproportionately higher IPMR compared to the rest of the regions in the last two financial years (FY2020/21-FY2021/22).

Table 13: Showing the Perinatal Death Notifications and Reviews by Region between FY2020/21 and FY2021/22

Region	Total Births		Total Perinatal Deaths		PD Notifications_ 24 HRS (%)		PD Reviews (%)	
	FY2020/2021	FY 2021/2022	FY2020/2021	FY 2021/2022	FY20/21	FY21/22	FY20/21	FY21/22
Acholi	57,823	65,817	1,245	1,455	54.5	73.3	62.2	78.6
Ankole	100,833	113,116	1,802	1,814	67.8	64.0	75.9	61.5
Bugisu	79,849	100,671	1,020	1,006	45.9	36.6	74.9	66.6
Bukedi	86,349	91,892	1,068	1,046	71.8	50.4	68.0	39.5
Bunyoro	79,482	90,743	2,074	2,069	24.8	11.9	8.8	5.7
Busoga	119,084	125,914	2,470	2,446	31.3	33.3	31.9	22.0
Kampala	84,225	89,253	3,389	3,463	106.8	99.2	48.5	62.7
Karamoja	33,613	34,293	595	620	92.6	62.7	70.8	43.7
Kigezi	50,806	55,941	833	970	95.8	89.8	73.3	63.5
Lango	73,788	79,416	1,376	1,328	66.4	80.0	69.5	76.5
North Central	139,749	149,389	3,203	3,137	32.8	31.8	21.2	19.2
South Central	132,831	146,472	2,634	2,661	24.9	36.3	17.9	27.5
Teso	72,460	74,745	1,051	1,058	60.2	73.0	79.1	59.6
Tooro	109,887	127,028	2,035	1,887	14.2	32.9	10.1	20.5
West Nile	107,051	114,744	2,056	2,039	33.9	48.4	31.2	48.1
National	1,327,830	1,459,434	26,851	26,999	50.8	52.9	41.2	42.2

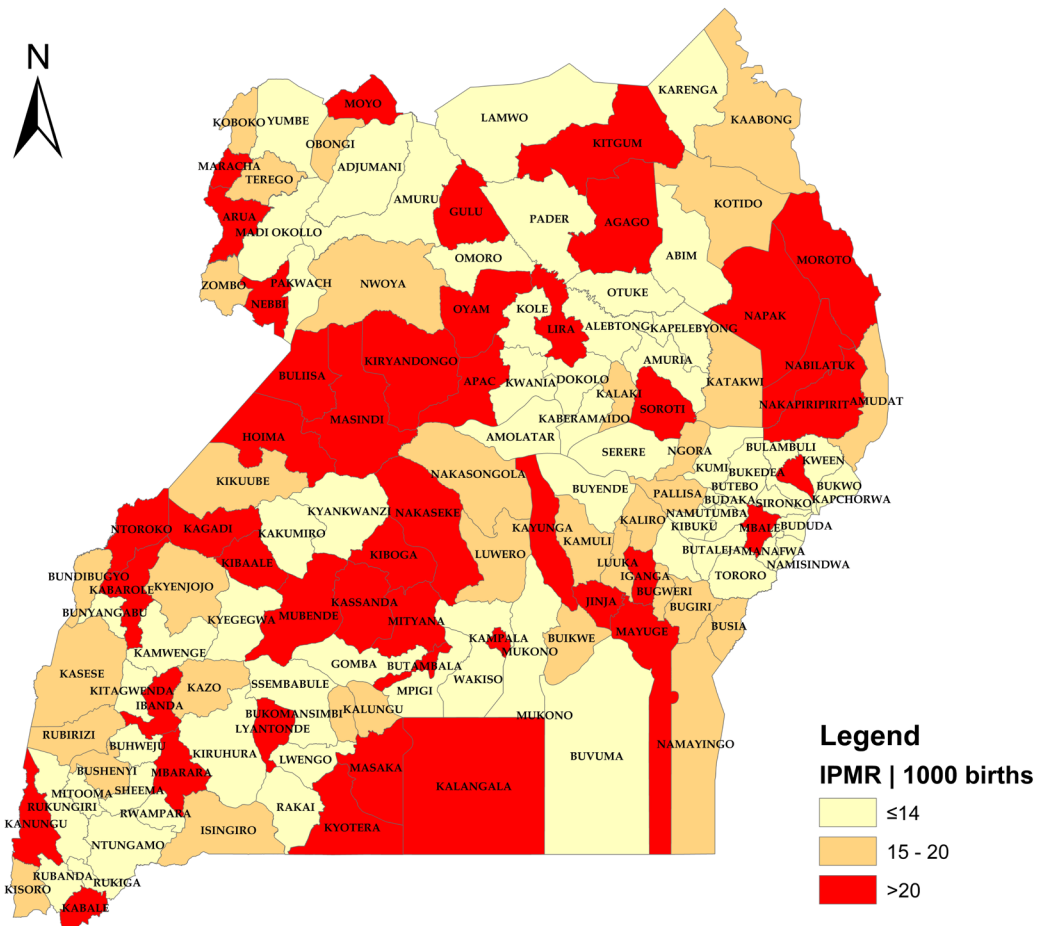
PD Notifications and Reviews	
	>50
	25-49
	<25

In FY2021/22, there was improvement in perinatal death notification in the regions of Acholi, Busoga, Lango, South Central, Teso, Tooro and West Nile with greatest improvement seen in Acholi, Tooro, West Nile and Lango respectively. Bunyoro region is still performing below 25% in perinatal death notification.

There was an improvement in perinatal death reviews in the regions of Acholi, Kampala, Lango, South Central, Tooro and West Nile with the greatest improvement seen in West Nile, Acholi, and Kampala respectively. Bunyoro, North Central and Tooro are still performing below 25% in reviewing their perinatal deaths.

During FY2021/22, fifty-nine districts (43.4%) achieved an IPMR of less than 15/1,000 births while 44 districts (32.4%) had an IPMR above 20/1,000 births.

Figure 21: Showing Institutional Perinatal Mortality per 1000 births during FY2021/22



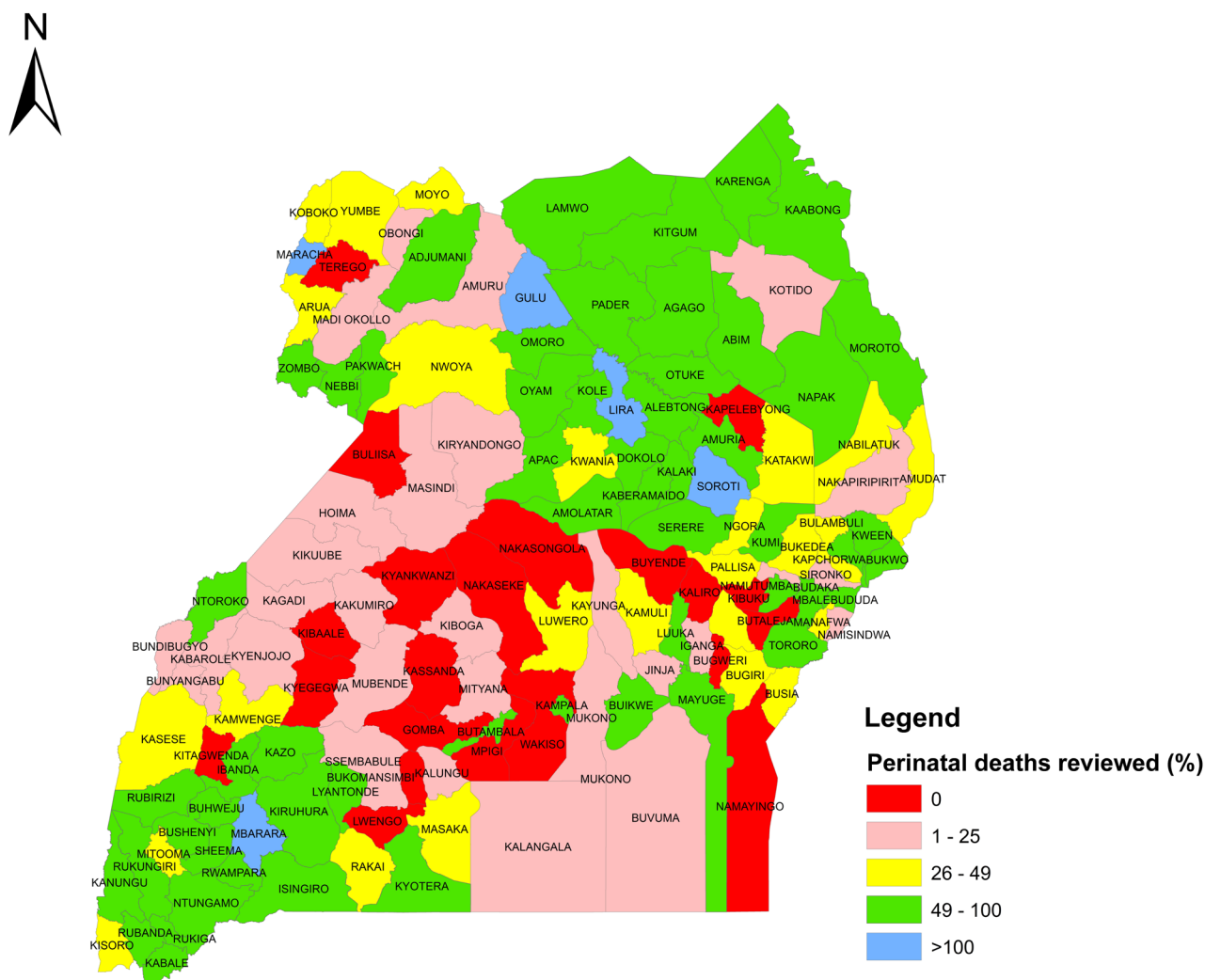
Data Source: DHIS-2 Events report (2021/2022)

Perinatal Death Reviews

All districts reported a perinatal death in the FY2021/22, of these fifty-two (38.2%) reviewed at least 50% of their reported perinatal deaths.

Twenty-one districts (15.4%) did not conduct any of their reported perinatal death review whereas one district reviewed more than 100%.

Figure 22: Map showing the proportion of perinatal deaths reviewed and reported by districts



Data Source: DHIS2 (FY 2021/22)

3.3.4 Perinatal death outcomes by level of care

In the FY2021/22, the lower health facilities (HCII/clinics and III) had the lowest IPMR of less than 15/1000 births and this increased with increase in level of care, a trend similar to that seen in the previous financial year. The NRH registered an IPMR of 106.4/1000 births, a 12% increase from FY2020/21 which remains more than the desired target of less than 15/1,000 births. The increase was more (13%) in the ENND which increased from 47/1000 live births (FY2020/21) to 53.1/1000 live births (FY2021/22). Similarly, the RRH registered an IPMR of 55.8/1000 births, an 11.6% increase from FY2020/21. The highest percentage increment of 35.8 was recorded among the ENND from 12/1000 live births (FY2020/21) to 16.3/1000 live births in FY2021/22. The IPMR at General Hospitals stagnated at 38/1000 births. There was a 12.5% reduction in IPMR at HC IV from 20/1000 births (FY2020/21) to 17.5/1000 births (FY2021/22).

Table 14: Showing Perinatal mortality rates by level of Health Facility

Facility Level	Total births	Deliveries in unit –live births-Total	IPMR/1000 births	FSBR/1000 births	MSBR/1000 births	ENNDR/1000 live births
HC II/Clinics	148,808	147,730	9.3	4.1	3.2	2.1
HC III	682,963	679,632	6.1	2.3	2.6	1.2
HC IV	278,734	274,718	17.5	7.0	7.4	3.1
GH	238,308	231,755	38.6	13.7	13.8	11.4
RRH	87,181	83,683	55.8	21.6	18.5	16.3
NRH	23,503	22,181	106.4	27.0	29.2	53.1
National	1,459,497	1,439,699	18.5	6.8	6.8	5.0



Data source: DHIS2, 2021/22.

Perinatal death reviews by level of care

The NRH and GH reviewed more than half of their reported perinatal deaths (55.1% and 56.4% respectively). Early Neonatal Deaths were the most reviewed, followed by FSBs and MSBs at CEmONC health facilities. Perinatal death reviews relatively remained low at BEmONC health facilities.

Table 15: Perinatal Deaths Reported and reviewed FY2021/22

Facility Level	Total births	Deliveries in unit -Live births - Total	Perinatal Death Review Rate (%)	FSB Review Rate (%)	MSB Review Rate (%)	ENND Review Rate (%)
HC II/Clinics	148,808	147,730	13.7	9.7	17.3	13.4
HC III	682,963	679,632	16.5	16.2	16.6	16.2
HC IV	278,734	274,718	36.4	34.7	27.5	56.5
GH	238,308	231,755	56.4	46.8	42.0	82.1
RRH	87,181	83,683	44.8	31.5	34.9	71.1
NRH	23,503	22,181	55.1	74.6	22.6	63.6
National	1,459,497	1,439,699	42.2	36.2	30.8	63.3

FSB, MSB, ENND Reviews (%)



3.3.5 Characteristics of the perinatal deaths reviewed

(i) Birth weight

More Half of the babies who died had a birth weight of 2500g or more with FSBs (34.5%) early neonatal deaths (26%) and MSBs (27%). Babies with low birth weight accounted for 36% of the perinatal deaths reviewed, among these early neonatal deaths were 22%, MSBs 31% and FSBs 20%. The very low birth weight and extremely very low birth weight contributed to 12%.

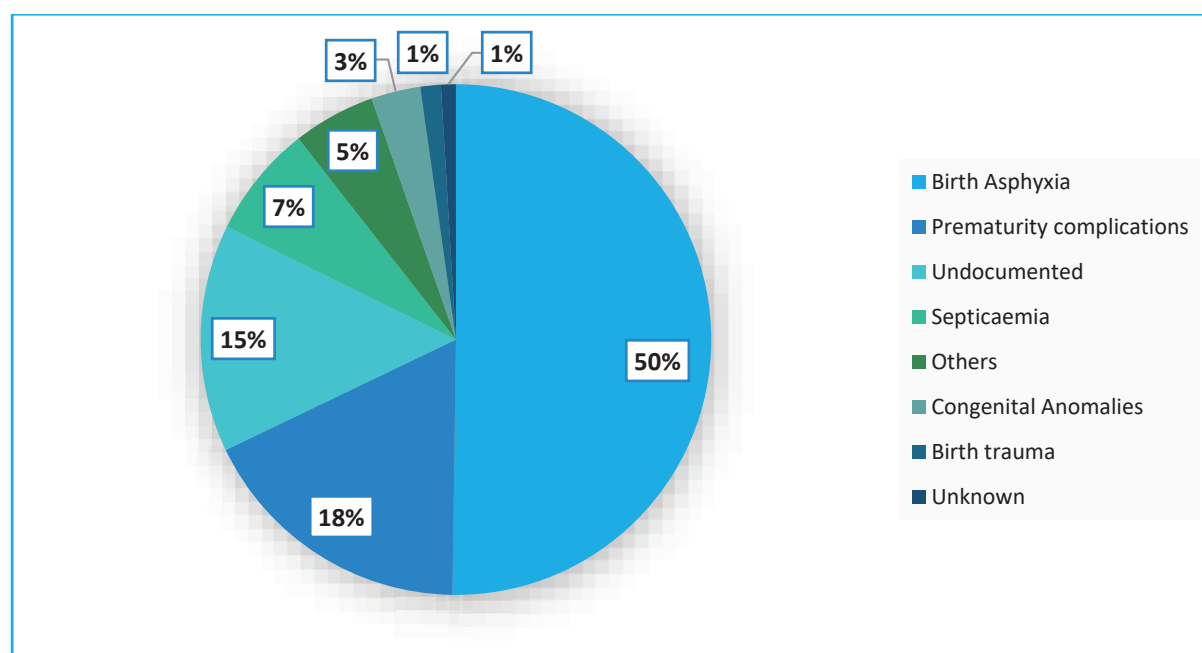
Table 16: Perinatal Deaths Reviewed by Birth Weight (BWT)

Birth Weight	Perinatal Death Type				Total
	Fresh Still Births	Macerated still Births	Neonatal Deaths	Unclassified	
Extremely Low BWT (≤ 1000)	27 (1%)	41 (1%)	112 (2%)	2 (1%)	182 (2%)
Very Low BWT (1000-1499)	176 (5%)	297 (10%)	693 (15%)	20 (9%)	1,186 (10%)
Low BWT (1500-2499)	726 (20%)	935 (31%)	996 (22%)	45 (21%)	2,702 (24%)
Normal BWT (2500-3499)	1,739 (48%)	1,152 (38%)	1,865 (41%)	75 (34%)	4,831 (42%)
Big Baby (≥ 3500)	736 (21%)	420 (14%)	615 (13%)	29 (13%)	1,800 (16%)
Missing	182 (5%)	196 (6%)	277 (6%)	47 (22%)	702 (6%)
Total	3,586 (100%)	3,041 (100%)	4,558 (100%)	218 (100%)	11,403 (100%)

Data source: DHIS2, 2021/2022

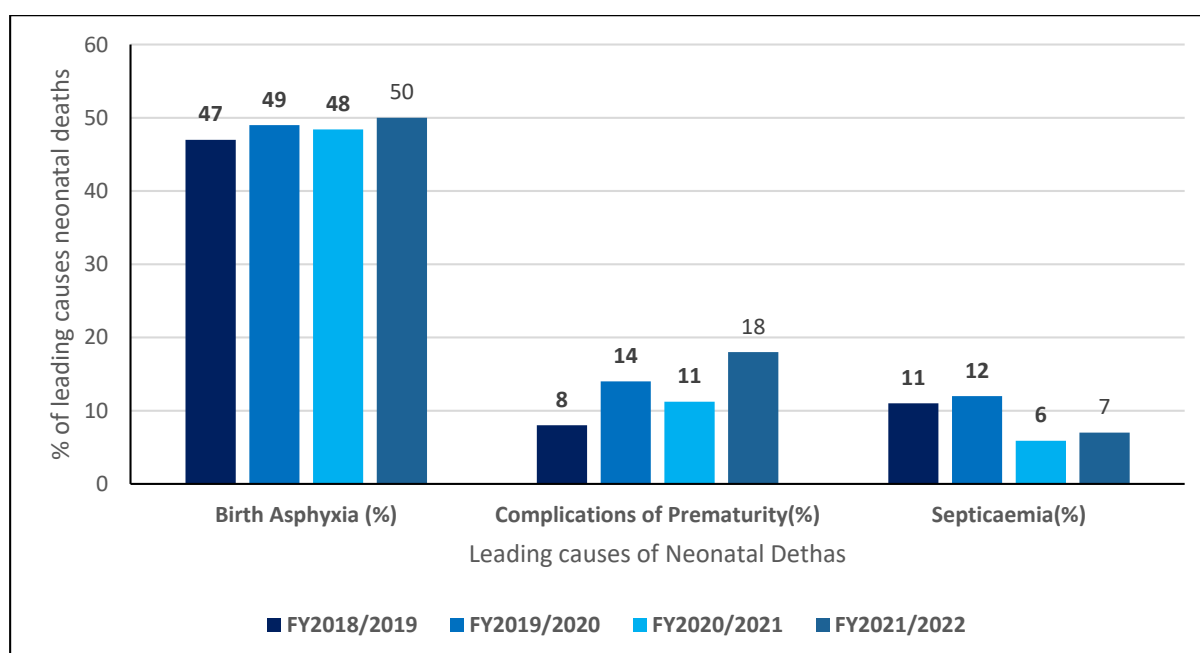
3.3.5 Causes of perinatal deaths

Figure 23: Causes of Reviewed Early Neonatal Deaths during FY2021/2022 (n=4558)



Birth asphyxia accounted for 50% of ENND followed by prematurity complications (18%) and Septicaemia at 7%. There was a significant proportion of ENND whose cause of death was undocumented (15%).

Table 17: Trends in the leading causes of Neonatal deaths over the past 4 years (FY 18/19-FY21/22)



Birth asphyxia remains unchanged as the leading cause of ENND followed by complications of prematurity and Septicaemia over the past 4 years.

Maternal characteristics of the perinatal deaths reviewed

(i) Age, parity, and type of pregnancy

During FY2021/22, 43.5% of the perinatal deaths reviewed happened for adolescent girls and young women aged 10-24 years, of those 16.9% were among adolescents (≤ 19 years). Nearly half of all the perinatal deaths reviewed (45.7%), happened for women aged 25-49 years and 10.8% had missing maternal age.

Of the perinatal deaths reviewed, 6.9% were among mothers who had multiple pregnancy while 86.0% were singleton.

Table 18: Showing maternal characteristics associated with perinatal deaths reviewed (n=11403)

Maternal Age	Fresh Still Birth (%)	Macerated still Birth (%)	ENN Death (%)	Unclassified (%)	Total (%)
≤ 19 (n=1,922)	4.6	4.4	7.6	0.3	16.9
20-24 (n=3,031)	8.3	7.6	10.2	0.5	26.6
25-49 (n=5,208)	16.7	13.0	15.0	0.9	45.7
50+ (n=08)	0.0	0.0	0.1	0.0	0.1
Undocumented (n=1,234)	1.9	1.7	7.1	0.2	10.8
Total (n=11,403)	31.4	26.7	40.0	1.9	100.0

Type of Pregnancy	Fresh Still Birth (%)	Macerated still Birth (%)	ENN Death (%)	Unclassified (%)	Total (%)
Singleton (n=9,808)	28.1	24.2	32.2	1.6	86.0
Multiple (n=784)	2.0	1.3	3.5	0.1	6.9
Undocumented (n=811)	1.4	1.3	4.2	0.3	7.1
Total (n=11,403)	31.4	26.7	40.0	1.9	100.0

Of the 11403 perinatal deaths reviewed, one third (33.33%) occurred among women who were having their first baby while 18.61% was among women who had had five or more babies. Also, to note, 8.2% of perinatal death reviews happened for women with undocumented parity.

Table 19: Mother's Parity by Age

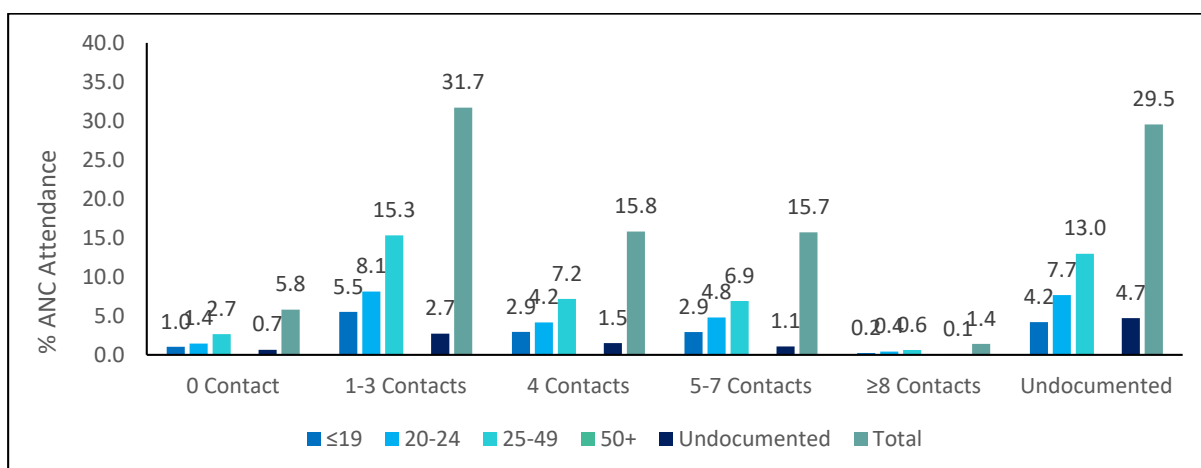
Mother's Age	Mother's Parity (%)			
	Para 1	Para 2-4	Para 5+	Undocumented
≤19 (n=1922)	13.6	1.9	0.3	1.1
20-24 (n=3031)	11.7	12.3	0.7	1.9
25-49 (n=5208)	4.7	22.4	16.0	2.6
50+ (n=08)	0.03	0.03	0.01	0.0
Undocumented (n=1234)	3.2	3.4	1.6	2.7
Total (n=11403)	33.33	39.93	18.61	8.2

Data source: DHIS2, 2021/2022

(ii) ANC attendance

Majority of the perinatal deaths reviewed were of mothers who had up to 3 ANC contacts (31.7%). A big proportion of close to 30% of perinatal deaths reviewed had their mothers with undocumented ANC contact visits. Four ANC contacts were at 15.8% whereas the recommended 8 contacts were at 1.4%.

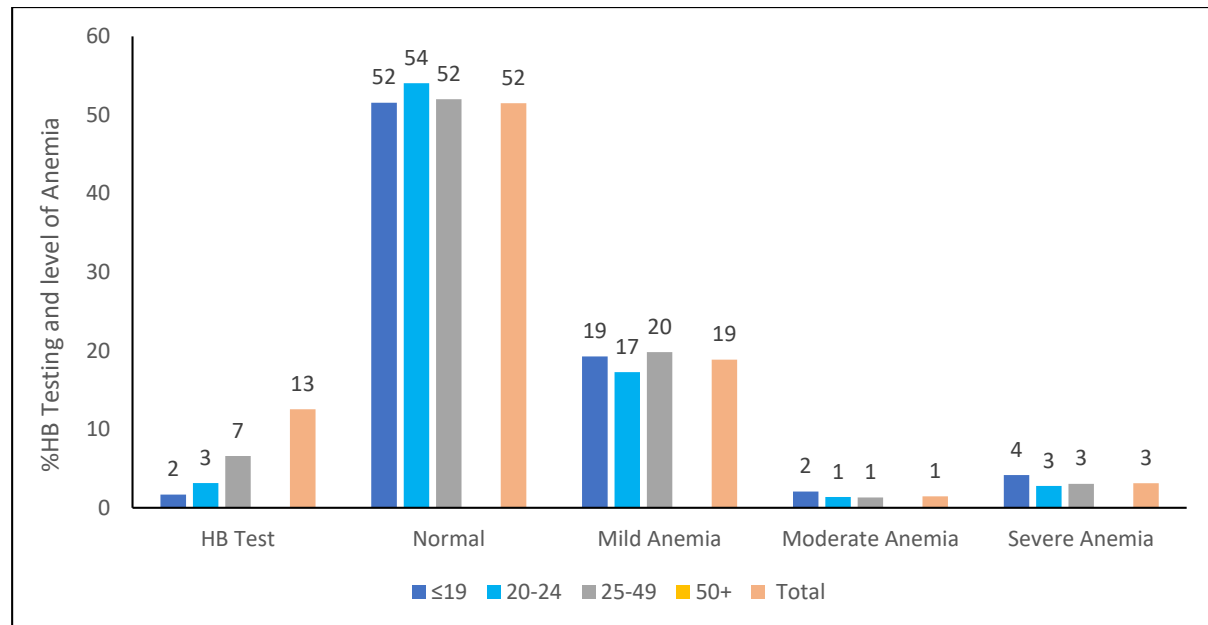
Figure 24: ANC Contact visits of Mothers whose Perinatal deaths were reviewed, (n=11,403)



(iii) ANC interventions

Among mothers with reviewed perinatal deaths, only 13% were screened for HB level. Of these, only 3% had severe anaemia in pregnancy

Figure 25: Showing HB Testing during ANC for mothers with reviewed perinatal deaths



Data source: DHIS2, 2021/2022

(iv) Complications during Pregnancy

Table 20: Showing complications experienced during pregnancy

Perinatal Death Type	Complications during Pregnancy									
	APH (%)	HTN in Pregnancy (%)	PROM (%)	DM in Pregnancy (%)	Anaemia in Pregnancy (%)	UTI in Pregnancy (%)	Malaria in Pregnancy (%)	Trauma-Accidental (%)	GBV in Pregnancy (%)	Drugs/ Medicines (%)
Fresh Still Birth (1390)	28.3	14.3	12.0	2.6	7.4	15.3	15.1	1.4	1.2	2.4
Macerated still Birth (1296)	10.4	14.0	7.5	2.2	6.2	23.8	30.8	1.4	1.4	2.5
Neonatal Death (1277)	10.1	11.0	14.8	3.8	4.4	22.2	28.0	2.0	0.9	2.8
Total (3963)	16.6	13.1	11.4	2.9	6.0	20.3	24.4	1.6	1.2	2.5

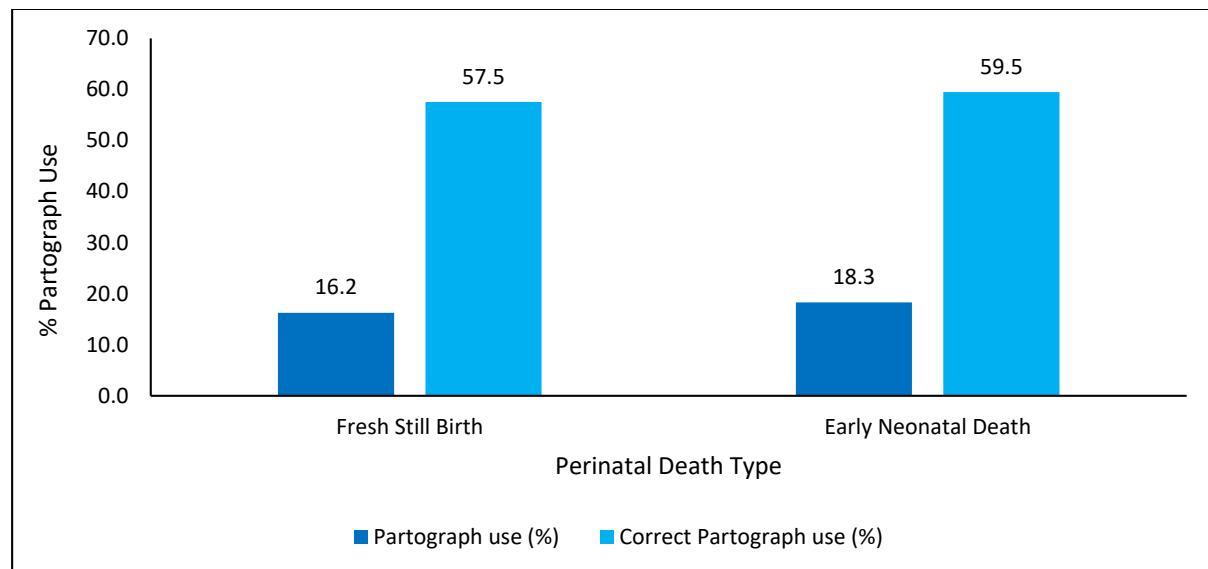
Of the reviewed perinatal deaths, 24.4% occurred among women who suffered malaria in pregnancy, 20.3% and 16.6% with UTI and APH respectively. Malaria in pregnancy accounted for the highest proportion of MSB (30.8%) and neonatal deaths (28.0%) whereas majority of FSB were due to APH (28.3%).

(v) Partograph use

Among the fresh still births reviewed in FY2021/22, only 16.2% had their labour monitored using a partograph and of these 57.5% had a partograph plotted correctly.

Of the reviewed early neonatal deaths, 18.3% had their labour monitored using a partograph and 59.5% of the partographs were correctly plotted.

Figure 26: Showing Partograph use among reviewed perinatal deaths by type



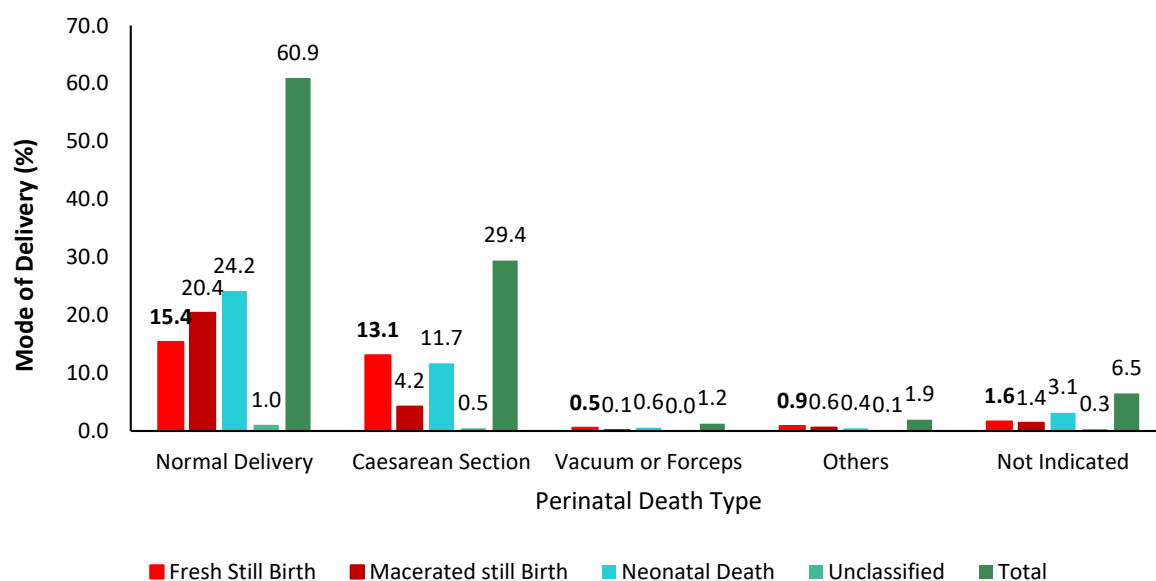
Data source: DHIS2, 2021/2022

**Correct use of partograph is based (measured) on the reviewers' assessment

(vi) Mode of delivery by Perinatal Death Type

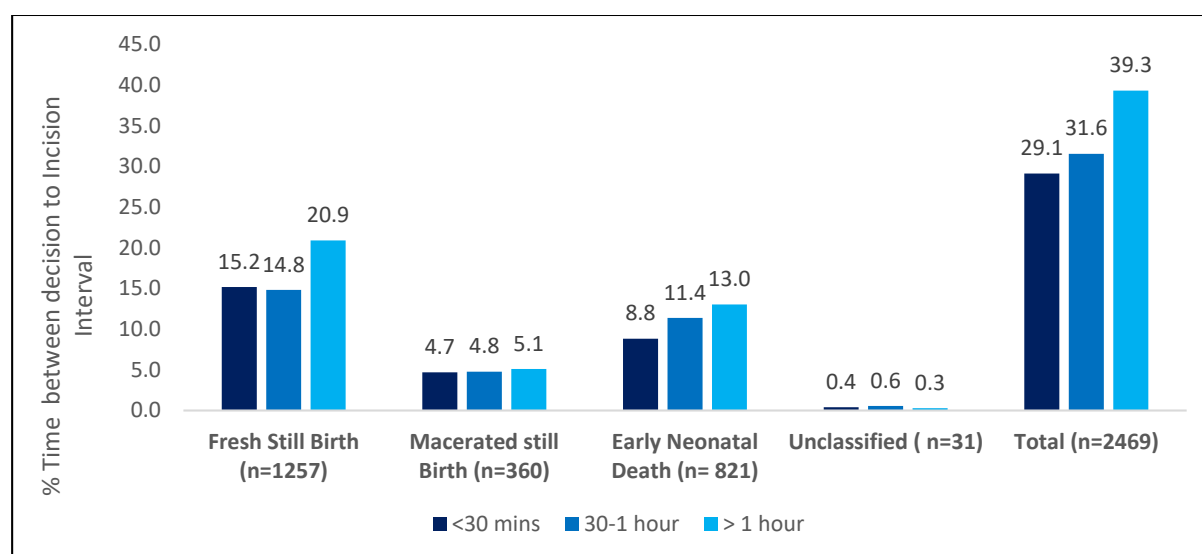
Among the perinatal deaths reviewed, 60.9% were normal delivery, 29.4% had been delivered by caesarean section and assisted vaginal delivery (vacuum or forceps) at 1.2%.

Figure 27: Mode of Delivery by Perinatal Death Type (%)



(vii) Decision to incision interval

Figure 28: Showing Decision to Incision Interval among perinatal deaths delivered through C/S by Facility Level



Data source: DHIS2, 20120/2021.

Overall, data from the perinatal death reviews indicate that more perinatal deaths occurred in women with a decision-to-incision time greater than one hour.

(viii) Referral status

Table 21: Referral status

Type of Perinatal Death	Referral status (%)			Fetal Heart Present at admission (%)		
	Yes	No	Undocumented	Yes	No	Undocumented
Fresh Still Birth (n=3586)	5.0	17.8	8.6	10.2	15.2	6.1
Macerated still Birth (n=3041)	3.2	16.6	6.9	2.0	18.7	6.0
Neonatal Death (n=4558)	12.2	20.8	6.9	25.1	2.5	12.4
Unclassified (n=218)	0.3	1.1	1.1	0.3	0.9	0.7
Total (n=11403)	20.7	56.3	22.9	37.7	37.3	25.1

More than half (56.3%) of the women who had a perinatal death delivered at the health facility of their first contact. More than a third (37.7%) of the women who had a perinatal death had a fetal heart rate present on admission.

Avoidable/modifiable factors by the level of care

Modifiable factors at Health Facility level

At HC II and III, the biggest contribution of avoidable factors to perinatal deaths were due to delay 1 (HC II, 50.7% and HC III, 45.1%) and delay 2 (HC II, 33% and HC III, 40.1%), this implies that mothers are coming in late. At the higher-level facilities where majority of babies are dying, the biggest contribution was delay 3 and the factors were even much

more at the regional referral hospitals. Delay to provide care was highest at RRH (4.4%) followed by HC IV at 2.4% while absence of critical human resource was highest at RRH at 5.3%. Lack of resuscitation equipment was highest at clinics (10.0%) but also affected HC IIs and HC IIIs. Inappropriate interventions, as a contribution to perinatal death was highest at higher facilities (GH to NRH), with National Referral Hospital leading at 28%. Misdiagnosis was a key contributor at HC IVs and HC IIIs, with HC IVs leading at 7.1%. RRH and NRH highlighted lack of supplies and drugs including blood products as key contributor to the perinatal deaths.

Table 22: Showing avoidable/modifiable factors by the level of care

Regions	Delay 1	Delay 2	Delay 3					
	Delay to seek health care	Delay to reach the health facility	Delay to provide care	Absence of critical human resources	Lack of resuscitation equipment	Inappropriate intervention	Misdiagnosis	Lack of supplies and drugs including blood
Clinic	55.0	35.0	0.0	0.0	10.0	0.0	0.0	0.0
HC II	50.7	33.0	0.5	2.8	2.3	4.7	3.7	2.3
HC III	45.1	34.1	2.0	1.8	3.7	4.9	6.3	2.1
HC IV	43.9	31.4	2.4	2.2	1.2	9.4	7.1	2.3
GH	38.2	31.4	1.4	2.2	1.4	16.2	5.7	3.7
RRH	39.2	25.5	4.4	5.3	2.1	13.8	4.5	5.2
NRH	26.0	29.3	1.6	2.8	1.2	28.0	4.8	6.3
Total	37.9	30.5	2.0	2.6	1.6	15.8	5.6	4.0

CHAPTER FOUR: DISCUSSION

4.1 Institutional Maternal Deaths

Over the last six years, Uganda has made considerable positive progress towards meeting the MOH-SP 2020/2025 target for reducing IMMR and IPMR. In FY2016/17, the IMMR was 108/100,000 deliveries. In FY 2021/2022, the IMMR improved to 84.7/100,000 deliveries. In FY2016/17, the IPMR was 29.1/1,000 total births. In FY 2021/2022, the IPMR improved to 18.5/1,000 total births.

The 40% and 20% increase in maternal deaths notifications and reviews, respectively, were attributed to continuous efforts from the National MPDSR Committee, where health facilities with un-notified or un-reviewed maternal deaths are flagged and followed up on a weekly basis with support from the District Health Teams and regional implementing partners.

Over the past three financial years, maternal death reviews consistently increased from 66% (FY2019/20) to 89.4% (FY2021/22) with a corresponding reduction in IMMR from 99.97/100,000 deliveries (FY2019/20) to 84.7/100,000 deliveries (FY2021/22). A similar trend was observed in Kigezi and Tooro regions where maternal death reviews gradually improved leading to a reduction in IMMR [Table 6].

Recognising the health system's challenges in implementing community MPDSR, this report continues to show a disparity in the number of maternal deaths reviewed compared to those reported at various facilities. Amongst other complex factors this could be explained by health facilities struggling to own up to community-specific deaths brought to their facilities.

Despite the overall reduction in IMMR, the overarching causes of maternal deaths remained largely the same for FY2021/22 in comparison to previous financial years. This highlights the contribution of interconnected yet complex factors in the entire child-birth continuum to the unchanging causes in Figure 6 above. There are still existing gaps in the ANC package provided to mothers during the different contacts leading to missed opportunities in early identification and management of obstetric complications. The same is true during the time of delivery and the immediate postpartum period.

On the other hand, the reduction in mortality due post abortion complications was partly attributed to trainings conducted for midwives to improve their skills in management of complications using Manual Vacuum Aspiration (MVA) and additional stocking of MVA kits. Regionally, Kampala, Acholi and Bunyoro consistently had a high IMMR over the last three years. In Bunyoro region, the IMMR drivers as highlighted in the 3 delays model include long distances moved by patients to access functional CEMONC facilities, complicated by inadequate health facility HR and resource limitations that in many ways impact the final

maternal outcomes. Specifically, the region continued to grapple with the dysfunctional community to health facility referral services, rapid gentrification from the oil prospects, and inadequate implementing partner support in the region among others.

In Acholi, despite the consistently high IMMR in the past 3 years different schools of thought attributed it to improved notification and reporting in the region, more implementing partner involvement in community to health facility linkage MNCH programs, increased community maternal deaths reported through the facilities, and more focus to address cultural-specific male partner involvement amongst others that could have been masking community maternal deaths that could have been undocumented in earlier times.

The Kampala region continued to contribute the highest IMMR nationally. Kampala's demographic picture mimics the complexities of other rural-urban major cities globally. Kampala identifies as a region, a district, and a capital city with the greatest number of private and public facilities providing CEMONC services. It also houses the National Referral point for all complicated cases from nearby towns and districts and this combined with improved reporting rates, renders Kampala as the greatest contributor of maternal deaths. The National Referral Hospital serves a way higher client load than it was planned to serve. This constrains the resources allocated to the hospital for essential medicines and supplies, and human resources (patient: health worker ratio is high). Over the last two (2) years, there have been concerted efforts by the Ministry of Health, implementing partners, private sector, and KCCA to understand the unique challenges and map out solutions but the IMMR for Kampala highlights that these challenges still exist.

During 2021/2022 efforts have been focused on improving maternal death reviews across the country. As a result of these, we have registered great improvement in maternal death review rates of 89.4%. Consequently, 83 districts achieved the annual MOH Strategic plan (2020/21-2024/25) IMMR target of 63/100,000 deliveries. About 53 districts were unable to meet the target.

The top ten amongst those with the highest IMMR include Masaka, Hoima, Mbarara, Gulu, Arua, Lira, Mbale, Soroti, Moroto and Jinja (refer to table 1 of districts showing IMMR in the Appendix V). It is apparent that districts with regional referral hospitals had the highest IMMR indicating that these districts receive referral cases from the surrounding districts. This highlights that the referral system is working, however, there are still gaps in timeliness of referral, referral coordination, quality of care at both the referring and referral sites.

Eight districts (Alebtong, Bukomansimbi, Butebo, Gomba, Kibuku, Kitagwenda, Lwengo and Namayingo) reported zero maternal deaths.

However, there were 10 districts that did not review any of their reported maternal deaths. These districts/maternal deaths reported included Bugweri 3, Kamwenge 6, Nakasongola 3, Kyegegwa 6, Kyankwanzi 2, Buvuma 1, Namisindwa 4, Buyende 2, Terego 1 and Manafwa 1.

Generally, more maternal deaths, 1139(92.9% of 1226 deaths) occurred at higher level health facilities (HC IVs and above). Health Center IIs and clinics reported 26 (2%) maternal deaths indicating either late health seeking by mothers in labour, low quality of care or untimely referral to higher levels of care.

Maternal deaths among Adolescents contributed 10% of the total reported maternal deaths during FY 2021/2022. This age group is still under-age and expected to be in school. Adolescents are prone to having difficult labour with all its associated complications.

The leading causes of maternal deaths among adolescents were pregnancy-related sepsis, followed by indirect causes (Malaria, HIV/AIDS, Severe anaemia) and hypertensive disorders of pregnancy respectively. Capacity building efforts should focus on understanding and addressing those factors contributing to these complications in this age group.

4.2 Institutional Perinatal Mortality rates

There has been a 6.7% increase in notifications and a 1% increase in reviews between FY2021/22 and FY2020/21. The increment in the notification and perinatal death reviews could be partly attributed to the weekly national MPDSR surveillance with support from the various MoH stakeholders. The National MPDSR Committee has continued to urge for timeliness of death reviews since October 2021 through the NASMEC sub-committees. Specifically, the neonatal sub-committee on a weekly basis engaged the RRHs to review at least more than half of their reported perinatal deaths. Timely audits of perinatal death reviews are still lagging but have generally improved nationally.

On the other hand, the reducing trend in the institutional perinatal mortality rate can be attributed to increased efforts by the government and partners to improve newborn care through the establishment of newborn care units. The government and partners have implemented the following interventions, for example, Neonatal resuscitation (HBB), Essential newborn care, care of small and sick newborns (Kangaroo mother care, use of oxygen, Nasogastric tube feeding with breast milk, use of antibiotics, and Phototherapy). The increased IPMR for Karamoja Region can be partly attributed to improved reporting and fewer/scattered neonatal care units within the region.

The greatest decrease has been observed in Macerated and Fresh stillbirths. Early neonatal deaths remained unchanged. This could be attributed to the failure to reduce asphyxia-related deaths. Between FY2019/20 and FY2021/22, IPMR decreased by 22.3%. This could be attributed to ongoing efforts to re-energize and strengthen MPDSR committees at the national, regional, district, and facility levels. There have been efforts to mentor providers on the quality of reviews and responses required, as well as to report notified and reviewed cases in a timely manner through regional clinical mentorships. More stakeholders continue to see MPDSR as an important quality improvement and accountability tool for MNH services, and efforts are being made to scale it up across every part of the country.

Most of the Fresh Stillbirths occur at NRH (27 per 1000 births) and RRHs (21.6). The macerated stillbirth rates reduced but remain significantly high and this is attributable to gaps in knowledge among expectant mothers. This calls for continuous innovations and efforts for scaling up awareness of timely ANC attendance at household and community levels. It is important to note that most of the interventions seem to be tailored to early neonatal deaths and less advocacy has been done for stillbirths. Efforts to address the stillbirth rates need to focus on strengthening the overall Quality of care at the BEmONC and CEmONC facilities and streamlining the regulatory framework for quality of care at private facilities in urban centers. Additional emphasis needs to be put on addressing onsite delays at higher-level facilities and improving referral systems.

Most perinatal deaths (31.7%) involved mothers who had up to three ANC interactions. Nearly 30 percent of perinatal deaths examined included mothers with unrecorded ANC contacts/visits. Four ANC contacts were at 15.8%, whereas the suggested number of eight contacts was at 1.4%. As a result of receiving more ANC contact visits, women suffered fewer perinatal deaths. Moreover, one-third (37.5%) of mothers who experienced a perinatal death had a detectable fetal heart rate upon arrival. However, despite having a fetal heart rate at admission, 61 mothers (2%) were reported to have delivered MSBs.

About 58% of recorded perinatal deaths in FY2021/22 had a birth weight of 2500g or greater, indicating that these babies could have been saved if proper interventions were in place. The findings reveal significant gaps in the MNH quality of care (intrapartum care), including inadequate monitoring of labor, inability to use partograph observations for decision-making, and inadequate newborn resuscitation skills. Implementation of the Babies Matrix as a tool for quality improvement at all levels of care must be scaled up for implementation at all levels of care.

In addition, the highest proportion of neonatal deaths (53.1%) occurred at the NRH followed by the RRH, and this was most likely due to improved referral system. The high proportion of neonatal deaths at the hospitals reflects current efforts to improve care of the sick newborn at these facilities. It is important to note that the Health Centre IIs contributed 4.1% of FSB reviewed indicating more efforts to implement MPDSR at these lower-level facilities.

This also highlights the need to also address existing gaps in intrapartum care at the HC IIs. In some districts HC IIs contribute a significant proportion of delivery outputs. Many of these however have limited infrastructure, staffing gaps, limited knowledge, and skills gaps and inconsistent support supervision. There is need to speed up upgrading HC IIs to HC IIIs by MOH.

Of 11,403 perinatal deaths that were reviewed, 6,631 (58%) were of normal birth weight and most of these were fresh still births (2,475) hence more likely to be at term. These highlight existing gaps in intrapartum care. This indicates improvement in monitoring of labour and appropriate timely resuscitation and as improving referral system across levels of care. The FSBs are also a reflection of the delays at the higher-level receiving facilities

after referrals. About (35%) of the deaths reviewed were very low birth weight highlighting the need to strengthen care for the premature and low birth weight infant with secondary level interventions such as Kangaroo mother care, use of CPAP and antibiotics and nasogastric feeding with breast milk and phototherapy at regional referral and district Hospitals. The babies with missing weights were 6% of all the reviews. Facility teams need to be supported to appreciate the importance of taking weight and provided with new-born weighing scales where they are not available.

About 267 (24%) of the perinatal deaths that were reviewed had been born to prime gravida (PG) mothers who were more likely to be younger in age highlighting this category as a priority focus group. This could be explained by the fact that many of the Prime gravidas are young adolescent mothers that are at risk of poor ANC attendance and may have challenges with birth planning. This also indicates the need to create more advocacy programmes to stop teenage pregnancies.

Most of the perinatal deaths reviewed were delivered by SVD, 60% and majority of these were early neonatal deaths 24.2%. Poor monitoring practices that included: delayed decision making, inadequate resuscitation skills, lack of equipment, low skills in care for the premature and sick new-born were attributing factors to the level(s) of newborn deaths. A significant proportion of all perinatal deaths were from caesarean section - outcome (29.4%) and most of these were FSBs (13.1%). In line with the national statistics, birth asphyxia was highlighted as the leading cause of early neonatal death followed by complications of prematurity, and sepsis. Challenges with the classification of causes of death still exist, and the health workers need capacity building and orientation on cause of death classification to improve data completeness and accuracy.

WHY ARE MOTHERS AND BABIES STILL DYING?

MOTHERS	BABIES
KIRUHURA: Lack of support to ADHO MCH for regular support Heavy workload for the midwives especially at HC III level of care KABALE: Severe Shortage of Anaesthetists [Kabale] APAC: HR_ few nurses, few trainings in NICU care; the current staffing structure lacks critical & ER trained staff. Lack of equipment, old building	KAPCHORWA: Delay in referral from the communities Delay in health intervention. KIRUHURA: Delayed referral from peripheral facilities that accounts for most Fresh Still Births at HC IV and hospital [Kiruhura] APAC: Maternal death has been mitigated none in 2021/2022 yet; but perinatal deaths is related to young maternal age, poor ANC, FP, PNC of the newborn esp. follow-up

structure and lack of critical drugs in the NMS order form 018.

Kampala: Following schedules for meeting due to occupied specialists.

- Inappropriate labour monitoring with partographs
- Delay to seek medical attention both at individual and community level. Most cases on review point it out delays to recognize danger signs, late ANC attendance, report to a skilled health provider, transport constraints to reach the health facility and lack of critical cadres and supplies at the health facilities especially at health Centre IVs.
- Monthly meetings for MPDRS are not held regularly due to committees having competitive activities in the district. The MPDRS meetings tagged with allowances and refreshments during the meeting.

Rubanda:

- Traditional birth attendants who have little experience and knowledge is handling obstetrics but highly trusted by the community yet not regulated.
- Poor referral system where mothers leave lower facilities to upper facilities with poor means of transport and no communication between two sites.
- Lack of knowledge in identifying high risk mothers leading to late referrals
- Patriarchal families where women depend entirely on men for decision making including crucial ones like seeking health care.

KAMPALA: Delays in perinatal deaths reviews due to workload

- Lack of Appropriate Newborn resuscitation in a golden minute.
- Delay of mothers to make decisions to seek health services early
- Long distances from the health facilities
- Lack of critical cadres to support in performance of caesarean section in health centre IV e.g., anaesthetic officers, medical officers
- Lack of means of transport from one facility to another.

KALUNGU: Inadequate monitoring of mothers due to limited staffing levels,

- Nonattendance/late attendance of ANC by mothers,
- lack of ambulance services, delay to seek healthcare due to lack of money,
- influence of TBAs,
- irrational use of oxytocic's

AMOLATAR:

- Delay in seeking health care by mothers and partners/care takers where they ignore danger signs like malaria symptoms, urinary tract infections, loss or reduced fetal movements and they report to facilities late when fetal demise has already taken place or in late irreversible stages of systemic compromise.
- delay reaching the health facility. there is only one major access road to the facility, and it is in a poor state especially when it rains, most mothers complain transport becomes inconveniencing since riders and drivers are not interested, they over charge leading to accessing care from clinics and sometimes road delays. this road delays

○ Understaffing eg HC II with one midwife expected to work 24/7. ○ Eliminating traditional birth attendant deliveries and antenatal care attendances because they are not regulated by law. ○ Human resource recruitment due to fixed staffing norms despite increasing demand for services. Infrastructure especially staff accommodation that causes delay or gaps in service delivery like critical care team e.g., theatre staffs, midwives, (moving far at night). ○ Inadequate medical supplies and lack of kits for emergency obstetric care. ○ Poor health seeking behaviour of the communities served. ○ ○ Hard to reach nature of some areas like Kigezi and islands.	ambulances on the road as well with critical emergencies KABAROLE: ○ Late referrals from lower H/Facilities ○ Especially for Asphyxia and preterm babies ○ Lack of equipment and supplies that delay management. E.g., lack of reagents to do Serum Bilirubin, lack of equipment to perform emergency procedures like UVC like NGT, Syringes etc ○ Transferring unstable babies from delivery room to neonatal unit without communicating to the team
--	---

CHAPTER FIVE: RECOMMENDATIONS

Health system building Block	Identified bottlenecks	Recommendations
Leadership/Governance	Gaps in internal support supervision and clinical audit meetings to review what transpired in the last 24-hours at all CEmONC facilities.	Improve monitoring and supervision for referral processes and coordination, CEmONC functionality, and quality of care around the time of labour, delivery and the immediate postpartum period.
	Majority of ADHOs MCH are not well facilitated to conduct routine coordination and supervision activities for the various Health Sub Districts and facilities; including follow up of the response actions at all levels of care.	Ministry of Health and partners need to prioritize the pivotal role of ADHO-MCH to coordinate and supervise the MPDSR portfolio from the determinants of deaths, gaps in quality of care, and tracking of response-actions from the facility, and district MPDSR committees.
	Despite presence of Implementing partners, the technical and supervision role of the regional referral hospitals is still sub optimal in many regions. There's a lack of regional MPDSR review and coordination meetings across different regions.	The Ministry of Health to support Kawempe NRH to strengthen its regional oversight role of supporting the referring facilities within greater Kampala Metropolitan region of Wakiso, Mukono, Mpigi and Kampala. In addition, setting up regional safe motherhood coordination efforts through the establishment of local maternity and Newborn systems to support the highest burden regions of greater Kampala, Bunyoro, and Acholi.
	Majority of the regions lack good skills labs to attach health workers with capacity and skills gaps.	Ministry of Health and partners should consider establishing or functionalizing the existing skills labs at the different RRHs to enhance skills of health workers with capacity gaps.
	About 10% of the total reported maternal deaths during FY 2021/2022 were teenage mothers. This	The Adolescent Health stakeholders should focus on understanding and addressing the socioeconomic and

	age group is still under-age and expected to be in school. Adolescents are prone to having difficult labour with all its associated complications	cultural factors contributing to teenage pregnancies, it will help in averting maternal mortality in this age group. Capacity building efforts should focus on understanding and addressing those factors contributing to these complications in this age group.
Health workforce	Existing human resource gaps at the various levels of care, including the critical shortage of neonatal nurses and neonatologists, anaesthetists and anaesthesiologists that could provide critical care support at referral sites.	Ministry of Health needs to Fasttrack approval of the revised staffing norms to address the existing HR gaps, including special categories such as neonatal nurses, neonatologists, anaesthetists, and anaesthesiologists.
Health financing & infrastructural development	Inadequate facilities to support full time availability of medical officers and anaesthetists at CEmONC sites	Ministry of Health to engage RMNCAH stakeholders including the private sector to mobilise resources for infrastructural improvements at health facility level that support medical officers and anaesthetists while on duty.
Health information systems	Low evidence of data use by the MPDSR committees to develop 'SMART' response actions to reduce preventable causes of maternal and Perinatal death.	- MoH together with the implementing partners to build the capacity of districts and health facilities in developing MPDSR dashboards to track their response to MPDSR Recommendations. - The data captured in the DHIS2 should be utilized during the regional performance meetings
	No maternal deaths reviews conducted from 10 districts that reported maternal deaths during FY 2021/2022	Provide targeted mentorship support to the districts of Bugweri, Kamwenge, Nakasongola, Kyegegwa, Kyankwanzi, Buvuma, Namisindwa, Buyende, Terego and Manafwa. This should further strengthen functionality of their MPDSR committees to routinely convene and conduct reviews.

Access to essential medicines, supplies and equipment	Inadequate stocks of Magnesium sulphate, uterotonics, and essential antibiotics	Ministry of Health should build the capacity of health workers to correctly forecast, quantify and order magnesium sulphate, uterotonics and antibiotics. National Medical Store (NMS) should also utilise consumption data for these commodities to quantify for the country.
	Non-availability of life- saving commodities like carbetocin, surfactant and Caffeine.	Ministry of Health should ensure the availability of essential drugs including Carbetocin, CAFFEINE and surfactant at the CEmONC sites.
	Shortages of blood/ blood products and uneven geographical coverage of regional blood banks hindering easy access to blood in case of emergencies.	The Ministry of Health through the Uganda Blood Transfusion Services should increase availability and even regional coverage of blood and blood products in all the CEmONC facilities.
	Birth asphyxia continues to be the leading cause of newborn deaths with limited supplies of the newborn resuscitation equipment, and scarcity of skills in the Helping Babies Breathe (HBB) package	Ministry of Health and its partners should mobilise resources to equip every health facility with newborn resuscitation equipment and train health workers to use them.
Service delivery	Gaps in the quality of intrapartum care across the different facility levels including low partograph use and time delays in corrective interventions such as C-section.	The Ministry of Health through regional referral hospital and its partners should strengthen mentorship on surgical skills for c-section and repair of all degrees of perineal tears through in-service staff attachments and trainings and implementing quality improvement processes.
	Delays in accessing the health facility due to lack of preparedness for birth leading to delays in accessing quality care.	Health workers should emphasise birth and emergency preparedness plans during antenatal care, including planning for birth expenses, transport to the care facility but also in case they require referral.

	Uncoordinated and poor-quality referral systems	- Ministry of Health should establish/strengthen an effective referral system (pre-referral treatment to mother and/or newborn, available and reliable means of transport 24/7, communication to the referral facility and feedback to the referring facility) - We recommend that MOH scale up High Dependence Units (HDUs) to all Regional Referral Hospitals and a strategic shift to players to supporting the quality and coordination of referrals.
	There is still a high contribution from MSBs highlighting gaps in quality of ANC and/or gaps in health-seeking behaviour.	- Ministry of Health and its partners need to reassess ANC quality of care that women receive and ensure that they get the recommended package of interventions at each contact they make with the health system. Critical inputs for ANC should be available for mothers that attend, such as iron and folic acid, LLINS etc. - The Ministry of Health should streamline the implementation of new recommendations such as access to the one ultrasound in early pregnancy for all women.
	Postpartum haemorrhage is still the leading cause of maternal death.	The Ministry of Health through its regional structures should ensure that all skilled birth attendants starting from HC III level acquire skills on actively managing the 3rd stage of labour, manual removal of the placenta and how to manage PPH when it occurs.
	One in five perinatal deaths reviewed were of very low birth weight	Ministry of Health through its regional structures should strengthen care for the premature and low birth weight infant with secondary level high impact interventions such

		as Kangaroo mother care, use of CPAP, appropriate antibiotics, nasogastric feeding with breast milk and phototherapy at National, Regional Referral and District Hospitals.
	Gaps in community maternal and perinatal death surveillance and reporting	- Ministry of Health should strengthen community verbal autopsies and advocate for capacity building to increase the contribution of VHTs and Health assistants regarding capturing community data. - There should be a strong linkage to NIRA about capturing community deaths and births to further discuss how MoH through the existing systems at the community level can pick this data to improve health facility data.

APPENDICES:

Appendix I: Case Studies



OYAM DISTRICT

Local Government



Strengthening Maternal and Perinatal Death Surveillance Response (MPDSR) improves Quality of Care: A case of Anyeke HCIV, Oyam District

Authors: ¹Ariko Annet, ²Muga B, ²Amoli C, ²Okino D, ³Amandi, ⁴Giovanni D, ⁴Emina G, ⁴Katetemera, ⁴Ichtho J, ⁴Peter Lochoro

Affiliation: ¹CUAMM- Mothers and children First, ² Oyam DLG - Anyeke HCIV, ³Oyam DLG- DHOs office, ⁴Doctors with Africa-CUAMM,

Introduction: Uganda is committed to ending preventable maternal and perinatal Mortality. In FY2019/2020, perinatal deaths in Anyeke HCIV increased from 27 to 35, Neonatal deaths alone increasing from 8 to 11 compared to the previous financial year. Similarly, reporting and review of deaths declined from 93% to 69%.

The problem: A brain storming meeting held by the Staff of Anyeke HCIV with technical support from Doctors with Africa CUAMM established that irregular meetings by the MPDRS committee to review and address the underlying factors was the main cause of the drop-in MPDSR performance in Anyeke HCIV and the resultant increase in neonatal death in the health facility.



Anyeke HF Team reviewing a maternal death (left) and brainstorming (right) on the underlying factors for the underperformance of MPDSR in the HF.

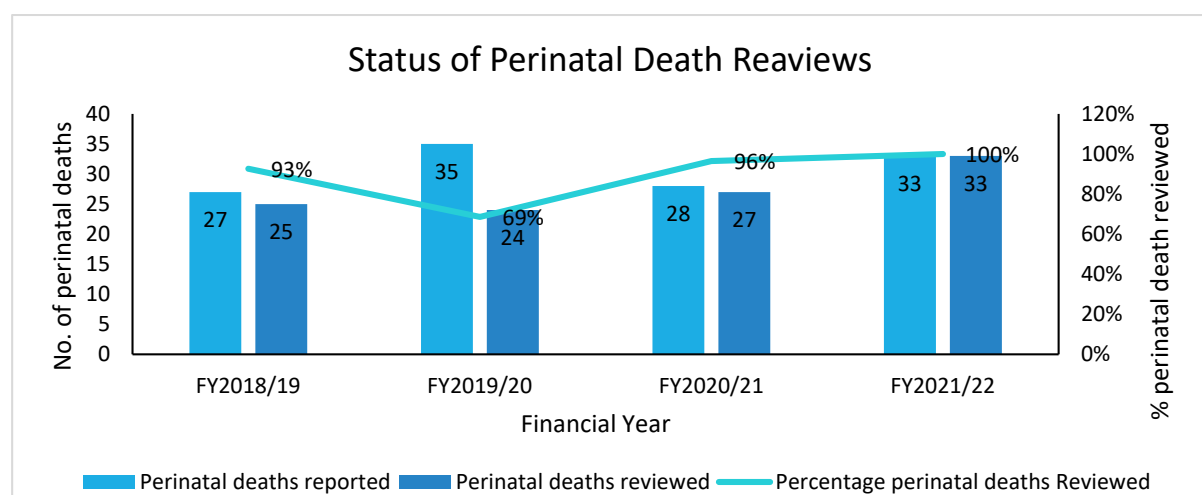
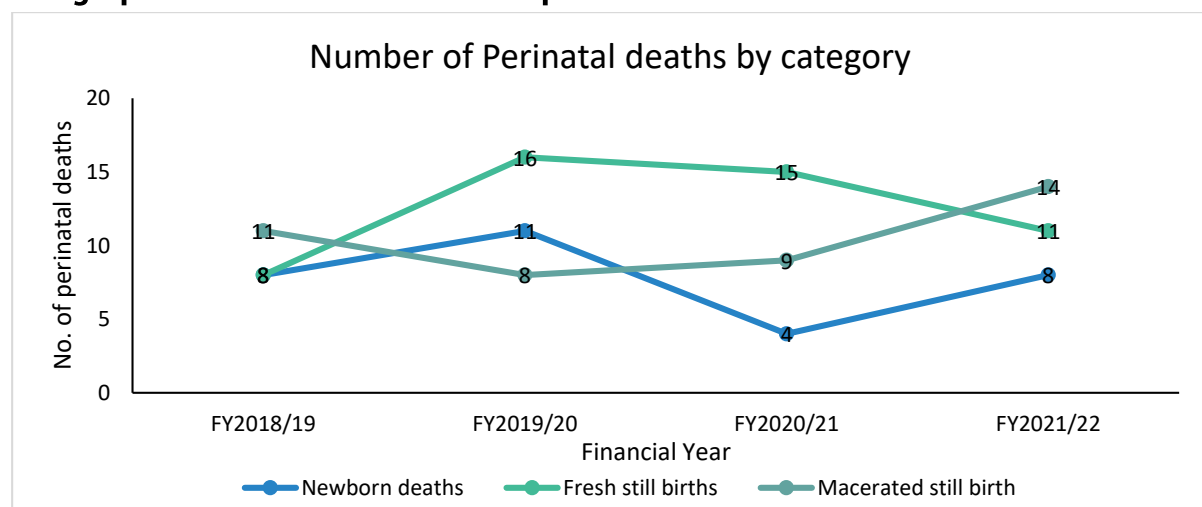
Objective: To improve the quality of maternal and newborn care through strengthening the leadership for the MPDSR in Anyeke HCIV.

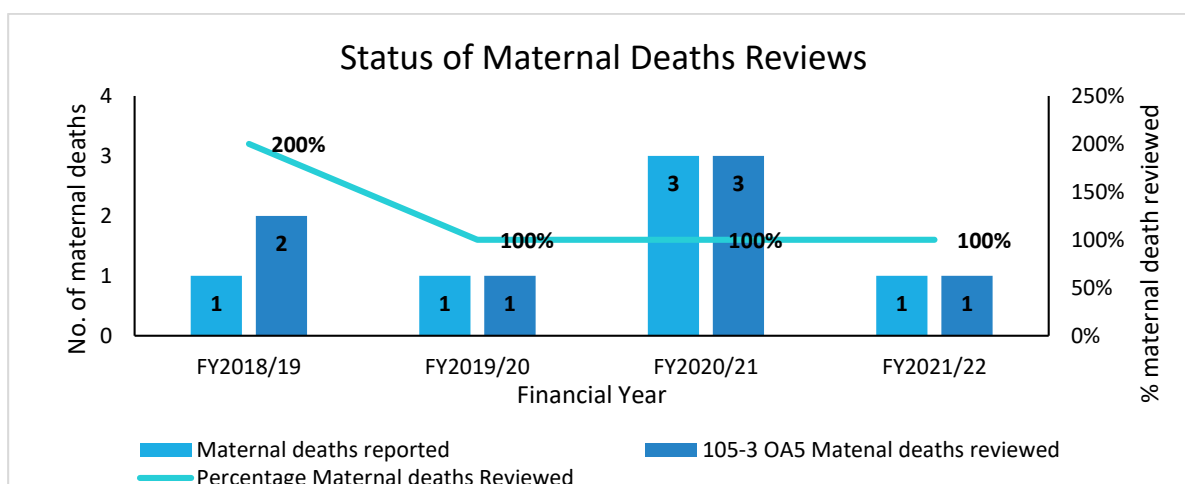
Intervention Areas:

- The HF team intervened by electing a new MPDSR focal person.
- The team elected a new MPDSR focal person who sent weekly SMS reminders to committee members to attend meetings.
- The new team members and one DHT was reoriented on their MPDSR roles and their capacity to conduct quality death audits built.
- CUAMM provided the required MPDSR tools, built capacity in their use and facilitated the committee with refreshments and data bundles on monthly basis for conducting reviews, ensuring no discrepancies between information in the registers and that in the DHIS2.
- The committee implemented action points from these meetings.

Results: Perinatal death reporting and audit ratios improved from 69% in FY2019/2020 to 96% and to 100% in FY2020/2021 and FY 2021/2022 respectively. The institutional newborn deaths reduced from 11 to 8 over the same period. Similarly, 100% of the maternal deaths that occurred in that period were reported and audited in time, and maternal deaths reduced from 3 to 1 in the same period.

The graphs below show the trends in performance





Lessons learnt:

1. Designating a dedicated Focal Person for MPDSR is essential for its success.
2. Constant availability of the MPDSR tools is very important.
3. Sending SMS reminders to the committee members of the scheduled meeting earlier in the week improves participation.

Conclusion: Good leadership is key in strengthening Maternal Perinatal Death Surveillance Responses and improving quality of care.



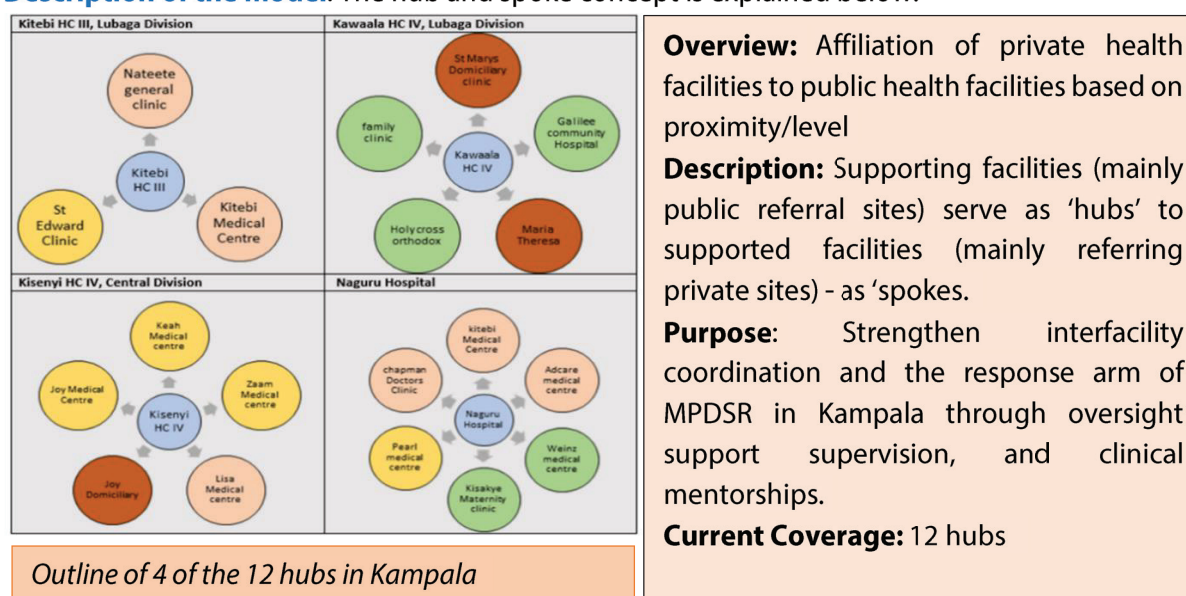
KCCA's experience while employing the hub and spoke model to improve Maternal and Perinatal outcomes in Kampala city

Authors: Sarah Zalwango, Daniel Okello, Paul Kiggundu, Ronald Mutumba

Introduction: According to the National FY 2020/2021 Annual MPDSR report, Kampala city had unacceptably high institutional maternal and perinatal mortality rates at 224/100,000 live births and 40.2/1,000 live births compared to the national averages of 92.1/100,000 live births and 20.2/1,000 live births respectively. This is further concretized by the fact that the city contributed 13% of the entire PDs burden and 16% of the entire MDs burden, hence, the need to strategically focus on reducing the occurrence of these deaths within the highly metropolitan part of the country (Directorate Annual report 2020/21).

Problem Statement: According to the updated Health Facility Inventory for the year 2021, Kampala has a total of 71 health facilities that provide maternal health services. Of these, the majority are private (98%) and only 2% are Government owned. The few government health facilities shoulder the load of Maternal Health outputs resulting in overcrowding at public referral sites with cases that could have been optimally managed at lower-level health facilities. Due to the unique challenges within Kampala's health service structure, e.g. poor interlinkages between the private and public health facilities, limited opportunities in the private sector in the area of capacity building, human resource shortages in the public sector, there was a need to strengthen inter-linkages and coordination mechanisms between the two sectors to improve health outcomes. Relatedly, as a result of the poor coordination, KCCA has over time registered the following shortfalls: Poor data capture across critical tools; Lack of Knowledge of MPDSR; Poor quality of the Audits; and suboptimal use of the Partographs among others.

Description of the model: The hub and spoke concept is explained below:



Interventions:



Clinical mentorship on pre-referral management of Pre-eclampsia conducted by Kawaala HCIV (hub) for a spoke site.

KCCA's regional MPDSR committee, with support from USAID MCHN Activity, has undertaken the following activities through the hub and spoke model to improve; (1) interfacility coordination, and (2) site-level implementation and follow-up of actions generated through MPDSR processes with an ultimate goal of improving the quality of maternal and newborn health services in the city:

- Targeted support supervisions, clinical mentorships, and CMEs.
- Orientation of spokes on pre-referral management of common maternal and neonatal emergencies.
- Orientation of spokes on MPDSR concepts and guidelines
- Onsite data support to spokes
- Participation during onsite HF review sessions.

Results of the hub and spoke (Emphasis on Perinatal death auditing):

AUDITING RATE	NUMBER OF HEALTH FACILITIES (75) (BEFORE)	NUMBER OF HEALTH FACILITIES (83) (AFTER)	NUMBER OF PDS	NUMBER OF PDS AUDITED Current; July 2022
>100%	18	37	351	378
60% to 99%	5	7	524	454(87%) Naguru RRH at 86% out of 380 PDS
1% to 59%	7	7	2541	1337(53%) Kawempe NRH at 53% out of 2500 PDS
0%	45 (60%)	10	20	0 (0%)

Before the hub and spoke model implementation, 60% of the HFs that had reported PDS had not audited these deaths. The number significantly improved following the deployment model by 55%

Results of the hub and spoke (Improved auditing in Kampala) as of May 2022:

CATEGORY	TOTAL PDS	TOTAL AUDITED	% AUDITED
Ownership			
GOVERNMENT	3045	1836	60%
PFP	150	114	76%
PNFP	241	223	93%
Grand Total	3436	2173	63%
Level			
HC II	50	47	94%
HC III	64	63	98%
HC IV	89	83	93%
Hospital	287	262	91%
NRH	2566	1391	54%
RRH	380	327	86%
Grand Total	3436	2173	63%

After the hub and spoke model, the private reporting improved tremendously across all the levels

General achievements during the implementation of the model:

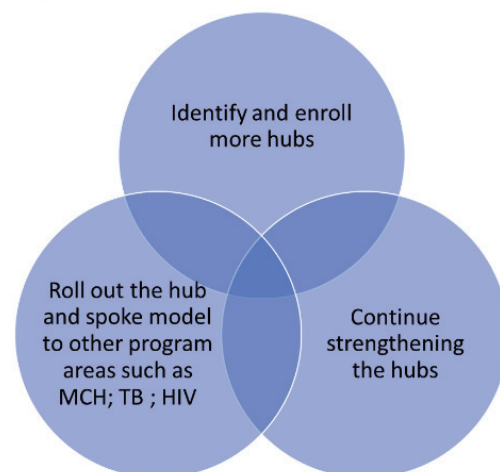
Through this approach, the following achievements were registered.

- Improved level and timeliness of the implementation of actions generated through MPDSR processes at regional and site levels.
- Timely inter-facility feedback on referral outcomes across all levels
- Strengthened inter-facility coordination
- Efficient movement/distribution of registers and tools to support data management processes.
- Improved tracking of QI projects at the spoke sites
- Improved weekly accountability by the hub representatives for maternal and perinatal outcomes during the KCCA MPDSR engagements

Challenges registered during implementation:

- Regular involvement of staff from the hub sites in the activities under the hub and spoke model interferes with routine tasks at the hub.
- Governance inadequacies: some health facilities are not willing to be supported by hubs they are mapped to
- Inadequate capacity in the areas of documentation and tracking of findings/issues from the supervision visits.
- Inadequate funds to facilitate the desired level of engagement between the hubs and spokes.

KCCA's plans for the hub and spoke model in FY2022/23





MAMA RESCUE SYSTEM: INCREASING ACCESS TO TRANSPORT DURING LABOUR USING A MOBILE CLOUD APPLICATION

Authors: Eleanor Nakintu, Esther Nakyaze, Stella Nalubowa, John Bosco Mpiirweh, William Mulindwa, Donald Kagulire

Babies and Mothers Alive (BAMA) Foundation in partnership with the district local government and the Ministry of Health implements the Mama Rescue Project in Rakai and Kyotera Districts. Mama Rescue is a simple automated mobile-phone platform that provides dispatch for emergency perinatal transportation in rural areas; and transport vouchers enabling women to be transported to deliver in health centers, received after attending four antenatal care appointments. By coordinating transport from home to health centre, logistics, and communication between facilities, Mama Rescue aims to reduce delays associated with childbirth, thereby mitigating risks related to maternal and newborn mortality and morbidity, and increasing mothers' and midwives' confidence in the health system. Uganda suffers from a maternal mortality ratio of 336 deaths per 100,000 live births and it is thought that 75% of these deaths can be attributed to one of three types of delays.

The first two of these delays are often related to transportation. Mama Rescue facilitates transport and uses local drivers' existing phone networks for payment on a mobile money system already widely used, thus leveraging and strengthening existing infrastructure to connect health centres, hospitals, and patients. There are two components to the Mama Rescue system, serving three objectives:

Facility-Based Delivery: Mama Rescue provides transport vouchers to women enrolled in the system after they log four antenatal care visits. These vouchers guarantee them free transport by boda boda (motorcycle) from home to a health centre, for delivery with a midwife. Our Babies and Mothers Alive Foundation has documented that if mothers attend ANC visit #4, the likelihood that they will deliver in one of our partnering health facilities reaches 81!



A boda boda rider transporting a mother and her care take to a health facility

Emergency Referral: Midwives at health centres can use their simple mobile phones to request emergency transport, using an automatic dispatch system. Local taxi drivers are alerted, and one is selected based on response time. Upon transporting the woman to the receiving facility, the driver is paid immediately with mobile money.



A midwife at Kirumba HCIII, Kyotera District receiving a mother who has been transported under the Mama Rescue Project

Communication of Critical Information: Referring midwives use Mama Rescue menus on their phones to send clinical information to the hospital, ahead of the woman's arrival. This enables the hospital midwives to prepare for the admission and reduces the wait time for services such as surgical procedures and blood transfusions. Since Mama Rescue uses simple technology and locally available infrastructure (simple phones, local transport, and mobile money), it is readily adaptable and scalable to other

regions, countries, communities, and public-health problems.

Since 2020, Mama Rescue has provided 20,564 transports from home to health centre, and 2,251 emergency-referral transports from health centre to hospital. The project has contributed to reduction in emergency referral time from 210 minutes at baseline to 32 minutes. In addition, within 10 minutes women are transported from homes to health facilities. There has been a significant increase in the percentage of births that take place in health facilities has increased from 79.7% in 2020 to 86% in 2021. The service has resulted in an increase in ANC 4 attendance and decreased the rate of fresh stillbirths by 33% during its first year.

In conclusion, Mama Rescue can improve the efficiency address delay 2 as well as improve overall referral system in Uganda if the technology is adopted nationally.



Taxi drivers and a care take supporting a mother referred using the Mama Rescue System

Appendix II: Avoidable factors identified during maternal death reviews by region
Table I Avoidable factors identified during maternal death reviews by region

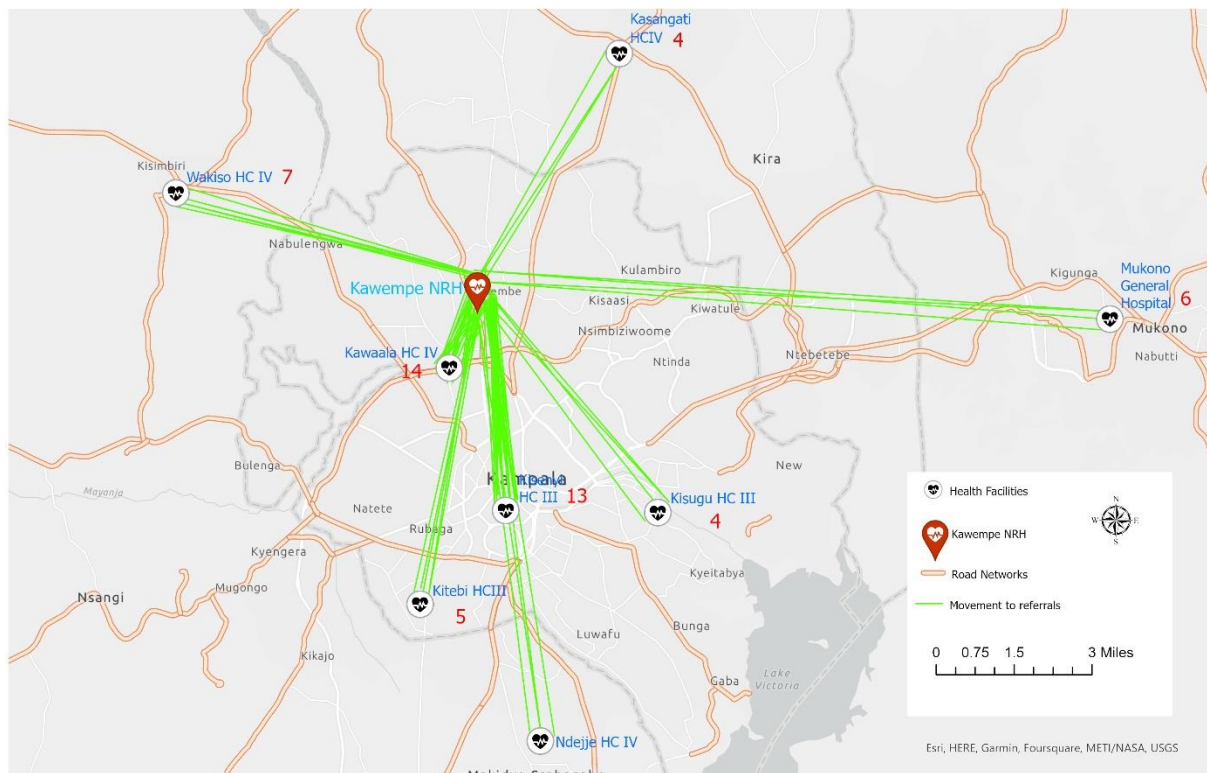
Category	Details	Acholi (88)	Ankole (169)	Bugisu (123)	Bukedi (88)	Bunyoro (127)	Busoga (173)	Kampala (382)	Karamoja (55)	Kigezi (87)	Lango (113)	North Central (195)	South Central (136)	Teso (106)	Tooro (143)	West Nile (224)	National (2209)
Personal/Family /Community Factors	Delay of the woman seeking appropriate healthcare	27.3	24.9	18.7	19.3	27.6	22.5	19.1	30.9	17.2	25.7	22.6	22.8	17.0	25.9	23.7	22.5
	Delay to reach Health Facility	18.2	16.0	15.4	14.8	18.9	16.2	15.7	14.5	10.3	15.9	13.3	14.7	12.3	12.6	11.2	14.7
	Refusal of treatment or admission	0.0	0.6	1.6	0.0	0.0	1.2	1.6	0.0	3.4	0.9	0.5	0.7	0.0	0.0	1.3	0.9
	Woman use of herbal medication	3.4	4.1	1.6	4.5	1.6	3.5	1.3	0.0	5.7	0.9	5.1	6.6	0.0	2.8	2.7	2.9
	Refused transfer to higher facility	4.5	0.6	0.8	2.3	0.8	2.9	1.6	3.6	6.9	1.8	1.0	1.5	0.0	4.9	3.1	2.2
Logistical Systems	Lack of partner support	6.8	2.4	0.8	2.3	3.9	4.0	3.9	7.3	2.3	4.4	3.6	2.2	3.8	1.4	2.7	3.3
	Lack of transport from home/community to HF	8.0	5.3	4.1	6.8	1.6	4.0	1.8	14.5	4.6	4.4	3.6	2.2	5.7	3.5	5.4	4.2
	Lack of transport between health facilities	1.1	3.0	0.8	1.1	1.6	2.9	3.7	0.0	2.3	1.8	2.1	1.5	4.7	0.0	1.3	2.1
Supply Health system factors	Lack of blood products, supplies & consumables	9.1	5.9	15.4	17.0	4.7	10.4	9.9	1.8	10.3	6.2	12.3	14.0	15.1	9.1	8.9	10.1
	Lack of appropriate medicines for client management including Lab Supplies	2.3	2.4	11.4	11.4	5.5	2.9	6.8	5.5	6.9	10.6	5.6	8.8	6.6	14.0	4.9	6.8
	Lack of other medical supplies, equipment & consumables for use in patient care	1.1	1.8	4.9	5.7	5.5	4.6	6.0	1.8	3.4	5.3	9.2	4.4	3.8	2.1	5.8	4.8
	Inappropriate intervention/ treatment / doses given	6.8	12.4	13.0	3.4	12.6	8.1	8.4	1.8	12.6	8.0	9.2	7.4	10.4	7.0	9.8	9.1
Personnel health system factors	Inadequate numbers of staff	2.3	3.0	3.3	4.5	2.4	5.2	5.2	5.5	4.6	7.1	5.6	2.9	9.4	6.3	5.4	4.9
	Absence of critical human resource	2.3	1.2	2.4	1.1	4.7	4.0	4.5	1.8	1.1	4.4	1.5	3.7	3.8	0.7	2.7	2.9
	Staff lack of skill/expertise	4.5	10.1	4.9	1.1	3.9	3.5	5.2	5.5	3.4	1.8	2.1	3.7	2.8	7.7	7.6	4.8
	Misdiagnosis	2.3	5.9	0.8	2.3	3.1	3.5	4.5	3.6	4.6	0.9	2.6	2.9	4.7	1.4	2.7	3.2
	Staff professional misconduct	0.0	0.6	0.0	2.3	1.6	0.6	0.8	1.8	0.0	0.0	0.0	0.0	0.0	0.7	0.9	0.6

Data source: DHIS2, FY2021/22

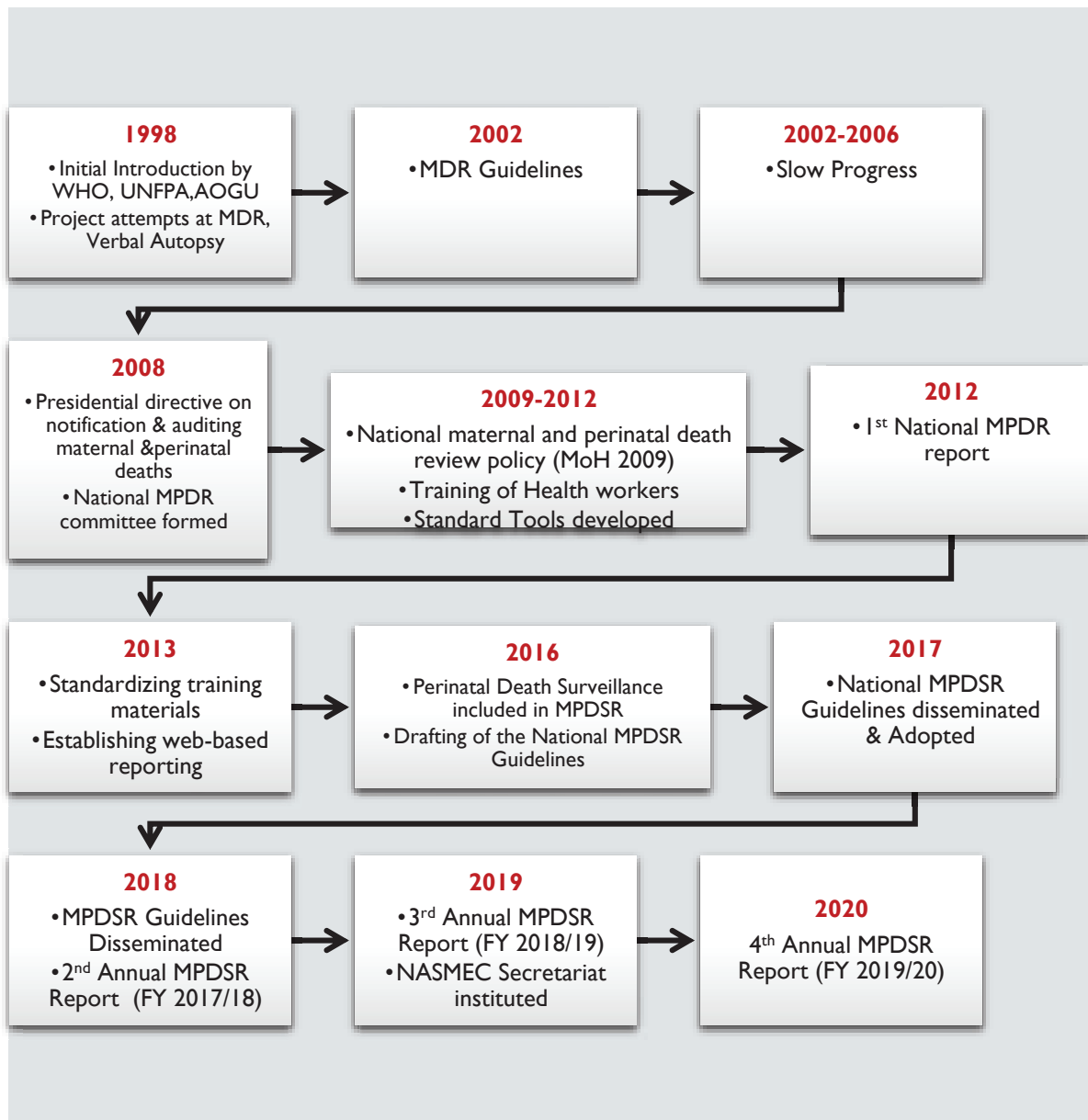
Table 2: Showing avoidable/modifiable factors identified during Perinatal death reviews by regional level (n=11063)

Regions	Delay 1	Delay 2	Delay 3					Lack of supplies and drugs including blood
	Delay to seek health care	Delay to reach the health facility	Delay to provide care	Absence of critical human resources	Lack of resuscitation equipment	Inappropriate intervention	Misdiagnosis	
Acholi	42.3	30.6	0.7	3.7	2.0	11.1	7.5	2.2
Ankole	42.2	32.5	3.3	2.9	1.9	9.0	4.8	3.5
Bugisu	48.7	20.2	3.1	3.0	1.9	15.5	4.0	3.7
Bukedi	41.8	37.0	2.5	1.6	3.0	4.7	5.5	3.9
Bunyoro	43.3	33.3	2.2	0.0	1.1	10.0	6.7	3.3
Busoga	49.2	34.4	1.1	1.0	1.3	6.3	4.4	2.3
Kampala	29.1	28.7	1.9	2.7	1.3	25.5	5.1	5.7
Karamoja	45.8	32.9	1.0	2.3	1.7	8.6	3.3	4.3
Kigezi	43.0	26.0	2.5	3.5	4.0	11.4	7.4	2.2
Lango	43.5	29.1	5.3	1.2	1.6	10.6	4.9	4.0
North Central	46.3	33.7	3.1	5.2	1.9	3.7	3.5	2.6
South Central	45.9	32.3	1.9	0.5	0.8	12.5	5.8	0.3
Teso	43.8	36.7	1.5	0.9	1.1	8.2	4.1	3.7
Tooro	40.3	29.5	1.8	3.4	0.9	12.4	8.0	3.7
West Nile	38.0	26.1	1.4	4.6	1.0	17.0	9.0	2.9
National	40.4	30.3	2.2	2.6	1.6	13.6	5.7	3.6

Appendix III: Referral patterns to Kawempe National Referral Hospital



Appendix IV: Illustrates the milestones achieved in institutionalizing MPDSR in Uganda



Appendix V: National Annual_FY2021/2022_MPDSR Report Data Set
Table I: National Annual_FY2021/2022_MPDSR Report Data Set

District/ City	Region	Maternal Deaths (mTrac)	Maternal deaths (105 Report)	% MD Notification (mTrac)	MD Notification within 24hrs	MD Reviews (DHIS2 Capture)	% MD Reviews	Deliveries (105 Report)	Deliveries in Live births (105 Report)	IMMR per 100,000 HF deliveries	Total Births	MSB (105 Report)	FSB (105 Report)	Weekend reports (0-7 days) - (105 Report)	Perinatal Deaths Reported (105 report)	Perinatal death Notification (mTrac)	PD Notification within 24hrs	PD Reviews Total (105 Report)	% Perinatal death Notification (mTrac)	% Perinatal death Review (DHIS2)	MSBR/ 1000 births	FSBR/1000 births	ENNR/ 1000 live births	IPMR/ 1000 births
Abim	Karamoja	0	1	0.0	1	1	100.0	5201	5169	19.2	5213	17	27	20	64	30	69	50	46.9	78.1	3.3	5.2	3.9	12.3
Adjumani	West Nile	4	2	200.0	3	2	100.0	11645	11597	17.2	11690	42	51	43	136	51	62	68	37.5	50.0	3.6	4.4	3.7	11.6
Agago	Acholi	0	4	0.0	4	4	100.0	9450	9465	42.3	9578	58	55	80	193	44	198	191	22.8	99.0	6.1	5.7	8.5	20.2
Aleglong	Lango	0	0		0	0		6736	6723	0.0	6784	20	41	2	63	0	37	32	0.0	0.0	2.9	6.0	0.3	9.3
Amolaiar	Lango	2	3	66.7	3	3	100.0	5487	5447	54.7	5497	24	26	16	66	19	44	43	28.8	65.2	4.4	4.7	2.9	12.0
Amudat	Karamoja	2	2	100.0	1	1	50.0	2507	2471	79.8	2510	19	20	11	50	37	29	14	74.0	28.0	7.6	8.0	4.5	19.9
Amuria	Teso	3	3	100.0	3	3	100.0	8421	8375	35.6	8445	30	40	12	82	50	71	58	61.0	70.7	3.6	4.7	1.4	9.7
Amuru	Acholi	0	1	0.0	2	2	200.0	6580	6649	15.2	6681	17	15	10	42	1	5	8	2.4	19.0	2.5	2.2	1.5	6.3
Apac	Lango	1	2	50.0	2	2	100.0	7323	7243	27.3	7360	51	66	50	167	44	91	84	26.3	50.3	6.9	9.0	6.9	22.7
Arua	West Nile	3	2	150.0	0	3	66.7	13749	3806	14.5	3891	34	51	24	109	75	14	21	68.8	19.3	8.7	13.1	6.3	28.0
Arua City	West Nile	8	31	25.8	29	28	90.3	3882	13481	798.6	13759	145	133	95	373	43	137	84	11.5	22.5	10.5	9.7	7.0	27.1
Budaka	Bukedi	2	3	66.7	3	3	100.0	14278	14257	21.1	14319	33	29	9	71	16	23	35	22.5	49.3	2.3	2.0	0.6	5.0
Bududa	Bugisu	2	2	100.0	2	2	100.0	10988	10958	18.2	11006	22	26	33	81	54	80	66	66.7	81.5	2.0	2.4	3.0	7.4
Bugiri	Busoga	3	6	50.0	4	8	133.3	11353	11204	52.8	11405	104	97	13	214	55	54	63	25.7	29.4	9.1	8.5	1.2	18.8
Bugweri	Busoga	2	3	66.7	3	3	0.0	4889	4849	61.4	4909	32	28	12	72	28	4	0	38.9	0.0	6.5	5.7	2.5	14.7
Buhweju	Archiele	1	1	100.0	2	1	100.0	4037	4029	24.8	4046	8	9	6	23	4	23	22	17.4	95.7	2.0	2.2	1.5	5.7
Bukwee	North Central	13	17	76.5	18	18	105.9	16843	16718	100.9	16948	126	104	97	327	173	254	190	52.9	58.1	7.4	6.1	5.8	19.3
Bukedea	Teso	3	3	100.0	0	3	100.0	7579	7578	39.6	7638	43	17	4	64	21	0	25	32.8	39.1	5.6	2.2	0.5	8.4
Bukomansimbi	South Central	0	0		0	0		3728	3705	0.0	3766	38	23	2	63	8	0	0	12.7	0.0	10.1	6.1	0.5	16.7
Bukwo	Bugisu	3	4	75.0	4	4	100.0	3390	3370	118.0	3395	11	14	4	29	14	26	25	48.3	86.2	3.2	4.1	1.2	8.5
Bulambuli	Bugisu	0	1	0.0	1	1	100.0	6666	6675	15.0	6707	12	20	3	35	7	17	17	20.0	48.6	1.8	3.0	0.4	5.2
Bullisa	Bunyoro	1	4	25.0	3	2	50.0	3599	3578	111.1	3653	33	42	18	93	20	0	0	21.5	0.0	9.0	11.5	5.0	25.5
Bundibugyo	Tooro	4	9	44.4	7	9	100.0	10397	10321	86.6	10453	68	64	34	166	53	35	33	31.9	19.9	6.5	6.1	3.3	15.9
Bunyanyabubu	Tooro	0	1	0.0	1	1	100.0	7836	8082	12.8	8119	23	14	6	43	0	6	7	0.0	16.3	2.8	1.7	0.7	5.3
Bushenyi	Archiele	14	12	116.7	14	13	108.3	11875	11917	101.1	12016	61	36	124	221	209	169	142	94.6	64.3	5.1	3.0	10.4	18.4
Busia	Bukedi	11	12	91.7	8	7	58.3	16049	15977	74.8	16185	94	114	54	262	132	61	97	50.4	37.0	5.8	7.0	3.4	16.2
Butaleja	Bukedi	3	2	150.0	1	2	100.0	12622	12566	15.8	12680	45	69	22	136	109	11	0	80.1	0.0	3.5	5.4	1.8	10.7
Butambala	South Central	3	13	23.1	13	13	100.0	7305	7155	178.0	7339	72	112	58	242	44	190	184	17.0	94.8	15.3	8.1	33.0	
Butebo	Bukedi	0	0		0	0		4072	4047	0.0	4085	19	19	5	43	0	12	10	0.0	23.3	4.7	4.7	1.2	10.5
Buvuma	North Central	1	1	0.0	1	0	0.0	3084	3080	32.4	3095	6	9	6	21	7	7	2	33.3	9.5	1.9	2.9	1.9	6.8
Buyende	Busoga	0	2	0.0	0	0	0.0	15446	15446	12.9	15519	35	40	13	88	19	6	0	21.6	0.0	2.3	2.6	0.8	5.7
Dokolo	Lango	0	6	0.0	6	6	100.0	7096	7062	84.6	7104	21	21	20	62	10	61	62	16.1	100.0	3.0	3.0	2.8	8.7
Fort Portal City	Tooro	25	15	166.7	36	29	93.3	10443	10248	143.6	10479	100	131	71	302	305	69	10	101.0	3.3	9.5	12.5	6.9	28.8
Gomba	South Central	0	0		0	0		5461	5471	0.0	5491	17	13	2	32	9	0	0	28.1	0.0	3.1	2.4	0.4	5.8
Gulu	Acholi	0	1	0.0	1	1	100.0	14260	3714	7.0	3750	19	17	13	49	3	34	42	6.1	85.7	5.1	4.5	3.5	13.1
Gulu City	Acholi	35	43	81.4	44	41	95.3	3727	14067	1153.7	14399	170	162	188	520	521	357	420	100.2	80.8	11.8	11.3	13.4	36.1
Holma	Bunyoro	0	0		0	0		9686	4598	0.0	4655	21	36	5	62	6	0	0	9.7	0.0	4.5	7.7	1.1	13.3
Holma City	Bunyoro	53	57	93.0	52	46	80.7	4599	9335	1239.4	9784	151	298	100	549	446	45	27	81.2	4.9	15.4	30.5	10.7	56.1
Ibanda	Archiele	5	9	55.6	10	9	100.0	7575	7481	118.8	7624	77	86	73	216	113	172	169	52.3	78.2	7.5	11.3	9.8	28.3
Iganga	Busoga	16	16	100.0	19	15	93.8	15148	15173	105.6	15484	179	132	126	437	307	296	104	70.3	23.8	11.6	8.5	3.0	28.2
Isingiro	Archiele	9	11	81.8	9	8	72.7	19067	18908	57.7	19187	117	162	56	335	233	220	202	69.6	60.3	6.1	8.4	3.0	17.5
Jinja	Busoga	1	1	100.0	0	1	100.0	13615	8011	7.3	8057	25	21	11	57	5	17	11	8.8	19.3	3.1	2.6	1.4	7.1
Jinja City	Busoga	8	22	36.4	22	15	68.2	8032	13401	273.9	13723	156	176	270	602	19	85	7	3.2	1.2	11.4	12.8	20.1	43.8
Kaabong	Karamoja	1	6	16.7	7	6	100.0	4588	4724	130.8	4774	14	36	19	69	24	68	52	34.8	75.4	2.9	7.5	4.0	14.5
Kabale	Kigezi	8	9	88.9	9	9	100.0	9935	9897	90.6	10041	64	80	145	289	279	268	189	96.5	65.4	6.4	8.0	14.7	28.8
Kabarole	Tooro	0	0		0	0		4728	4742	0.0	4819	23	54	6	83	1	0	0	1.2	0.0	4.8	11.2	1.3	17.2
Kahemaro	Teso	1	3	33.3	4	3	100.0	4224	4220	71.0	4280	27	13	13	53	33	37	30	62.3	56.6	6.3	3.1	3.1	12.4
Kagadi	Bunyoro	7	9	77.8	7	7	77.8	17109	16888	52.6	17190	130	172	78	380	198	18	16	52.1	42	7.6	10.0	4.6	22.1
Kakumiro	Bunyoro	1	3	33.3	4	1	33.3	15201	15202	19.7	15282	46	34	51	131	34	59	17	26.0	13.0	3.0	2.2	3.4	8.6
Kalaki	Teso	1	4	25.0	4	4	100.0	3302	3282	121.1	3322	18	22	26	66	10	43	33	15.2	50.0	5.4	6.6	7.9	19.9
Kalanqala	South Central	2	2	100.0	2	2	100.0	1521	1550	131.5	1573	14	9	13	36	12	4	4	33.3	0.0	8.9	5.7	8.4	22.9
Kaliro	Busoga	0	3		1	1	33.3	7051	7053	42.5	7159	57	49	11	117	24	17	0	20.5	0.0	8.0	6.8	1.6	16.3
Kalungu	South Central	3	7	42.9	5	2	28.6	8566	8495	81.7	8621	77	49	16	142	67	41	3	47.2	2.1	8.9	5.7	1.9	16.5
Kampala	Kampala	184	196	93.9	193	188	95.9	87966	87966	222.8	89253	1063	956	1444	3463	3105	3435	2171	89.7	62.7	11.9	10.7	16.6	38.8
Kamuli	Busoga	23	27	85.2	17	27	100.0	20976	20890	128.7	21179	134	155	127	416	251	111	179	60.3	43.0	6.3	7.3	6.1	19.6
Kamwenge	Tooro	6	7	85.7	3	0	0.0	14614	14512	47.9	14574	20	42	22	84	67	61	24	79.8	28.6	1.4	2.9	1.5	5.8
Kanungu	Kigezi	7	6	116.7	5	5	83.3	8909	8856	67.3	8996	70	70	82	222	170	197	156	76.6	70.3	7.8	7.8	9.3	24.7

District/ City	Region	Maternal Deaths (mTrac)	Maternal deaths (105 Report)	% MD Notification (mTrac)	MD Notification within 24hrs	MD Reviews (DHIS2 Capture)	% MD Reviews	Deliveries (105 Report)	Deliveries Live Births (105 Report)	IMMR per 100,000 HF deliveries	Total Births	MSB (105 Report)	FSB (105 Report)	Newborn Deaths (0-7 days) - (105 report)	Perinatal Deaths Reported (105 report)	Perinatal death Notification (mTrack)	PD Notification within 24hrs	PD Deaths (105 Report)	% Perinatal death Notification (mTrac)	% Perinatal death Review (DHIS2 Capture)	MSBR/ 1000 births	FSBR/1000 births	ENNR/ 1000 live births	IPMR/ 1000 births
Kapchorwa	Bugisu	4	3	133.3	0	4	133.3	5437	5437	55.2	5537	43	57	21	121	49	0	79	40.5	65.3	7.8	10.3	3.9	21.9
Kapelebyong	Teso	2	3	66.7	0	3	100.0	3027	3018	99.1	3041	11	12	4	27	2	2	0	7.4	0.0	3.6	3.9	1.3	8.9
Kareniga	Karamoja	1	1		1	1		1615	1630	0.0	1645	6	9	0	15	0	9	8	0.0	53.3	3.6	5.5	0.0	9.1
Kaasee	Tooro	28	32	87.5	32	30	93.8	36592	36250	87.5	36688	230	208	152	590	373	348	208	63.2	35.3	6.3	5.7	4.2	16.1
Kaasanda	North Central	4	3	133.3	2	3	33.3	10043	9924	29.9	10104	80	100	37	217	67	133	0	30.9	0.0	7.9	9.9	3.7	21.5
Katakwi	Teso	1	3	33.3	4	2	66.7	7496	7521	40.0	7620	44	55	42	141	44	0	57	31.2	40.4	5.8	7.2	5.6	18.5
Kayunga	North Central	16	15	106.7	14	16	106.7	14045	14056	105.6	14252	115	92	100	307	131	117	30	42.7	9.8	8.1	6.5	7.1	21.5
Kazo	Ankole	0	2	0.0	2	2	100.0	4188	4154	47.8	4202	16	32	15	63	14	39	42	22.2	66.7	3.8	7.6	3.6	15.0
Kibale	Bunyoro	2	3	66.7	5	2	66.7	6102	6006	49.2	6114	52	56	36	144	39	41	0	27.1	0.0	8.5	9.2	6.0	23.6
Kiboga	North Central	9	10	90.0	7	1	10.0	8223	8180	121.6	8319	68	71	42	181	78	36	1	43.1	0.6	8.2	8.5	5.1	21.8
Kibuku	Bukedi	0	0		0	0		9918	9944	0.0	9994	35	15	2	52	30	0	0	57.7	0.0	3.5	1.5	0.2	5.2
Kikuube	Bunyoro	3	8	37.5	2	2	25.0	12729	12574	62.8	12775	109	92	28	229	56	11	1	24.5	0.4	8.5	7.2	2.2	17.9
Kiruhura	Ankole	2	3	66.7	3	3	100.0	6526	6492	46.0	6536	21	23	4	48	49	50	44	102.1	91.7	3.2	3.5	0.6	7.3
Kiryandongo	Bunyoro	9	11	81.8	14	8	72.7	11755	11613	93.6	11758	66	79	98	243	102	71	55	42.0	22.6	5.6	6.7	8.4	20.7
Kisiro	Kigezi	5	7	71.4	10	8	114.3	11433	11375	61.2	11514	64	75	41	180	107	140	52	59.4	28.9	5.6	6.5	3.6	15.6
Kitagwenda	Tooro	0	0		0	0		4861	4832	0.0	4861	14	15	7	36	0	0	0	0.0	0.0	2.9	3.1	1.4	7.4
Kitgum	Tooro	9	8	112.5	11	10	125.0	8587	8448	93.2	8651	128	75	135	338	232	277	275	68.6	81.4	14.8	8.7	16.0	39.1
Kitgum	Acholi	6	8	75.0	8	7	87.5	9287	9285	86.1	9410	66	59	46	171	128	31	83	74.9	48.5	7.0	6.3	5.0	18.2
Koboko	West Nile	0	0		0	0		9014	8974	11.1	9034	41	19	14	74	14	48	53	18.9	71.6	4.5	2.1	1.6	8.2
Kole	Lango	0	1	0.0	3	4	133.3	7095	7087	42.3	7173	10	76	20	106	2	37	11	1.9	10.4	1.4	10.6	2.8	14.8
Kotido	Karamoja	0	3	0.0	3	4																		
Kumi	Teso	4	4	100.0	6	4	100.0	9539	9550	51.8	9635	54	31	44	125	58	86	87	46.4	69.6	5.6	3.2	4.2	13.0
Kwania	Lango	2	4	50.0	3	4	100.0	7297	7261	54.8	7336	31	44	21	96	21	19	35	21.9	36.5	4.2	6.0	2.9	13.1
Kween	Bugisu	0	1	0.0	1	1	100.0	4683	4748	21.4	4772	7	17	5	29	0	16	19	0.0	65.5	1.5	3.6	1.1	6.1
Kyankwanzli	North Central	0	2	0.0	0	0	0.0	5625	5616	35.6	5671	35	20	10	65	5	9	0	7.7	0.0	6.2	3.5	1.8	11.5
Kyegegwa	Tooro	0	6	0.0	0	0	0.0	16496	16476	36.4	16681	105	100	21	226	0	0	0	0.0	0.0	6.3	6.0	1.3	13.5
Kyenjojo	Tooro	3	6	50.0	7	3	50.0	17180	17129	34.9	17366	105	132	54	291	47	71	66	16.2	22.7	6.0	7.6	3.2	16.8
Kyotera	South Central	4	6	66.7	6	6	100.0	11240	11314	53.4	11314	108	76	57	241	142	147	172	58.9	71.4	9.5	2.8	5.1	21.3
Lamwo	Acholi	3	4	75.0	3	3	75.0	5749	5740	69.6	5787	31	16	23	70	35	50	59	50.0	84.3	5.4	2.8	4.0	12.1
Lira	Lango	0	0		0	0		12094	4330	0.0	4361	18	13	3	34	8	14	7	23.5	20.6	4.1	3.0	0.7	7.8
Lira City	Lango	19	24	79.2	27	27	112.5	4349	11996	551.9	12318	163	159	51	373	315	377	364	84.5	97.6	13.2	12.9	4.3	30.3
Luuka	Busoga	2	3	66.7	3	3	100.0	4625	4605	64.9	4653	22	26	21	69	42	48	34	60.9	49.3	4.7	5.6	4.6	14.8
Luwero	North Central	7	14	50.0	11	14	100.0	22720	22092	62.9	22434	182	160	37	379	161	113	125	42.5	33.0	8.1	7.1	1.7	16.9
Lwengo	South Central	0	0		0	0		7939	7884	0.0	7955	43	28	18	89	5	0	0	5.6	0.0	5.4	3.5	2.3	11.2
Lyantonde	South Central	0	5	0.0	6	4	80.0	4788	4683	104.4	4821	66	72	58	196	22	161	125	11.2	63.8	13.7	14.9	4.0	40.7
Madi-Okollo	West Nile	3	4	75.0	4	4	100.0	5291	5263	75.6	5293	17	13	10	40	8	10	3	20.0	7.5	3.2	2.5	1.9	7.6
Manafwa	Bugisu	0	1	0.0	0	0	0.0	13003	13012	7.7	13051	13	26	1	40	0	8	17	0.0	42.5	1.0	2.0	0.1	3.1
Maracha	West Nile	0	1	0.0	1	1	100.0	6110	6028	16.4	6122	42	52	30	124	95	96	130	76.6	104.8	6.9	8.5	5.0	20.3
Masaka	South Central	0	0		0	0		12021	2078	0.0	2094	9	7	5	21	0	0	0	0.0	0.0	4.3	3.3	2.4	10.0
Masaka City	South Central	30	58	51.7	57	35	60.3	2092	11697	2772.5	12047	187	163	263	613	436	256	172	71.1	28.1	15.5	13.5	22.5	50.9
Masindi	Bunyoro	6	7	85.7	2	2	28.6	8990	9327	77.9	9532	69	136	33	238	102	2	2	42.9	0.8	7.2	14.3	3.5	25.0
Mayuge	Busoga	6	7	85.7	9	8	114.3	11089	10964	63.1	11149	85	100	43	228	149	157	113	65.4	49.6	7.6	9.0	3.9	20.5
Mbale	Bugisu	0	0		0	0	0.0	17837	10149	0.0	10176	16	11	4	31	1	9	3	3.2	9.7	1.6	1.1	0.4	3.0
Mbale City	Bugisu	45	49	91.8	60	55	112.2	10168	17394	481.9	17910	278	238	15	531	429	163	431	80.8	81.2	15.5	13.3	0.9	29.6
Mbarara	Ankole	0	0		0	0		15208	3807	0.0	3829	12	10	5	27	12	38	26	44.4	96.3	3.1	2.6	1.3	7.1
Mbarara City	Ankole	35	33	106.1	43	45	136.4	3803	15003	867.7	15375	198	174	33	405	489	86	144	120.7	35.6	12.9	11.3	2.2	26.3
Mitooma	Ankole	1	1	100.0	9	1	100.0	5538	5533	18.1	5561	21	7	3	31	9	6	13	29.0	41.9	3.8	1.3	0.5	5.6
Mityana	North Central	10	8	125.0	0	9	133.62	13362	13140	59.9	13401	109	152	39	300	199	110	59	66.3	19.7	8.1	11.3	3.0	22.4
Moroto	Karamoja	7	7	100.0	9	9	128.6	2548	2533	274.7	2581	18	30	31	79	53	63	47	67.1	59.5	7.0	11.6	12.2	30.6
Moyo	West Nile	2	4	50.0	3	4	100.0	4073	4032	98.2	4088	32	24	32	88	55	52	39	62.5	44.3	7.8	5.9	7.9	21.5
Mpigi	South Central	4	6	66.7	6	2	33.3	11078	11079	54.2	11182	76	27	31	134	52	42	0	38.8	0.0	6.8	2.4	2.8	12.0
Mubende	North Central	33	37	89.2	20	18	48.6	14599	14158	254.1	14694	166	320	188	674	436	66	128	64.4	19.0	11.3	21.9	13.3	46.0
Mukono	North Central	7	4	175.0	8	6	150.0	24723	24611	16.2	24891	164	116	45	325	169	142	66	52.0	20.3	6.6	4.7	1.8	13.1
Nablatuk	Karamoja	0	1	0.0	1	1	100.0	2324	2297	43.0	2324	11	16	20	47	7	26	16	14.9	34.0	4.7	6.9	8.7	20.2
Nakapiripit	Karamoja	2	1	200.0	1	1	100.0	2384	2402	41.9	2450	20	28	24	72	3	15	4	4.2	5.6	8.2	11.4	10.0	29.4
Nakasongola	North Central	3	8	37.5	1	0	12.5	8601	8418	93.0	8614	119	77	26	222	222	143	0	100.0	0.0	13.8	8.9	3.1	25.8
Nakasongola	North Central	1	3	33.3	1	0	0.0	6886	6923	43.6	7016	61	32	26	119	5	0	0	4.2	0.0	8.7	4.6	3.8	17.0
Namayingiro	Busoga	0	0		1	0		6184	6164	0.0	6243	40	39	11	90	23	1	0	25.6	0.0	6.4	6.2	1.8	14.4
Namisingwa	Bugisu	2	4	50.0	1	0	0.0	14626	14600	27.3	14644	17	27	9	53	11	25	6	20.8	11.3	1.2	1.8	0.6	3.6
Namutumba	Busoga	3	3	100.0	1	3	100.0	6398	6386	46.9	6424	19	19	18	56	38	32	26	67.9	46.4	3.0	3.0	2.8	8.7
Napak	Karamoja	1	1	100.0	1	1	100.0	5440	5535	18.4	5623	27	61	30	118	46	73	69	39.0	58.5	4.8	10.8	5.4	21.0
Nebbi	West Nile	10	13	76.9	13	12	92.3	13066	12898	1														

District/ City	Region	Maternal Deaths (mTrac)	Maternal deaths (105 Report)	% MD Notification (mTrac)	MD Notification within 24hrs	MD Reviews (DHIS2 Capture)	% MD Reviews	Deliveries (105 Report)	Deliveries Live Births (105 Report)	IMMR per 100,000 HF deliveries	Total Births	MSB (105 Report)	FSB (105 Report)	Newborn deaths (0-7 days) (105 report)	Perinatal Deaths Reported (105 report)	Perinatal death Notification (mTrac)	% Perinatal death Notification (mTrac)	% Perinatal death Review (DHIS2 Capture)	MSBR/ 1000 births	F5BR/1000 births	ENNR/ 1000 live births	IPMR/ 1000 births
Ntoroko	Tooro	3			4	3		2952	2936	0.0	2988	16	36	14	66	20	30.3	59.1	5.4	12.0	4.8	22.1
Ntungamo	Ankole	10	9	111.1	12	10		17286	17204	52.1	17370	80	86	53	219	143	65.3	67.6	4.6	5.0	3.1	12.6
Nwoya	Acholi	2	3	66.7	3	1	33.3	6028	6015	49.8	6087	37	35	40	112	43	38.4	45.5	6.1	5.7	6.7	18.4
Obongti	West Nile	0	1	0.0	1	1	100.0	3599	3586	27.8	3624	20	18	16	54	14	25.9	9.3	5.5	5.0	4.5	14.9
Omoro	Acholi	1	2	50.0	1	2	100.0	5495	5451	36.4	5501	36	14	14	64	13	20.3	57.8	6.5	2.5	2.6	11.6
Otuke	Lango	3	3	100.0	3	3	100.0	3400	3387	88.2	3420	10	23	4	37	14	37.8	56.8	2.9	6.7	1.2	10.8
Oyam	Lango	10	12	83.3	12	12	100.0	15969	16005	75.1	16202	103	94	159	356	277	77.8	88.5	6.4	5.8	9.9	22.0
Pader	Acholi	1	1	100.0	1	1	100.0	5267	5329	19.0	5383	26	28	13	67	12	17.9	91.0	4.8	5.2	2.4	12.4
Pakwach	West Nile	1	4	25.0	4	4	100.0	7107	7062	56.3	7111	30	19	19	68	67	98.5	86.8	4.2	2.7	2.7	9.6
Pallisa	Bukedi	5	5	100.0	9	7	140.0	12706	12601	39.4	12758	90	67	65	222	85	44.1	71.1	5.3	5.2	5.2	17.4
Rakai	South Central	3	3	100.0	3	3	100.0	10681	10631	28.1	10755	70	54	22	146	66	45.2	43.2	6.5	5.0	2.1	13.6
Rubanda	Kigezi	2	1	200.0	1	1	100.0	6734	6731	14.9	6761	12	18	3	33	16	48.5	93.9	1.8	2.7	0.4	4.9
Rubirizi	Ankole	1	5	20.0	5	5	100.0	3852	3774	130.5	3840	29	37	9	75	10	13.3	50.7	7.6	9.6	2.4	19.5
Rukiga	Kigezi	2	2	100.0	2	2	100.0	3199	3185	62.5	3213	9	19	16	44	29	62.5	86.4	2.8	5.9	5.0	13.7
Rukungiri	Kigezi	4	5	80.0	5	5	100.0	15268	15298	32.7	15416	76	42	84	202	164	81.2	74.3	4.9	2.7	5.5	13.1
Rwampara	Ankole	0	1	0.0	1	1	100.0	2973	3960	33.6	3979	10	9	1	20	5	25.0	90.0	2.5	2.3	0.3	5.0
Sembabule	South Central	1	5	20.0	6	4	80.0	6353	6319	78.7	6379	27	33	21	81	9	11.1	12.3	4.2	5.2	3.3	12.7
Serere	Teso	3	5	60.0	6	6	100.0	11443	11444	43.7	11524	45	35	13	93	17	18.3	79.6	3.9	3.0	1.1	8.1
Sheema	Ankole	3	4	75.0	5	5	125.0	9480	9448	42.2	9551	64	39	28	131	59	45.0	81.7	6.7	4.1	3.0	13.7
Sironko	Bugisu	2	2	100.0	2	2	100.0	13446	13423	14.9	13473	28	22	6	56	17	30.4	12.5	2.1	1.6	0.4	4.2
Soroti	Teso	2	1	200.0	2	4	400.0	7604	5489	13.2	5576	19	68	8	95	25	26.3	7.4	3.4	12.2	1.5	17.0
Soroti City	Teso	11	24	45.8	28	18	75.0	5476	7486	438.3	7661	85	90	44	219	218	99.5	101.4	11.1	11.7	5.9	28.6
Terego	West Nile	2	1	200.0	0	0	0.0	8368	8286	12.0	8378	56	36	38	130	18	13.8	0.0	6.7	4.3	4.6	15.5
Tororo	Bukedi	10	17	58.8	14	15	88.2	21641	21660	78.6	21871	100	111	49	260	67	25.8	66.5	4.6	5.1	2.3	11.9
Wakiso	South Central	6	17	35.3	4	8	47.1	52841	52604	32.2	53135	315	216	94	625	116	18.6	0.0	5.9	4.1	1.8	11.8
Yumbe	West Nile	13	9	144.4	11	10	111.1	18835	18805	47.8	18981	93	83	72	248	125	50.4	35.5	4.9	4.4	3.8	13.1
Zombo	West Nile	5	5	100.0	6	7	140.0	9271	9153	53.9	9278	70	55	41	166	69	41.6	90.4	7.5	5.9	4.5	17.9

