Assessment of Maternal and Perinatal Death Surveillance and Response (MPDSR) Implementation in Kagera and Mara Region, Tanzania

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The Maternal and Child Survival Program (MCSP) is a global United States Agency for International Development (USAID) initiative to introduce and support high-impact health interventions in 25 priority countries to help prevent child and maternal deaths. MCSP supports programming in maternal, newborn, and child health, immunization, family planning and reproductive health, nutrition, health systems strengthening, water/sanitation/hygiene, malaria, prevention of mother-to-child transmission of HIV, and pediatric HIV care and treatment. MCSP will tackle these issues through approaches that also focus on household and community mobilization, gender integration, and digital health, among others.

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Abbreviations

CHMT	council health management team
CHW	community health worker
DMO	district medical officer
DNO	district nursing officer
DRCH-CO	district reproductive and child health coordinator
HMIS	health management information system
ICD-10	International Classification of Diseases, 10th revision
ICD-MM	*The WHO Application of ICD-10 to Deaths during Pregnancy, Childbirth and the Puerperium*
ICD-PM	*The WHO Application of ICD-10 to Deaths during the Perinatal Period*
M&E	monitoring and evaluation
MCSP	Maternal and Child Survival Program
MDSR	maternal death surveillance and response
MOHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MPDR	maternal and perinatal death review
MPDSR	maternal and perinatal death surveillance and response
NIMR	National Institute for Medical Research
PDSR	perinatal death surveillance and response
PO-RALG	President's Office-Regional Administration and Local Government
RCH	reproductive and child health
RHMT	regional health management team
RMO	regional medical officer
RNO	regional nursing officer
SDG	Sustainable Development Goal
USAID	United States Agency for International Development
WHO	World Health Organization

Executive Summary

Nearly 2,100,000 babies were born in Tanzania in 2015, with 38,600 of these babies dying in their first month of life (a neonatal mortality rate of 25 per 1,000 live births); in addition, there were nearly 47,100 stillbirths and 8,200 maternal deaths (a maternal mortality ratio of 556 per 100,000 live births).[1] With all eyes focused on achieving the Sustainable Development Goals (SDGs), Tanzania is looking to accelerate efforts to improve outcomes for women and babies. There is global consensus that accurate information about causes of death through mortality audits is needed to help inform efforts to end preventable maternal and perinatal deaths. The Ministry of Health, Community Development, Gender, Elderly and Children (MOHCDGEC) and the United States Agency for International Development's (USAID's) Maternal and Child Survival Program (MCSP) aimed to document experiences to date in implementing maternal death review, perinatal death review, and/or integrated maternal and perinatal death surveillance and response (MPDSR) processes in Tanzania. The study sought to identify factors that have affected the uptake and sustainability of implementing MPDSR systems to improve the quality of care and to prevent future deaths. Tanzania was one of four countries selected by MCSP as part of a multicountry assessment of MPDSR processes at the subnational level.

Methodology

The assessment gathered data through key informant interviews with representatives involved with MPDSR implementation at national, regional, district, and facility levels and through facility visits to capture the current status of mortality audit implementation in a sample of sites. Data collection took place in May 2017. MCSP purposefully selected 16 facilities across Mara and Kagera Regions: nine hospitals and seven health centres. Trained data collectors conducted semi-structured, in-person interviews with MPDSR focal persons and other key informants. MCSP assigned each facility surveyed a score of 0–30 using an adapted tool to determine the stage of MPDSR implementation.[2,3] The scoring scale represents a systematic snapshot of the facility's stage of MPDSR implementation in three phases: pre-implementation, implementation, and institutionalisation. The National Institute for Medical Research (NIMR), Tanzania, approved the study protocol and tools and the Johns Hopkins Bloomberg School of Public Health institutional review board approved the study, determining it non–human subjects research.

Findings

The results from the 16 facilities visited and 17 stakeholder interviews showed a strong level of MPDSR practice. Nearly all facilities (15 of 16) demonstrated some evidence of practising audit of maternal and perinatal deaths; two-thirds of facilities (10 of 16) demonstrated institutionalised practice. The 16 facilities assessed scored between 5.42 and 23.58, with a mean of 17.54, out of the possible 30 points in the MPDSR implementation status scoring methodology.

All facilities had Tanzania's 2015 *Maternal and Perinatal Death Surveillance and Response Guideline* (the national guideline), which includes the notification forms to use, onsite.[4] All facilities reported a formal system for reviewing maternal and perinatal deaths, and the 15 facilities conducting MPDSR indicated that they adhere to the national guideline when collecting information for the notification forms, using death registers, labour and delivery registers, postnatal registers, case notes, reproductive and child health (RCH) cards, and partographs as data sources. While maternal deaths and stillbirths were captured well in these data sources, assessors observed few records of early neonatal deaths across the facilities. Nearly 70% of facilities indicated that the medical records and registers did not capture the necessary information for assessment of cause of death and contributing factors for maternal and perinatal deaths. For the facilities collecting information, the quality of data captured in the death review and notification forms varied, with some facilities not capturing the required data. Hospitals had no observed or reported official way to systematically capture deaths in the community; health centres have a standard tool to do so.

The assessment revealed variations in facilities' analysis of data and presentation of trends. Though the national guideline proposes using the International Classification of Diseases, 10th revision (ICD-10) system of coding and recording[5] to facilitate consistency in data collection, analysis, and interpretation of information relating to cause of death, only 75% of facilities assessed reported using the ICD-10. Few sites managed to provide evidence supporting their use of ICD-10 and the quality of classification was generally poor. Most facilities used the three delays model (81%) and root cause analysis (69%) in classifying modifiable factors; some of the hospitals were using the patient-provider-administration model (44%).[6–8] Four facilities displayed some data trends, but only one had up-to-date data.

Adherence to the code of conduct outlined in the national guideline was inconsistent and poorly documented in most of the health facilities. All facilities conducting MPDSR self-reported that they adhere to the code of conduct, yet only two facilities mentioned that the chairperson reads the code prior to starting the meeting and only one facility showed evidence of a written code of conduct. Furthermore, 12 health facilities had measures to ensure staff confidentiality. Three health facilities reported taking disciplinary actions against staff members involved with managing cases that were reviewed during MPDSR meetings, which risks loss of staff morale and unwillingness to participate in MPDSR.

Implementation of recommendations from audit meetings is a critical step in the audit cycle. All but one of the facilities assessed reported developing action plans during audit meetings, with 11 of the 16 providing evidence that they identify and prioritise recommendations. Self-reporting indicated that actions were linked to modifiable factors; however, assessors noted gaps in the thoroughness and specificity of action plans. Fourteen facilities reported assigning individuals to follow up on specific recommendations. Responsibilities for implementing recommendations were assigned either verbally or in writing. Most facilities (94%) reported that they followed up on specific recommendations that were assigned to individuals, yet—apart from reviewing minutes at the next mortality audit meeting—only one facility demonstrated a formal process in place to monitor follow-up.

Eleven facilities reported regularly linking MPDSR to other quality improvement activities at their facilities, and all facilities practising MPDSR provided examples of a time where the recommendations resulted in a change action or change at the facility. However, the assessment found no defined feedback mechanism for tracking and evaluating MPDSR implementation.

Discussion and Recommendations

Health workers and stakeholders are strongly committed to counting and understanding maternal and perinatal deaths in Tanzania. Though most of the facilities demonstrated institutionalised MPDSR practices, mortality audit for maternal and perinatal deaths—including the practices of reviewing the causes and avoidable factors related to maternal deaths and recommending and implementing solutions—varied across districts and facilities.

To strengthen facility-level MPDSR implementation, facilities should be encouraged to use the standardised audit forms provided in the national guideline to identify, notify of, review, and respond to maternal and perinatal deaths. Additionally, health workers' capacity should be built to ensure clear understanding of the MPDSR process, including assignment of cause of death, identification of contributing factors, development of appropriate responses, and implementation of responses. Clear systems should also be developed to ensure tracking and follow-up of recommendations emerging from MPDSR reviews. In order to ensure MPDSR is linked to facility-level quality improvement efforts, facilities should also consider integrating their MPDSR and quality improvement teams.

Successful MPDSR implementation requires national-, regional-, and district-level support. At the district level, regional and district nursing officers' awareness of MPDSR should be strengthened so that they can serve as champions and provide technical support to facilities. At the national level, a formal system with tools for monitoring and tracking MPDSR implementation should be developed and shared with health management teams to help them evaluate the response portion of the implementation process.

Conclusion

The development and rollout of the national MPDSR guideline in Tanzania demonstrates the government's commitment to ending preventable deaths for mothers and their babies. While the majority of facilities assessed demonstrated institutionalised practice, the quality of MPDSR implementation varied across the districts studied. Directing efforts to close the observed gaps could be important in addressing the MPDSR audit process. Offering providers the opportunity to learn and understand MPDSR procedure through capacity-building, supportive supervision, mentorship, and regular measured monitoring and evaluation (M&E) based on the requirements in the national guideline will lessen the problems of blaming, improve adherence to the code of conduct, alleviate the inconsistencies in documentation and reporting, and advance implementation. Reviewing the 2015 national guideline to address observed gaps and incorporating updates into implementation are important tactics for refining existing MPDSR practice.

Introduction

Background

In 2015 in Tanzania, nearly 2,100,000 babies were born, with 38,600 of these babies dying in their first month of life; in addition, there were nearly 47,100 stillbirths and 8,200 maternal deaths.[1] The latest national Demographic and Health Survey reported a maternal mortality ratio of 556 deaths per 100,000 live births, with no evidence to conclude that the ratio has changed substantially over the last decade.[9] The perinatal mortality rate for the 5 years preceding the survey was 39 deaths per 1,000 pregnancies, with higher rates among the youngest mothers (less than age 20), the oldest mothers (ages 40–49 years), and urban populations.[9] As the world transitions to achieving the SDGs—including targets 3.1 and 3.2 related to reducing maternal mortality and ending preventable newborn deaths—it is clear that Tanzania must accelerate efforts to improve outcomes for its women and babies.

Accurate information about causes of death is needed to inform efforts to end preventable deaths. In 2004, the World Health Organization (WHO), in a landmark publication titled *Beyond the Numbers*, recommended that all countries that had not established maternal death audit systems should do so without further delay to help reduce maternal deaths.[10] In 2012, the United Nations Commission on the Status of Women passed a resolution calling for the elimination of preventable maternal mortality.[11] In 2013, WHO released *Maternal Death Surveillance and Response: Technical Guidance; Information for Action to Prevent Maternal Death*, which provided guidance for establishing and implementing maternal death surveillance and response (MDSR) systems.[12] In 2016, the WHO also released guidance on conducting mortality audits for stillbirths and neonatal deaths that includes tools for adaptation at national, subnational, or facility level.[8] Institutionalisation of MPDSR systems was one of the key actions recommended in the WHO and UNICEF's 2014 Every Newborn: An Action Plan[13] and WHO's 2015 Strategies toward Ending Preventable Maternal Mortality[14] in order to enable a country's use of audit data to track and prevent maternal and early newborn deaths, as well as stillbirths.

Despite global recommendations, few countries have robust operational MPDSR systems, even with the presence of favourable policies in many countries, particularly for maternal death notification.[15] In some settings, country systems have been designed and/or are being implemented as stand-alone activities rather than as one among many important elements of goal-oriented quality improvement efforts focused on improving coverage, quality, equity, and access to care to reduce preventable maternal and perinatal morbidity and mortality.

Currently, there is a lot of momentum behind MPDSR strategies. WHO is tracking global MDSR status through an MDSR technical working group, which has recently expanded to include perinatal death as well. In 2015, WHO completed a global survey of national-level MDSR policy and high-level implementation status.[16] Additionally, the MDSR Action Network supports knowledge sharing and understanding of MDSR.[17] USAID's MCSP is working with global, regional, and country partners to understand experiences to date in implementing maternal death review, perinatal death review, and/or integrated MPDSR systems in selected African countries, including Tanzania, with an aim to identify factors that facilitate or inhibit the uptake and sustainability of the audit system.

Maternal and Perinatal Death Surveillance and Response Terminology

MPDSR is a continuous cycle of identification, notification, and review of maternal and perinatal deaths followed by actions to improve quality of care and prevent future deaths based on identified gaps in the audit process. The process of capturing information on the number and causes of deaths—whether for maternal deaths, stillbirths, or neonatal deaths—can facilitate a systematic, critical analysis of the quality of care received, in a no-blame, interdisciplinary setting, with a view to improving the care provided to all mothers and babies.[8] It is an established mechanism to examine the circumstances surrounding each death.[8,10,12]

Table 1. Terminology related to maternal and perinatal death

Indicator	Numerator	Denominator
Maternal mortality ratio (expressed as maternal deaths per 100,000 live births)	• Number of maternal deaths occurring in a defined period of time (usually 1 year) • A maternal death is the death of a woman while pregnant or within 42 days of the termination of pregnancy irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes • Can be direct (resulting from obstetric complications of the pregnancy state) or indirect (resulting from previously existing disease or disease that developed during pregnancy)	Total number of live births occurring in the same time period (usually 1 year)
Stillbirth rate (expressed as stillbirths per 1,000 total births)	• Number of babies born per year with no signs of life weighing ≥ 1,000 g and/or after 28 completed weeks of gestation	Total number of births per year (live- and stillborn)
Neonatal mortality rate (expressed as newborn deaths per 1,000 live births)	• Number of live-born infants per year dying before 28 completed days of age	Total number of live births per year
Perinatal mortality rate (expressed as perinatal deaths per 1,000 total births)	• Number of foetal deaths in foetuses born weighing ≥ 1,000 g and/or after 28 completed weeks of gestation, plus neonatal deaths through the first 7 completed days after birth • Some definitions include all neonatal deaths up to 28 days	Total number of births (live- and stillborn)

Source: WHO[8]

Aim and Objectives

The aim of this assessment was to measure and document the implementation process and results of the introduction and expansion of MPDSR in the Kagera and Mara Regions of Tanzania.

The specific objectives of the assessment included to:

1. Systematically measure the scope and institutionalisation of MPDSR implementation in selected sites in Kagera and Mara Regions and describe barriers and facilitators to MPDSR sustainable practice.
2. Identify outstanding MPDSR implementation gaps in Kagera and Mara Regions.

MPDSR in Tanzania

The National Health System

Tanzania's health system is a tiered system that involves the national, regional, and district levels as well as communities. At the national level, the MOHCDGEC and President's Office-Regional Administration and Local Government (PO-RALG) provide public health services.[18] The MOHCDGEC formulates policies and develops guidelines to promote health.[18] Regional health management teams (RHMTs), led by the regional medical officer (RMO), ensures policy implementation at the district level. The RMO reports medical management issues to the MOHCDGEC and health administration and management issues PO-RALG.[18] The council health management team (CHMT), headed by the district medical officer (DMO), supervises and monitors health services provided through the community and the district's dispensaries, health centres, and hospitals.[18] The DMO reports administrative, technical, and managerial matters to the RMO.[18] In the early

1990s, as part of a health sector reform process, community participation was integrated into the health system. Reforms also included establishment of health facility committees and council health service boards, to ensure community representation in administrative and financial management of health services.[19] Despite their limited influence, community members have been playing an important role through these structures.

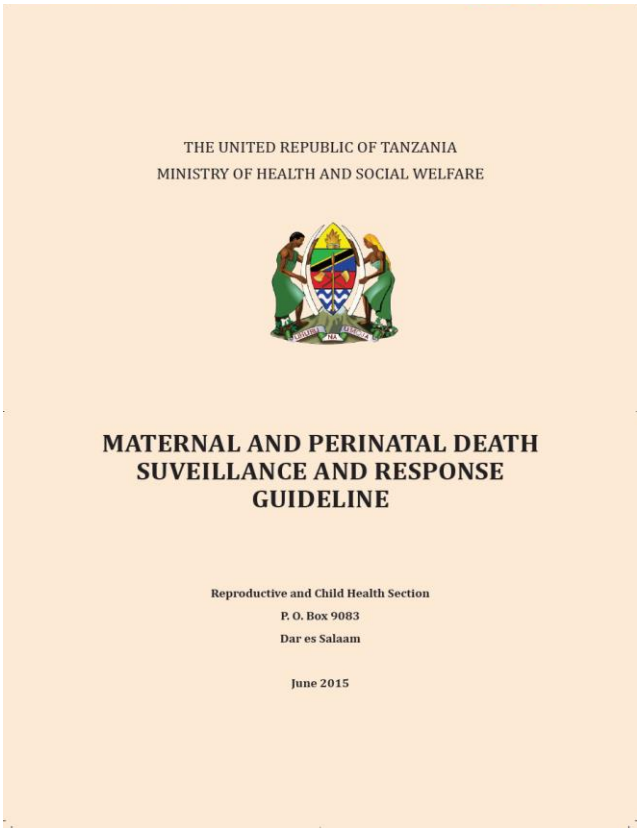
Tanzania's referral system consists of dispensaries, health centres, and hospitals, health centres.[18] Dispensaries offer preventative and curative outpatient services to the local. In addition to providing preventative and curative outpatient services, health centres also offer inpatient and outpatient services, provide delivery services, receive referrals from dispensaries.[18] Services provided at the hospitals are similar to those provided by dispensaries and health centres but also includes surgical services as well as laboratory and radiology diagnostic expertise.[18]

MPDSR Practice in Tanzania

Tanzania has been conducting maternal death reviews on a limited basis since 1984. In 2006, the MOHCDGEC released national guidelines for maternal and perinatal death review (MPDR) requiring MPDR practice in all health facilities. Although there was strong provider commitment, weak M&E and poor capacity to analyse problems and suggest recommendations, hindered successful implementation of MPDR.[20] In 2012, in an effort to accelerate reductions in maternal and perinatal mortality, the Government of Tanzania began reviewing the 2006 MPDR guidelines. Revision of the guidelines began in 2013.[20]

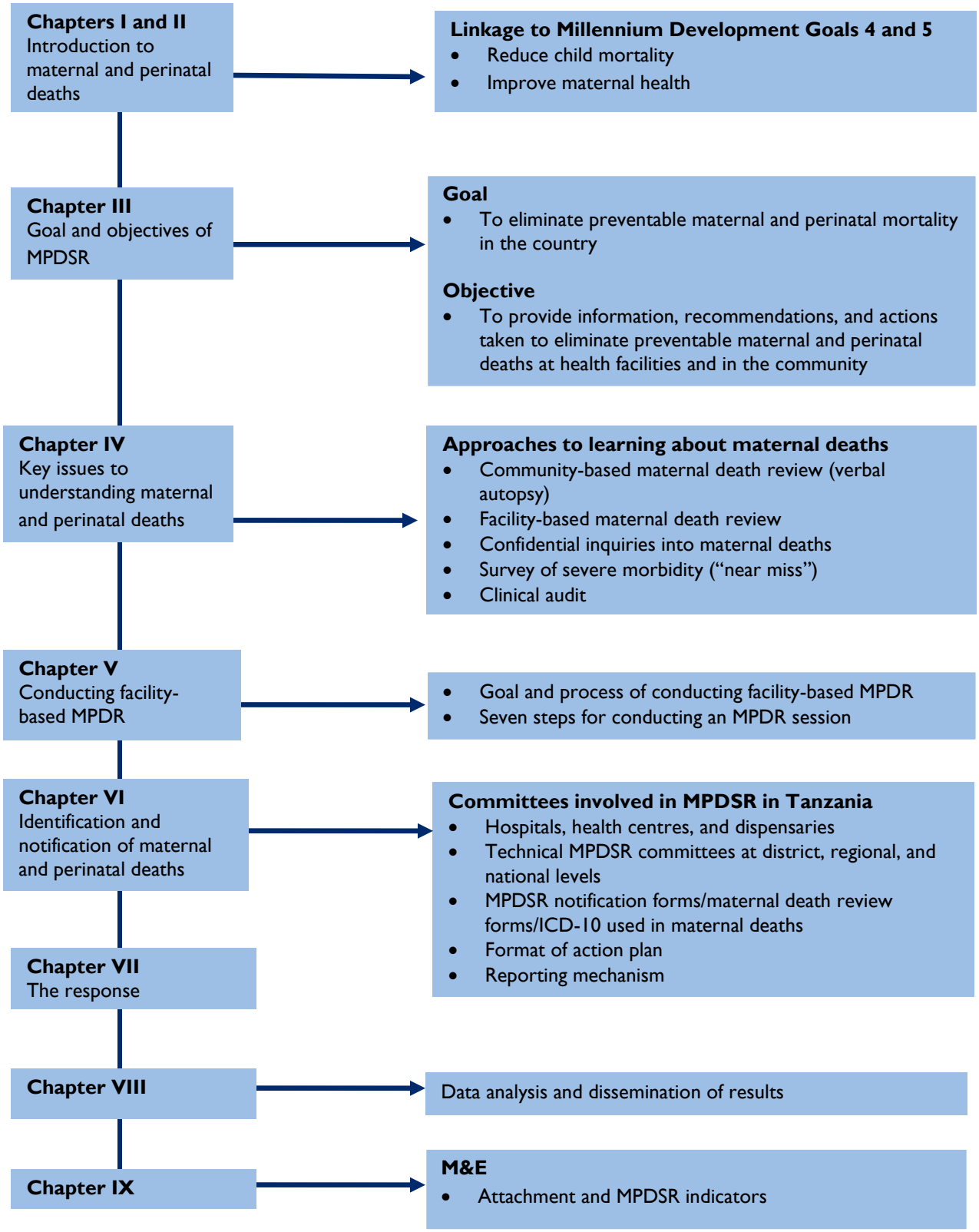
A Countdown to 2015 case study of Tanzania as well as midterm reviews of the Health Sector Strategic Plan III and One Plan showed that lack of accountability among the healthcare workforce and other related sectors was the leading cause of low performance in providing life-saving maternal and newborn interventions.[21–23] Thus, the national MPDSR guideline was developed with the goal of facilitating identification, review, and notification of maternal and perinatal deaths, as well as action to address observed dysfunctions based on recommendations generated from the reviews. The Ministry of Health and Social Welfare released the national MPDSR guideline in June 2015 (Figure 1).[4] Following approval of the national guideline, Mara and Kagera were the first regions to begin implementation of MPDSR, which they did with MCSP support. The 2015 national MPDSR guideline is accompanied by pretested, approved tools, unlike the 2006 MPDR guidelines.[20]

Figure 1. Title page of Tanzania's 2015 national MPDSR guideline



The national MPDSR guideline and data collection registers and other tools aim to achieve routine tracking and review of all maternal and perinatal deaths in Tanzania. The schematic diagram in Figure 2 highlights some key features of the national guideline. The Tanzanian government has disseminated copies of the guideline to most of the health facilities across the country and has directed regional and district health management teams to implement the audit process. Currently, there is no routine tracking system for the rollout of MPDSR implementation and no way to monitor which RHMTs, CHMTs, or facilities have begun, have ceased, or continue to implement any form of death review.

Figure 2. Schematic diagram highlighting key features of Tanzania's 2015 national MPDSR guidelines[4]



Methodology

The in-depth assessment of current MPDSR implementation status used interviews with key stakeholders at national, regional, and district levels, as well as facility-level staff involved with MPDSR implementation. Standardised questionnaires for health facility staff and other stakeholders, a systematic score based on the observations, and records review provided a comparable metric on MPDSR implementation scoring status across facilities, with feedback on the operation of the system as a whole.

Country and State Selection

MCSP selected Tanzania as one of four countries in Africa to participate in a multicountry assessment of MPDSR processes. The country selection process included the following criteria:

- An existing national policy for MPDSR (or any form of maternal and/or perinatal audit policy)
- Funds available through MCSP for maternal and child health
- Existence of maternal and/or perinatal death review in the current MCSP country work plan
- Other partners in country working on maternal and/or perinatal death review
- A planned health facility assessment

MCSP purposefully selected the regions of Kagera and Mara as key study areas since the project was already operating in these regions.

Site Selection and Data Sources

The sample of facilities was purposive and not random, with inclusion criteria that facilities had current or previous experience conducting maternal and/or perinatal death reviews, and/or were implementing formal MPDSR processes or policies, and were accessible geographically. Health facilities that research coordinators identified as concurrently undergoing another study were excluded. Key informants for the stakeholder meetings included government representatives, health professionals, and partners involved with MPDRs. The availability of stakeholders in health facilities and in regional and district authorities played a role in the final selection of respondents. (For more information on sites and stakeholders see Table 2).

Table 2. Data sources

Types of facilities visited	Number
Hospital	9
Health centre	7
Types of stakeholders interviewed	
National-level MDSR coordinator	1
Regional nursing officer (RNO)	1
Regional RCH coordinator	1
District RCH coordinators (DRCH-COs)	6
District nursing officers (DNOs)	2
DMOs	2
District pharmacist	1
District AIDS control coordinator	1
Types of stakeholders interviewed	
District health officer	1
District-level health management information system (HMIS) focal person	1

Data Collection

Data collection took place in May 2017. A team of local assessors—drawn from MCSP, USAID Boresha Afya* (including Jhpiego and Save the Children staff), and local health officials—served as data collectors (see Acknowledgements for full list of assessors). The team received training on the assessment methodology and use of the monitoring tools. Relevant health authorities and facilities were contacted about the date of the visit in advance and provided with information about the evaluation. Evaluation visits began with an introduction of assessors and respondents followed by a discussion of existing MPDSR processes with the facility representatives.

Assessors interviewed stakeholders at the national, regional, and district levels using a structured tool that gathered information on the stakeholder's specific role in MPDSR implementation, current MPDSR practices, community linkages, and experiences of changes in care resulting from MPDSR (Appendix A). Stakeholders at the district level were asked 12 additional, more detailed questions about local experiences of MPDSR as well as some of the risks and benefits associated with the MPDSR process. Facility assessment visits consisted of a semi-structured in-person interview of 66 questions and a document review with facility-based staff members currently involved in supporting the mortality audit processes.

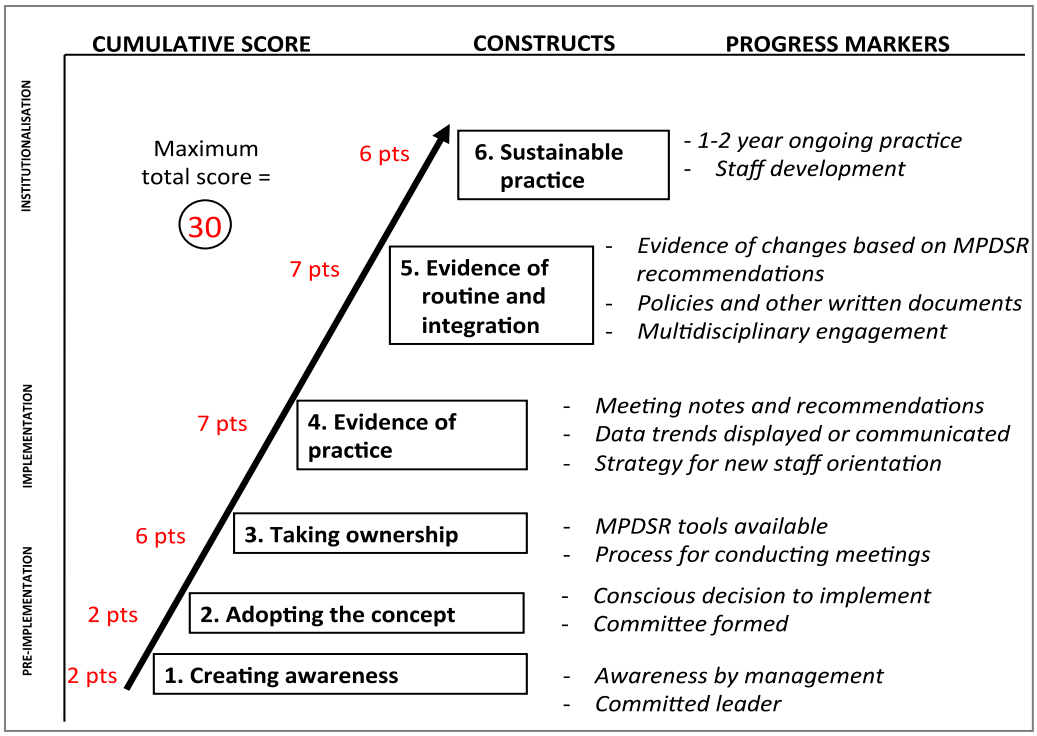
Scoring and Analysis

Facilities received a score up to 30 based on the key informant interviews and facility observations. The scoring scale includes three phases: pre-implementation, implementation, and institutionalization. MCSP interpreted results using a model with six stages of change (see Figure 3). Facilities received a score out of 30 (see Table 3). A facility score of less than 10 demonstrated that a facility was in a pre-implementation phase. A score greater than 10 demonstrated some level of implementation of MPDSR or evidence of MPDSR practice. A score above 17 demonstrated institutionalization of MPDSR through evidence of routine practice and integration. A score of more than 24 showed sustainable MPDSR practice. These tools and scoring methodology were adapted from a study of Kangaroo Mother Care progress developed and tested by the South African Medical Research Council Maternal and Infant Health Care Strategies Unit (see Appendix B).[2,24]

The score provides a snapshot of the facility's MPDSR implementation status or stage, allowing quantification of the current situation and a cumulative implementation progress score for each facility assessed. However, the model imagines progress as not merely linear, but also moving forward and backward. In other words, the facility does not need to fully complete one step before continuing with the next, and facilities can also regress in their implementation practices (additional details in Appendix B). Scoring does not assess the quality of MPDSR on its own but is a tool to complement qualitative assessment according to implementation stage.

* Funded by USAID and President's Malaria Initiative, Boresha Afya is a reproductive, maternal, newborn, and child health program implemented in Zanzibar as well as seven regions of the Lake and Western Zones in Tanzania.

Figure 3 : Implemention progress scoring schematic



Adapted with permission [2,3]

Table 3. MPDSR implementation progress scoring for facilities

Score	Interpretation
0	No implementation of MPDSR
1–2	Creating awareness of MPDSR
3–4	Adopting the concept of MPDSR
5–10	Taking ownership of the concept of MPDSR
11-17	Evidence of MPDSR practice
18–24	Evidence of routine and integrated MPDSR practice
25–30	Toward sustainable practice

Adapted with permission.[2,3]

Ethical Considerations

The NIMR reviewed and approved the study protocol and tools (see Appendix C). The study also received a "non–human subjects research" determination by the Johns Hopkins Bloomberg School of Public Health's institutional review board.

The data collected in this assessment did not include any personal information from respondents. The questions in the tools gathered data on the current state of practice and did not require respondents to provide personal reflection or opinions, nor did MCSP anticipate any risks associated with participation. Data transfer will be restricted and will fall under the Data Transfer Agreement and regulations provided by the NIMR.

Prior to key informant interviews, participants were asked to participate using written consent, given that the research presents no more than minimal risk of harm to respondents. The interviewers obtained written consent

before the start of the discussion by reading an oral consent script and asking the participant to sign the consent (see Appendix D).

Findings

Stage of MPDSR Implementation

The results from the 16 facilities visited and 17 stakeholder interviews showed a strong level of MPDSR. Nearly all facilities (15 of 16) demonstrated some evidence of practising audit of maternal and perinatal deaths; two-thirds of facilities (10 of 16) demonstrated evidence of routine and integration. The 16 facilities assessed scored a mean of 17.54, ranging from 5.42 to 23.58, out of the possible 30 points using the MPDSR implementation status scoring methodology (Table 4). Figure 4 depicts the position of each health facility on the progress-monitoring scale.

The scores do not indicate the quality of the audit process, but rather evidence of practice and—in most cases—an institutionalised system from which to strengthen the quality of practice. Higher-volume referral facilities scored higher than health centres in general, but few hospitals were following the national guideline completely, including information flow to other levels and community follow-up.

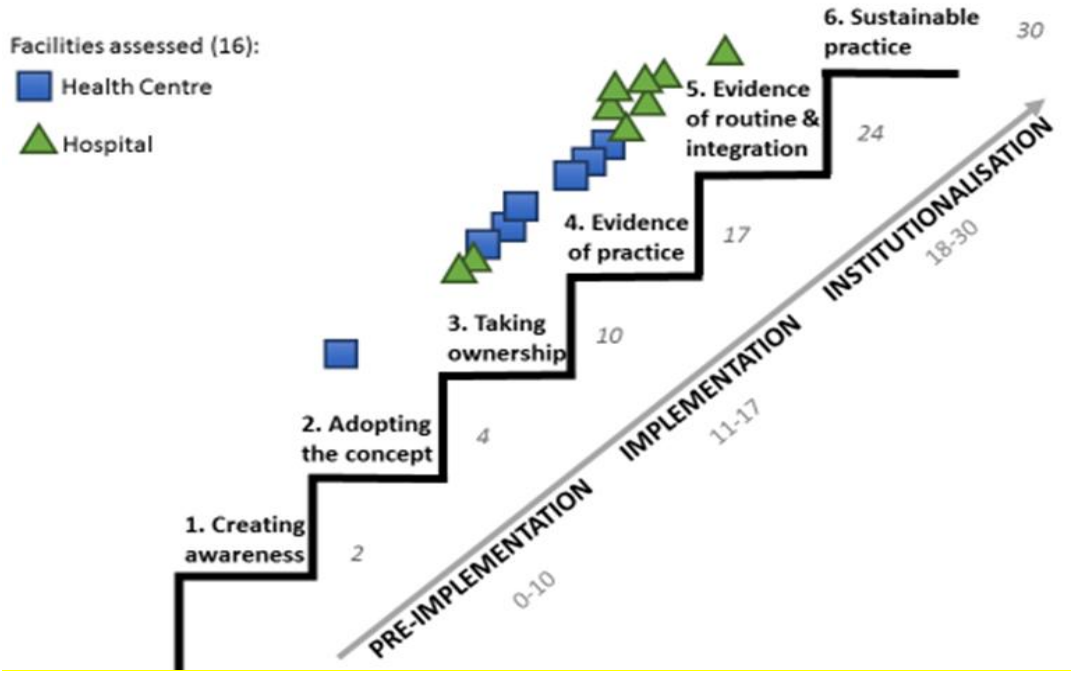
Of the 10 facilities with evidence of routine and integrated MPDSR practice, seven were hospitals and five had an average 100–299 births per month. Nearly a third of all facilities (three health centres and two hospitals) showed some evidence of MPDSR practice.

The majority of health facilities (13) reported starting MPDSR implementation between 2014 and 2016, but with MPDR established in 2006, all should have been doing some level of audit for maternal deaths. Among the five health facilities with evidence of practice, two reported starting the MPDSR process in 2017, while the remaining began between 2014 and 2016. One health centre was in the early phase of pre-implementation of MPDSR audits, taking ownership, and had an average of less than 50 deliveries per month. This facility has not started conducting mortality audits, and reported only recently receiving the national MPDSR guideline, in March 2017.

Table 4. Facility score and stage of implementation

Facility code	Level	Average births/month	Stage of implementation	Score (/30)
A	Hospital	≥ 300	Evidence of routine and integration	21.42
B	Hospital	100–299	Evidence of routine and integration	23.58
C	Hospital	100–299	Evidence of routine and integration	20.33
D	Hospital	100–299	Evidence of routine and integration	19.79
E	Health centre	< 50	Taking ownership	5.42
F	Health centre	< 50	Evidence of routine and integration	17.71
G	Hospital	50–99	Evidence of routine and integration	19.25
H	Health centre	100–299	Evidence of routine and integration	17.63
I	Health centre	< 50	Evidence of routine and integration	17.71
J	Hospital	≥ 300	Evidence of practice	13.96
K	Health centre	≥ 300	Evidence of practice	16.63
L	Health centre	< 50	Evidence of practice	15.17
M	Hospital	100–299	Evidence of routine and integration	22.50
N	Health centre	100–299	Evidence of practice	15.71
O	Hospital	100–299	Evidence of routine and integration	21.96
P	Hospital	≥ 300	Evidence of practice	11.83

Figure 4. Health facility MPDSR institutionalization status plotted by score



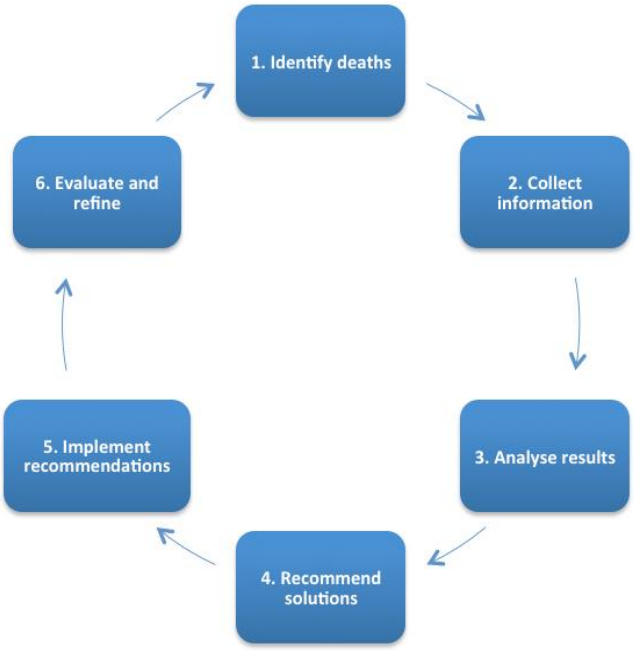
MPDSR Practice

This section provides a summary of results from the facility questionnaires and stakeholder interviews, including information on the history of implementation, resources provided for implementation, frequency of meetings, information flow, community involvement, staff involved, the response to recommendations, and some of the benefits and challenges of conducting death reviews. Results are presented according to WHO's six-step audit cycle for MPDSR (Figure 5). Unless indicated specifically, the results did not vary between hospital and health centre levels.

All facilities had the national guideline, which includes the forms to use, onsite. All facilities reported a formal system for reviewing maternal and perinatal deaths. Some facilities did not report a formal system for stillbirths (19%) and neonatal deaths (25%), though the guideline clearly defines "perinatal." The guideline also indicates that meetings should be conducted for maternal near misses, yet only four facilities reported a formal process for doing so. Five hospitals and six health centres reported that they did not receive support (financial or in-kind) from the hospital or district budget to establish MPDSR. All facilities reported having established MPDSR review committees, with the exception of the one facility not yet practising MPDSR. Not all facilities reported educational activities to introduce MPDSR to staff members; 56% of facilities reported some level of educational activity including formal and informal trainings or orientations. The frequency of formal review meetings varied: some facilities reported regular meetings (44%) and discussed sample cases of perinatal death or near miss in absence of maternal death, but half of facilities reported conducting meetings only when a death occurs (50%). Thirteen facilities reported having an MDSR coordinator; 10 facilities reported a perinatal death surveillance and response (PDSR) coordinator. In all cases, the PDSR coordinator was the same individual as the MDSR coordinator and had another role at the health facility, such as medical officer in-charge.

Beyond the facility level, district MPDSR committees are compiling and submitting reports on a quarterly basis to the regional level. At the national level, the regional reports are compiled and sent to the permanent secretary at the MOHCDGEC on a quarterly basis for review.

Figure 5: Six step audit cycle for MPDSR



Adopted from: WHO[8]

Step 1: Identify Deaths

Maternal and Perinatal Deaths

Maternal deaths and stillbirths were captured in the relevant registers with identification of maternal deaths in the labour and delivery ward registers. Few records of early neonatal death (especially days 2–7) were observed in the registers—such as the ones used in paediatrics and urgent care units—across all facilities. Facilities were capturing deaths using general death registers, though the quality of information reported varied. Staff report the deaths through the following records:

- Death registers
- Register number 12 (the labour and delivery register)
- Register number 13 (the postnatal register)
- Case notes
- Partographs

Community Deaths

Hospitals had no observed or reported official way to systematically capture deaths in the community, although one hospital reported that community health workers (CHWs) report deaths to facilities. In Tanzania, health centres have a standard tool for capturing community deaths, yet only four health centres demonstrated evidence that they were receiving reports through CHWs and village executive officers of deaths occurring in the community. Stakeholders seemed aware of the importance of community linkages—especially the role of relatives, community members, and leaders—in reporting deaths that occur in the community.

On capturing community deaths

In our little facility, we have a way of capturing community deaths and this works for neonatal deaths; it involves receiving reports from the community through community health workers.

—Health centre in-charge

We receive reports for community deaths. Volunteers (CHWs) working in the community identify and notify deaths in the community. We have not yet started review of these deaths in our facility.

—Health centre matron

In our situation, we have relatives, community members, and community health workers who report deaths occurring at the community to the health facilities.

—Stakeholder interview

Near Misses

Four hospitals (25% of all facilities) indicated that they discussed near misses in some special situations, including during clinical meetings, ward rounds, and morning reports. Only one health facility, a hospital, had a plan to start a formal process for reviewing and documenting near misses. Three hospitals and five health centres reported that the review of near misses is important and needs to be implemented.

On near miss

We had one case of near miss yesterday and we did nothing. From my thinking, I agree that it is important to start the review and discussion of near misses as this is helpful and will reduce future deaths and [improve] early identification of complications.

—Health centre matron

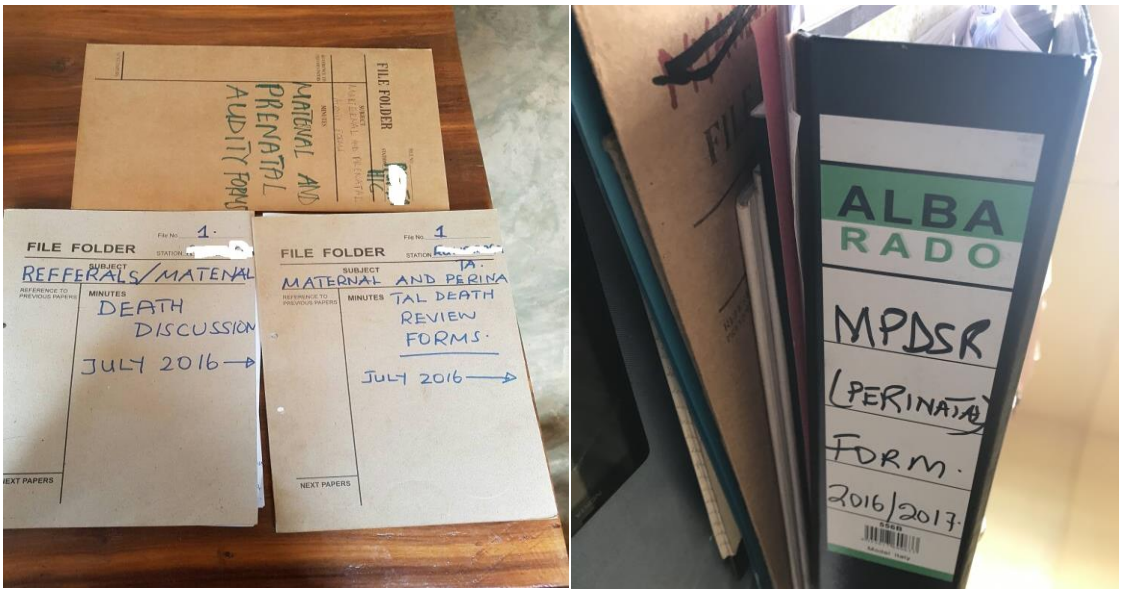
Step 2: Collect Information

For every death, health facility staff must decide what information to record, where the information is recorded, who records it, and who collates it on a periodic basis, both for the death review process and for reporting to other levels within the system.[8]

Facilities conducting MPDSR reported that they adhere to the national guideline when collecting information for the notification forms, including use of registers, case notes, RCH cards, and partographs as data sources. The most common registers used to extract data included the labour and delivery, postnatal, general adult inpatient ward, and outpatient registers. Many facilities did not check all registers for deaths: three facilities (two hospitals and one health centre) reported extracting data from the neonatal registers and five hospitals reported extracting data from the emergency care area. Four health centres and seven hospitals (69% of all facilities) indicated that the medical records and registers did not capture the necessary information for assessment of cause of death and contributing factors for maternal and perinatal deaths. In addition, the quality of data capture varied, with some facilities not capturing the data required by the national guideline or incompletely filling in forms. The filing systems used to keep notification forms for maternal and perinatal deaths also varied (Figure 6).

Most subnational stakeholders identified data quality as a problem affecting MPDSR implementation. Four districts noted that they report maternal deaths into the HMIS. One respondent indicated that death registers for HMIS use different coding from ICD-10 because of lack of training across Tanzania on the use of this form of coding. At the national level, the MOHCDGEC reported that it is currently working on strengthening MPDSR systems by reviewing the current integration of MPDSR and HMIS and has plans to update documentation and notification forms in the near future.

Figure 6. Files used to keep notification forms for maternal and perinatal deaths



On collecting information

I strongly believe the forms provide adequate information, but the big challenge here resides in providers who do not fill in the necessary information. In general, information is not filled in the forms.

—District stakeholder

Step 3: Analyze Results

The third step in the audit cycle, according to the WHO's *Making Every Baby Count*, is to assess causes of deaths and modifiable factors.[8] While death reviews should not be driven by a need to produce data, MPDSR committees or designated staff can tally quantitative analyses and outcomes, present findings at scheduled review meetings, and post publicly within the ward or unit.[8]

The national guideline proposes using the ICD-10 system of coding and recording to facilitate consistency in data collection, analysis, and interpretation of information relating to cause of maternal death. For perinatal deaths, the guideline uses a simplified coding system, not *The WHO Application of ICD-10 to Deaths during the Perinatal Period* (ICD-PM). Among facilities assessed, 12 out of 16 (75%) reported using ICD-10 to analyze and interpret information on maternal deaths. Three hospitals used a modified ICD-10 system of coding. One hospital was not using any mechanism or system to analyze and interpret information; one health centre and one hospital were analyzing information during meetings and categorizing maternal deaths without coding. However, few sites managed to provide evidence to support these reports and the quality of classification was generally poor (Figure 7).

The assessors observed incorrect assignment of cause of death for both maternal and perinatal deaths in registers, case summaries, and notification forms at three health facilities. For example, assessors noted that a newborn with a low Apgar score who had been successfully resuscitated was incorrectly classified as a stillbirth. On another form, assessors noted that the cause of death was misclassified as an obstetric haemorrhage for a woman who presented with antepartum haemorrhage and died of complications due to anaesthesia in the operating theatre. In other cases, the cause-of-death statement differed from the assigned ICD-10 code. The ICD-10 codes in the national guideline are not included in the general death registers found in health facilities. Half of all health facilities reported that they would change the cause-of-death classification in the registers if it changed during MPDSR review meetings.

Most facilities used the three delays model (81%) and root cause analysis (69%) in classifying modifiable factors; some of the hospitals were using the patient-provider-administration model (44%).[6–8] Four facilities (one health centre and three hospitals) displayed some data trends, but only one had up-to-date data. There was inconsistent use of mortality trends during audit meetings. Figure 8 shows one of the MPDSR data trends displayed at a hospital.

Figure 7. Filled-in maternal death forms (left) and the use of ICD-10 (right) in classifying maternal deaths, as found in some health facilities

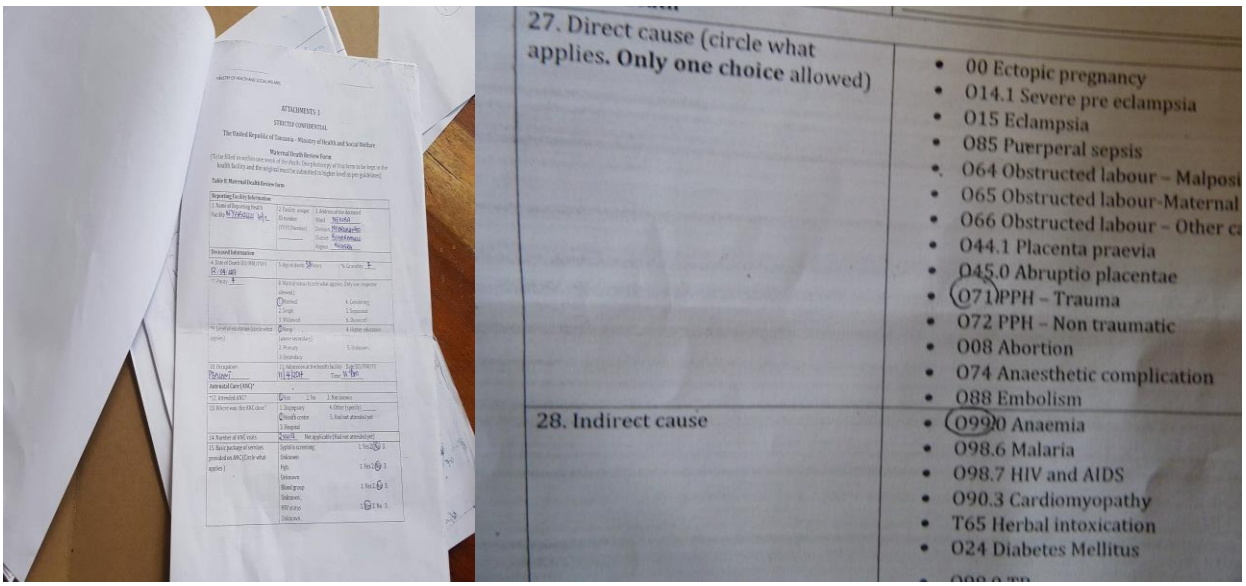
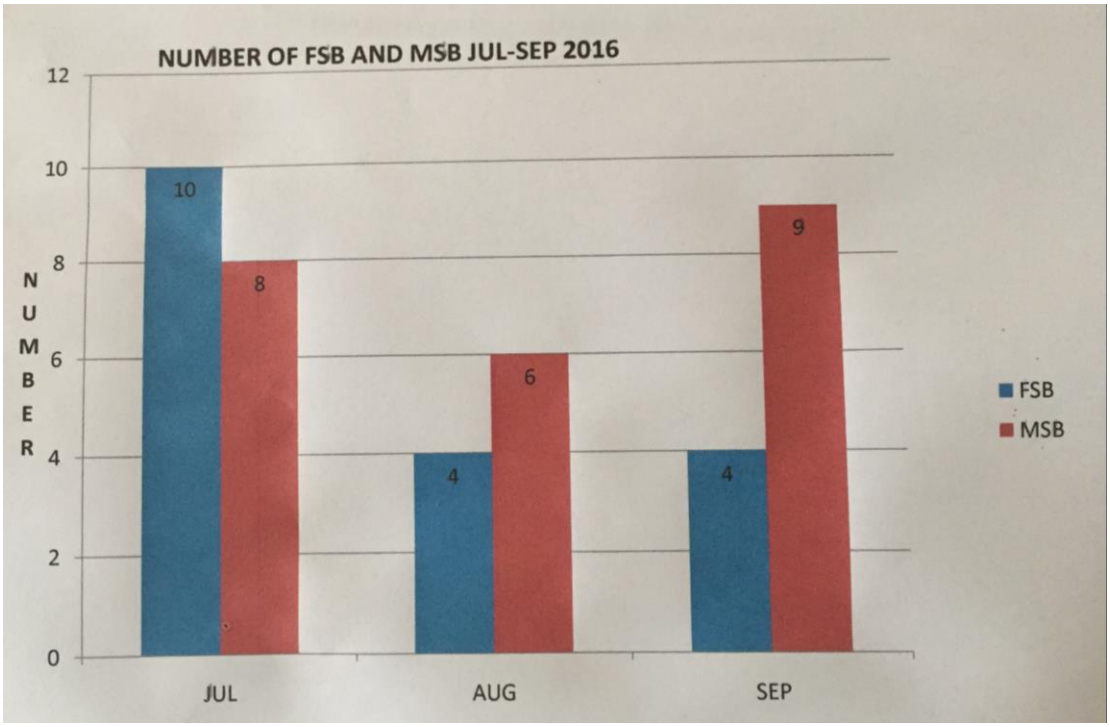


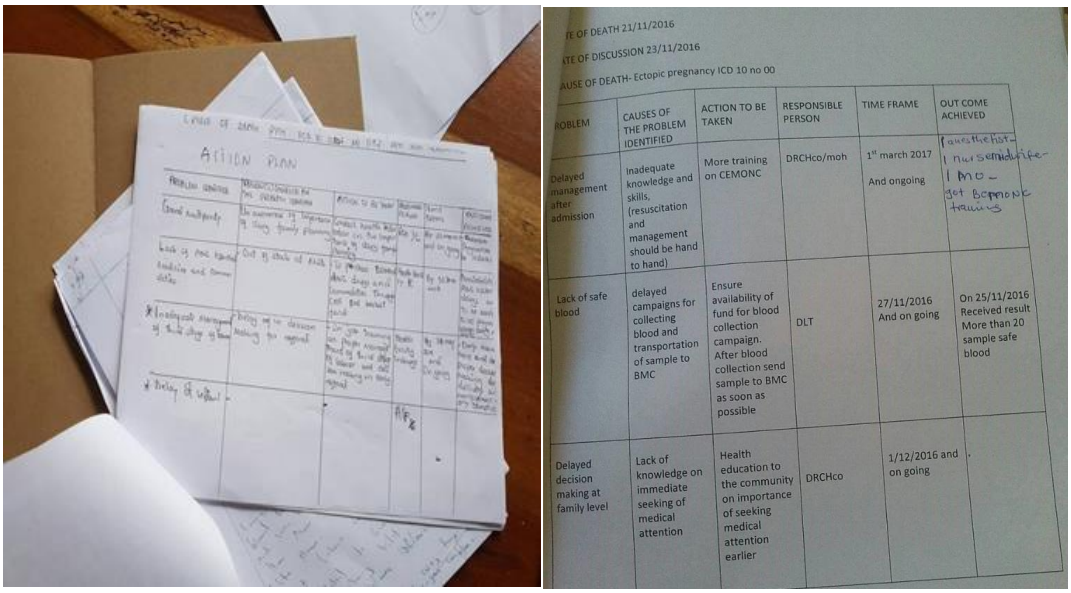
Figure 8. Data trends for stillbirth displayed at one health facility



Step 4: Recommend Solutions

One of the most challenging parts of the review process is the formulation of appropriate recommendations, but this step is critical to successful MPDSR. Except for one facility, all health facilities reported developing action plans during audit meetings, as the national guideline requires (Figure 9). Out of the 16 health facilities, eight hospitals and three health centres provided evidence that they identify and prioritise recommendations in line with the guideline's requirements. Self-reporting indicated that actions were linked to modifiable factors; however, assessors noted gaps in the thoroughness and specificity of action plans.

Figure 9. Action plans observed in some of the health facilities



TE OF DEATH 21/11/2016

ATE OF DISCUSSION 23/11/2016

AUSE OF DEATH- Ectopic pregnancy ICD 10 no 00

ROBLEM	CAUSES OF THE PROBLEM IDENTIFIED	ACTION TO BE TAKEN	RESPONSIBLE PERSON	TIME FRAME	OUT COME ACHIEVED
Delayed management after admission	Inadequate knowledge and skills, (resuscitation and management should be hand to hand)	More training on CEMONC	DRCHco/moh	1st march 2017 And ongoing	
Lack of safe blood	delayed campaigns for collecting blood and transportation of sample to BMC	Ensure availability of fund for blood collection campaign. After blood collection send sample to BMC as soon as possible	DLT	27/11/2016 And on going	On 25/11/2016 Received result More than 20 sample safe blood
Delayed decision making at family level	Lack of knowledge on immediate seeking of medical attention	Health education to the community on importance of seeking medical attention earlier	DRCHco	1/12/2016 and on going	

Responsibilities assigned to individuals were reported to be given verbally during or after the review meetings in all sites visited in one of the study regions. Whereas the assessors could not establish the mechanism used to assign responsibilities in four sites in another region, two of the four sites reported that they were using a combination of written and verbal communication to assign responsibilities and tasks to individuals.

On action plans

We normally put the assignment in writing and continue to remind each other through face-to-face discussion and talks.

—Health facility in-charge

We need to document the meetings better with minutes and give the designated actions to the responsible persons in writing.

—MPDSR focal person

Most facilities (94%) reported that they followed up on specific recommendations that were assigned to individuals; yet only one facility demonstrated a formal process in place to monitor the follow-up actions. In addition, key informants noted that the national guideline does not clearly explain the process for monitoring follow-up on action plan items.

Staff Protection, Confidentiality, and Disciplinary Actions

Despite the fact that the code of conduct is clearly stipulated in the national guideline and is discussed during MPDSR orientation sessions, the assessors found little evidence of its implementation. Adherence to the code of conduct was found to be inconsistent and poorly documented in most of the health facilities. All facilities conducting MPDSR self-reported that they adhere to the code of conduct, yet only two facilities mentioned that

the MPDSR meeting chairperson reads the code prior to starting the meeting. Moreover, only one facility showed evidence of a written code of conduct. This same facility was the only one that provided evidence that invitation letters were sent to MPDSR committee members working for that facility, indicating leadership by management to promote an organizational culture of participation. From the study findings, 12 health facilities had measures to ensure staff confidentiality and did not include names in the review notes. Three health facilities reported that disciplinary actions were taken against staff members involved with managing cases that were reviewed during MPDSR meetings; such actions lead to loss of staff morale and willingness to participate in MPDSR.

On confidentiality in MPDSR meetings

The meeting chairperson starts by reminding everyone of the guidelines and they are responsible to ensure staff are protected during meetings.

—Health facility interview

At our facility, some staff are unwilling to cooperate and attend meetings because of their experience of postpartum haemorrhage review meeting, where those who were responsible for the patient were victimised.

—Health centre in-charge

During the meeting, if someone has done wrong, they must tell. Then we will give a verbal warning. If they continue to do same mistake, we write a written warning.

—Health facility acting medical officer in-charge

The health worker involved requested to provide a statement of how the incident happened and may be given a verbal warning or a written one... and in one incident, the responsible person did not work for 1 month.

—Health centre in-charge/matron

Step 5: Implement Recommendations

One of the most challenging parts of the MPDSR process is formulating appropriate recommendations based on modifiable factors and then implementing them, but these steps are critical to successful implementation. At the facility level, it may be more effective to focus first on recommendations that are within the control of health workers, such as detailed history taking and correct partograph use. Administrators and management may be able to act quickly and responsively on recommendations that fall within their purview, such as ambulance availability or lack of resuscitation equipment. Assuming successes emerge in subsequent mortality audit meetings, health workers can use those successes to advocate with management for further action.

Fourteen facilities reported assigning individuals to follow up on specific recommendations. Eleven facilities reported regularly linking MPDSR to other quality improvement activities at their facilities. All facilities practising MPDSR provided examples of a time where the recommendations resulted in a change. Examples included improved clinical practice, better documentation, and procurement of important machines (such as a generator, Figure 10). In another example, after frequent deaths caused by anaesthetic accidents at one facility, the anaesthetist was placed in a mentorship programme for 6 months and provided with a log sheet for tracking follow-up of recommendations.

On implementation of actions

In our facility, there is a problem: our in-charge participation in implementing the recommendations is occasional. This demotivates even the remaining staff.

—Facility respondent

In our situation, we have improved documentation and improved action plans that are being developed.

—Health centre in-charge

Now that the perinatal death is audited they have started resuscitation of babies who are not crying or breathing. Also, proper use of partographs is now in place.

—Hospital matron

Figure 10. Evidence of action taken after review meeting

During a meeting about a maternal death, we identified that the reason was not enough light in the ward. So we got a generator to prevent deaths in the future.

—Acting medical officer in-charge

Multidisciplinary participation enables all actors to understand gaps and recommendations. Nine facilities demonstrated some evidence of multidisciplinary participation in the review meetings, from clinical staff working in different units (obstetrics, paediatrics, unit in-charge) to information officers, quality improvement focal persons, laboratory technicians, pharmacists, and peer educators. The average number of staff involved in MPDSR review meetings was 10 people, ranging from five at a health centre to 25 at a hospital—yet both of these two facilities recorded 100–299 births per month, indicating that the volume of deliveries did not influence the size of the committees. All facilities reported mandatory attendance for their committee members. Eight hospitals reported support from the quality improvement officer; two health centres reported that the same person acted as the quality improvement officer and MPDSR coordinator.

Most health facilities (81%) noted lack of community engagement as a barrier to implementing recommendations identified in action plans resulting from the MPDSR process. Two health centres reported that they work with communities to implement solutions by attending community leaders meetings and outreach. DRCH-COs are linking with the communities in the cases of maternal deaths (but this was not mentioned or probed for perinatal deaths).

On improving coordination of implementation

I am in the opinion that the district reproductive and child health coordinator should do the coordination at the district level, by establishing the linkage between the facilities within the district and community. From there, the linkage can be made to the regional and, finally, to the national level.

—National-level stakeholder

On sharing information with the community

In implementing solutions, the health facility in-charge attends the community meeting where he talks about these deaths and discusses the solutions and recommendations.

—Health centre in-charge

Step 6: Evaluate and Refine

The final step in the audit cycle involves looking back to evaluate what worked and what did not, and then refining and adapting the approach to move forward with an improved MPDSR process and a more conducive, enabling environment.[8] It requires completion of Steps 1 through 5, with offering an opportunity for reflection after the death has occurred.

The assessment found that there is no defined feedback mechanism for tracking and evaluating MPDSR implementation and no evidence that facilities used trend data or have targets (mortality or otherwise) to evaluate the effectiveness and efficiency of MPDSR implementation. Only one facility had a formal process for follow-up of recommendations apart from reviewing minutes at the next mortality audit meeting, although the staff at some facilities said that they do follow up recommendations either at the next meeting or during other staff meetings. While all facilities implementing MPDSR could name the official channels through which MPDSR findings are regularly reported to different levels of management, the assessors found little evidence that higher levels are acting in response to the findings reported.

Six out of seven health centres reported sharing success stories, either through meetings or through CHMTs and RHMTs, but stories were not shared in a systematic way. Of these facilities, only two provided feedback to the community.

On feedback to community

We wish that there was a specific mechanism to ensure that MPDSR feedback is shared with the community.

—Health centre in-charge

Enablers and Barriers of MPDSR Implementation

Facilities reported a number of enabling factors of MPDSR implementation. The most common included availability of copies of the national MPDSR guideline, staff commitment to and engagement with the process (attending meetings), availability of accurate data (including cause of death and specifics around the case), and, as promoted in the national guideline, open discussion without fear of blame. Other enablers that were mentioned included teamwork, mentorship and training on the national MPDSR guideline, support from other stakeholders, and feedback on the implementation of previous action plans. Key informants at the facilities identified capacity-building and mentorship as the most helpful activities and necessary to improving the utility of MPDSR at their facilities. Other changes they think are required included more staff, better motivation for staff participation (e.g., refreshments, rewards for those health workers who have carried out improvements in line with the recommendations, official membership to the MPDSR committee), better communication between stakeholders and communities on the MPDSR outcomes, more funding and resources, and stronger facility leadership. All district managers interviewed reported providing support to train facility staff in data collection and using data for quality improvement.

Communication between health staff in facilities, as well as between the hospital and health centres around it, also supported implementation efforts. The DRCH-COs are taking leadership/champion roles and participating in facility MPDSR meetings. Most facilities depend on the DRCH-COs to insist the meetings take place. DRCH-COs attend MPDSR meetings in person in order to ensure the quality of meetings and build capacity.

On the enablers

The coordinator attends the MPDSR meetings at the facilities (health centres and hospitals). The district team has a quarterly meeting and sends feedback on recommendations to the health facility.

—Stakeholder interview

Starting this year, my role as MPDSR coordinator has become clearer due to frequent training by MOH and partners.

—District stakeholder interview

Before, facilities only had 24 hours to report and review deaths, but now we have 7 days, which gives us more time to plan for the meeting and ensure the right people attend.

—District stakeholder interview

The most common barriers to MPDSR implementation, according to facility informants, included an inadequate referral system, unavailability of personnel with necessary up-to-date clinical competencies, unavailability of resources/finances, lack of community engagement, and harmful local practices (e.g., use of local herbs to augment labour and preference for home deliveries). The frequent staff changes, particularly of facility leaders, has been a major encumbrance in some facilities. Others noted inadequate funding, with one facility lacking funds to run their operating theatre. With the exception of one facility, the quality improvement teams and MPDSR teams were working separately, which prevents harmonising implementation efforts. Two facilities specifically mentioned the lack of budget for refreshments, which are needed because reviews and follow-up often take place after working hours. Misunderstandings and attitudes among staff regarding the objectives of the review meetings was mentioned in one facility as a barrier to implementing the MPDSR recommendations.

Stakeholders reported the most common barriers as disconnect between the facility and national and/or district levels, inadequate referral system, and unavailability of qualified personnel and personnel with necessary up-to-date clinical competencies. Additional barriers identified included delay in seeking care, few comprehensive emergency obstetric and neonatal care sites, traditional beliefs and practices, and not enough facilities to serve the population.

On the barriers

We have a problem of staff shortage overall, but also with competent staff; in our facility only one person has been trained in MPDSR.

—Health centre in-charge

In another bad scenario here in our community, a woman with obstructed labour was kept in a church and was prayed for so that the obstructed labour will go, but they kept on praying until she ruptured the uterus.

—Health facility in-charge

Our facility here serves two wards: women from a distant ward normally come late because they have to overcome such a long distance, and this is our main concern.

—Health facility matron

In our district, there are 30 health facilities: one hospital, three health centres, and 26 dispensaries. We have only one DRCH-CO who oversees maternal and child health in all the facilities. Despite the fact that the 26 dispensaries do not conduct MPDSR, we have a big problem in implementing our recommendations.

—Health facility in-charge

The community does not see the community health workers as important for improving health of mother and child.

—District stakeholder interview

Discussion with the national-level stakeholder revealed that there are concerns about the lack of clear demarcation on roles played by the MOHCDGEC and PO-RALG in supervising and implementing MPDSR was a major obstacle in monitoring the implementation of MPDSR, an important element for programme success countrywide.

On national-level challenges

I believe we are in the right direction because we have at least managed to roll out the guideline. The presence of the two ministries to harmonise and implement the recommendations of the MPDSR is currently a problem—the limits are not clear here, at times a bit of a confusion… A problem of who is doing what has resulted in some duplication of activities between the two ministries.

—National-level stakeholder

Discussion

The results of this assessment demonstrate a commitment to audit maternal and perinatal deaths, with the majority of facilities demonstrating institutionalised MPDSR practice. Since MPDR has been in place in Tanzania for over a decade, this finding aligns with the expectation that facilities would have established practices in place at least for maternal deaths. There is no debate over whether MPDSR on its own is valued, but rather whether it is resulting in the desired improvements to practice and quality of care, both at the facility and community levels.

This study shows a range of awareness and implementation of the national MPDSR guideline in Mara and Kagera. Mortality audits for maternal and perinatal deaths—including the practices of reviewing the causes and avoidable factors related to maternal deaths and recommending and implementing solutions—varied across different districts and facilities. The facility's level—health centre or hospital—was not consistently associated with its stage of MPDSR implementation. The findings align with a related study done in Mara, which showed the MPDSR system was not functioning adequately to perform either good-quality reviews or fulfil the aspiration to capture every facility-based maternal and perinatal death.[25]

Overall, the integration of stillbirths and neonatal deaths into the data collection and the notification process and others steps of MPDSR implementation requires more investigation given the gaps identified. Others have found a lack of PDSR education within midwifery or nursing education in Tanzania, reflecting the need to address the general approach to PDSR.[25] There is a need to clarify the role of nurses and midwives in implementing MPDSR, as they have key responsibilities at national, regional, district, facility, and community levels. RNOs, regional RCH coordinators, DNOs, DRCH-COs, and facility or maternity ward nursing officer in-charges are engaged in the MPDSR process and, in some districts, were mentioned as key facilitators in the process. Hence, if these cadres receive deliberate capacity-building and support for implementation, their contribution is likely to be more significant and structured. It will also:

- Influence nurses and midwives (who make up the majority of the healthcare workers implementing MPDSR) to increase commitment
- Renew related values
- Bring about required changes in a sustainable manner

The lack of incentives and low motivation—possibly related to fear of punitive actions—among staff involved in MPDSR reflect the need for the MOHCDGEC and partners to consider an intervention to reorganise teams and reporting so providers can accurately record stillbirths and neonatal deaths. Ensuring the capture of a minimum set of perinatal indicators remains of paramount importance.

The lack of MPDSR training reported by some facilities and limited awareness of some components of the national MPDSR guideline—such as carrying out audits for near miss cases—among nurses and midwives indicate the need for more technical support, leadership, and sensitisation for healthcare providers on the importance of implementing MPDSR reviews. The orientation of healthcare providers to MPDSR, especially through regular supportive supervision and clinical meetings, remains important.

With little evidence of MPDSR integration into the HMIS, Integrated Disease Surveillance and Response system, and Civil Registration and Vital Statistics system, there is clearly a need for further training and support provided to DNOs, DRCH-COs, and key personnel in all hospitals, CHMT and RHMT members, and other higher-cadre staff supporting MDSR implementation in the study regions. The inadequacies in data quality found in this study raise concerns around the competency of health facility staff to adequately assess and interpret data. This observation is consistent with the findings in Mara by Armstrong and colleagues who noted, "contrary to instructions in the [2006 MPDR] guidelines, feedback on previously reported MPDR data was rarely received from higher level administration."[25]

Gaps in reporting community deaths or even linking communities in the MPDSR process remain a challenge. The robust road networks and military infrastructure in Kagera might partly explain the observed difference between Mara and Kagera because CHWs might reach health facilities much more easily in Kagera than in Mara. Moreover, the fact that most of the facilities visited in Kagera were health centres adds weight to the observed difference since health centres are generally closer to the community than hospitals. The need to engage the communities in MPDSR and maternal, newborn, and child health is underpinned by the evidence from studies done elsewhere. In one pilot project in Malawi, community and health facility stakeholders were partnered to identify maternal deaths through verbal autopsy, review causes and associated factors, and take action to prevent further deaths.[26]

Another factor that may be linked to poor reporting of community-level deaths is the statement in the national MPDSR guideline, "review sessions will not include deaths occurring outside health care system."[4] Such a statement might prompt some providers who are responsible for capturing reports from CHWs to be a bit slack in the way they supervise these community focal persons. However, the validity of this explanation remains to be explored. This observation provides a strong additional reason for the review and improvement of the 2015 national MPDSR guideline. Despite the fact that CHWs provide a critical role in reporting deaths, the majority of CHWs are not adequately trained, do not have job aids, and do not receive refresher training.[27] Moreover, they may not feel compelled to report deaths occurring in the community, since most of them work as volunteers.

Stakeholders indicated that development of action plans and reporting of data from facility to district, district to region, and region to national level were adhered to fairly well, but recommendations were not generally feasible and measurable. In 2014, Armstrong and colleagues made similar observations on the strengths and weaknesses in the implementation of MPDRs in Mara, signifying that, despite the knowledge of gaps, change has not yet occurred in practice.[25] Stronger mechanisms for following up the recommended solutions, coupled with feedback from higher levels—district, regional, and national, will decisively mitigate these gaps, as they will motivate and encourage evidence-based decision-making in MPDSR management and implementation, particularly at facility level.

Alignment with Global MPDSR Guidance

The Tanzanian government has taken forward the process of MPDSR in order to improve quality of care for maternal and newborn health in line with WHO recommendations.[28] Despite the guidelines in place, the authors have observed major setbacks in meeting global guidance around the content of the guidelines as well as the implementation.

Firstly, the 2015 national guideline reflects MPDSR's connection to the Millennium Development Goals, yet the global priorities for reducing maternal and perinatal mortality and the standards for improving quality of maternal and newborn care in health facilities are now tied to the SDGs and their revised health-related targets for mothers, newborns, and children. Moreover, the SDGs focus on the standards of care for routine care and management of complications occurring for women and their babies during labour, childbirth, and the early postnatal period, including those of small babies during the first week of life. Relating to the perinatal (PDSR) context, the new ICD-PM—published in 2016 and therefore not incorporated into Tanzania's 2015 national MPDSR guideline—provides a revised system for classifying perinatal cause of death that links stillbirths and neonatal deaths to maternal contributory conditions.[29] ICD-PM is now undergoing testing and based on the observation from the assessors, a simplified version of ICD-PM for the purpose of initiating audit in low-resource settings should be considered. The national guideline also does not provide a systematic framework for M&E as other global technical guidelines do,[29] instead providing only links to M&E materials available online. However, it may be that the authors of the guideline considered M&E to have limited applicability in resource-limited settings.[29] In light of these considerations and based on the findings of this study, there is a need to review the 2015 national guideline to align with global MPDSR guidance.

Secondly, this assessment observed widespread non-adherence to the national guideline across the two study regions. The MOHCDGEC and implementing partners will need to address the inconsistencies and unsystematic audit reviews currently found across the six steps of the audit cycle in order to improve the quality of MPDSR implementation. Practices adhering to the national guideline are critical to advancing the global MPDSR guidance and strategy.

Limitations of This Assessment

This assessment has several limitations; foremost, no claims can be made on Tanzania as a whole or the two regions assessed with regard to the generalizability of the findings, especially because a small subsample of facilities were visited and facilities were not selected randomly. Moreover, interviews focused mainly on the process of conducting mortality audits at the facility level and thus could not fully capture linkages between the facility and community levels. In addition, assessors collected information from providers present at the facility on the particular day of the visit, and this may have affected the results in some way. Another limitation lies in the fact that the views respondents expressed in the data obtained in this research may not necessarily reflect those of other healthcare staff, particularly more junior staff who may be subject to more blame or scrutiny during mortality audit meetings. Furthermore, some documents were not available at the facilities for review. Despite the examples from health facilities implementing change, it would be methodologically difficult to attribute the reported and observed changes to the MPDSR reviews, rather than to other causes.

Conclusions

The development and rollout of the national MPDSR guideline in Tanzania demonstrate the country's commitment to ending preventable deaths for mothers and their babies. While the majority of facilities assessed demonstrated institutionalised practice, MPDSR implementation in Kagera and Mara Regions of Tanzania varied across districts. In terms of the WHO audit cycle, the facilities generally could identify and notify of maternal and perinatal deaths, though there were some gaps for early neonatal deaths and near misses. Non-adherence to the national guideline has resulted in inconsistencies and incompleteness in analysing the information collected as well as implementing recommended changes and solutions. The lack of a formal system and M&E framework (including tools for tracking and monitoring), coupled with poor feedback from higher levels, remain critical setbacks in evaluating MPDSR practice and performance.

Directing efforts to close the observed gaps could be important in addressing the MPDSR audit process. Offering providers the opportunity to learn and understand MPDSR procedure through capacity-building, supportive supervision, mentorship, and regular measured monitoring based on the requirements of the national MPDSR guideline will lessen the problems of blaming, improve adherence to the code of conduct, alleviate the inconsistencies in documentation and reporting, and advance implementation. Addressing the strenuous workload of facility staff, including the reporting burden, also needs to be considered. Review of the 2015 national guideline to address the observed gaps in practice remains an important strategy that will refine existing MPDSR implementation.

Recommendations

National Level

- Review the 2015 national MPDSR guideline with the following main goals:
    - The MOHCDGEC and MPDSR national steering committee develop a formal system along with tools that are in line with global guidance for tracking and monitoring MPDSR implementation beyond the formation of action plans. MOHCDGEC and the MPDSR national steering committee should provide facilities, CHMTs, and RHMTs with tools to help them track and evaluate the "response" portion of MPDSR.
    - The MOHCDGEC and MPDSR national steering committee should review the existing disease coding system, align it with WHO guidelines (i.e., *The WHO Application of ICD-10 to Deaths during Pregnancy, Childbirth and the Puerperium* [ICD-MM] and ICD-PM), and ensure it is captured in registers and notification forms used in health facilities.
    - The MOHCDGEC and MPDSR national steering committee should link the facility initiative to community efforts to record deaths to enable comprehensive findings in the review process.
- Establish a unified approach for supervision and M&E of MPDSR implementation that will delineate roles and responsibilities between the MOHCDGEC and the Ministry of Regional Administration and Local Government and community.
- Ensure all levels of the system use a standardised classification system for cause of death. Consider adopting WHO's ICD-MM and ICD-PM codes and simplifying them for use at facility level.
- Ensure links between the national MPDSR process and national quality improvement efforts.
- Ensure integration of MPDSR information (data, problem identified, and solutions implemented) into the national HMIS and oversee regional integration.
- Translate the national guideline into job aids and on-the-job training materials to support standardised MPDSR practice in a cost-effective and efficient manner.
- Clarify the roles of nurses and midwives in implementing MPDSR, as they have key responsibilities at national, regional, district, facility, and community levels. Provide these cadres with PDSR education in addition to MDSR.
- Consider the role of community structures such as community leaders and CHWs in MPDSR—among other service areas—to encourage the community to provide the needed engagement and support as CHWs collect MPDSR-related data.
- Establish efforts and strategies directed at strengthening the existing referral system, including provision of means of transport that will accommodate the specific facility environment.
- Develop strategies and policies that will ensure and guide the sustainable generation of financial resources and support for lower-level facilities, enabling them to handle MPDSR activities and provide comprehensive maternal and perinatal care.

Regional and District Levels

- Oversee and ensure capacity-building (e.g., onsite training, mentorship, supportive supervision) for understanding and implementing the audit cycle and the MPDSR national guideline, including understanding the definition of perinatal death, capturing perinatal death data, and assigning correct causes for both maternal and perinatal deaths.
- Strengthen engagement of RNOs and DNOs in the processes of providing technical support to facilities on MPDSR.

- Explore combining training in quality improvement and MPDSR training as well as the functionality of quality improvement and MPDSR committees at all levels, as the same committee needs to manage both processes.
- Mentor leaders and raise up MPDSR champions at facility level to reduce dependence on the DRCH-CO. Involve others, including DNOs, in MPDSR review meetings.
- Strengthen the reporting system of maternal and perinatal deaths at the community level by working with CHWs, where they exist, and working with village executive officers to report on maternal and perinatal deaths occurring in their areas of jurisdiction to dispensaries.
- Strengthen CHWs' support system at district level by engaging DRCH-COs in supportive supervision.
- Strengthen community engagement activities in order to address harmful maternal and newborn health practices through various mechanisms (e.g., community sensitisation, social and behaviour change communication materials, job aids for CHWs).

Facility Level

- Use standardised forms available in the national guideline for documenting cases under review, including identifying recommendations for action.
- Provide every unit in a hospital with a separate death register if the hospital has a high volume of deliveries.
- Review early neonatal deaths as well as stillbirths and maternal deaths.
- Adopt a meeting code of conduct—to be displayed on a poster or handed out—to ensure that staff know that they will not be punished or blamed.
- Build capacity and confidence of providers to correctly count all deaths; assign cause of death using standardised classification aligned with national guideline; identify key underlying contributors to death; and define and follow up on actionable recommendations linking MPDSR to quality improvement activities.
- Institute a system of documenting meeting minutes, noting specific timeline and persons responsible for actions, and ensure a system is in place to follow up on action plans in order to ensure action takes place. This system could be established as part of regular MPDSR meetings and through other mechanisms (e.g., line list recommendations with completion status).
- Integrate MPDSR committee and quality improvement team to ensure quality improvement links to MPDSR efforts.
- Display and use up-to-date trend data to inform staff about progress in maternal and newborn health.
- For health centres, support CHWs and community leaders to capture community deaths using a standardised tool.
- Strengthen (through facility RCH in-charges) the engagement of RNOs and DNOs in the MPDSR processes.

References

1. World Health Organization (WHO). 2016. *World Health Statistics 2016: Monitoring Health for the SDGs*. Geneva, Switzerland: WHO. http://www.who.int/gho/publications/world_health_statistics/2016/en/. Accessed March 14, 2018.
2. Bergh AM, Kerber K, Abwao S, et al. 2014. Implementing facility-based kangaroo mother care services: lessons from a multi-country study in Africa. *BMC Health Serv Res*. 14:293. doi: 10.1186/1472-6963-14-293.
3. Bergh AM, Arsalo I, Malan AF, Patrick M, Pattinson RC, Phillips N. 2005. Measuring implementation progress in kangaroo mother care. *Acta Paediatr*. 94(8):1102–1108. https://www.healthynewbornnetwork.org/hnn-content/uploads/3-Bergh-2005.-Measuring-KMC-Impl-progress-in-RSA.-Acta-Paed.pdf. Accessed February 2, 2018.
4. Ministry of Health and Social Welfare (MOHSW). 2015. *Maternal and Perinatal Death Surveillance and Response Guideline*. Dar es Salaam, Tanzania: MOHSW.
5. World Health Organization. 2016. International Statistical Classification of Diseases and Related Health Problems 10th Revision. ICD-10 Version:2016 website. http://apps.who.int/classifications/icd10/browse/2016/en. Accessed March 14, 2018.
6. Thaddeus S, Maine D. Too far to walk: maternal mortality in context. 1994. *Soc Sci Med*. 38(8):1091–1110. https://www.ncbi.nlm.nih.gov/pubmed/8042057. Accessed February 2, 2018.
7. Weeks AD, Alia G, Ononge S, Mutungi A, Otolorin EO, Mirembe FM. 2004. Introducing criteria based audit into Ugandan maternity units. *Qual Saf Health Care*. 13(1):52–55. https://www.ncbi.nlm.nih.gov/pubmed/14757800. Accessed February 2, 2018.
8. World Health Organization (WHO). 2016. *Making Every Baby Count: Audit and Review of Stillbirths and Neonatal Deaths*. Geneva, Switzerland: WHO. http://apps.who.int/iris/bitstream/10665/249523/1/9789241511223-eng.pdf?ua=1. Accessed February 2, 2018.
9. Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), Ministry of Health (MoH), National Bureau of Statistics (NBS), Office of Chief Government Statistician (OCGS), ICF. 2016. *Tanzania Demographic and Health Survey and Malaria Indicator Survey: 2015-16*. Dar es Salaam, Tanzania: MoHCDGEC, MoH, NBS, OCGS, ICF. https://dhsprogram.com/pubs/pdf/FR321/FR321.pdf.
10. World Health Organization (WHO). 2004. *Beyond the Numbers: Reviewing Maternal Deaths and Complications to Make Pregnancy Safer*. Geneva, Switzerland: WHO. http://apps.who.int/iris/bitstream/10665/42984/1/9241591838.pdf. Accessed February 2, 2018.
11. Economic and Social Council. 2012. *Commission on the Status of Women: Report on the Fifty-Sixth Session (14 March 2011, 27 February-9 March and 15 March 2012)*. New York, NY: United Nations. http://www.un.org/ga/search/view_doc.asp?symbol=E/2012/27. Accessed February 2, 2018.
12. World Health Organization (WHO) et al. 2013. *Maternal Death Surveillance and Response: Technical Guidance; Information for Action to Prevent Maternal Death*. Geneva, Switzerland: WHO. http://apps.who.int/iris/bitstream/10665/87340/1/9789241506083_eng.pdf?ua=1. Accessed February 2, 2018.
13. World Health Organization (WHO), UNICEF. 2014. *Every Newborn: An Action Plan to End Preventable Deaths*. Geneva, Switzerland: WHO, UNICEF. http://apps.who.int/iris/bitstream/10665/127938/1/9789241507448_eng.pdf. Accessed February 2, 2018.

14. World Health Organization (WHO) et al. 2015. *Strategies toward Ending Preventable Maternal Mortality (EPMM)*. Geneva, Switzerland: WHO. http://apps.who.int/iris/bitstream/10665/153544/1/9789241508483_eng.pdf?. Accessed February 2, 2018.

15. Kerber KJ, Mathai M, Lewis G, et al. Counting every stillbirth and neonatal death through mortality audit to improve quality of care for every pregnant woman and her baby. 2015. *BMC Pregnancy Childbirth*. 15(suppl 2):S9. doi: 10.1186/1471-2393-15-S2-S9.

16. World Health Organization. 2016. *Time to Respond: A Report on the Global Implementation of Maternal Death Surveillance and Response (MDSR)*. Geneva, Switzerland: WHO. http://apps.who.int/iris/bitstream/10665/249524/1/9789241511230-eng.pdf?ua=1. Accessed March 14, 2018.

17. MDSR Action Network. 2018. Homepage. http://mdsr-action.net/. Accessed February 2.

18. World Health Organization Country Office for Africa. 2004. *Health Systems Profile: United Republic of Tanzania*. http://mbaralidc.go.tz/storage/app/media/uploaded-files/Health-tanzania.pdf. Accessed February 2, 2018.

19. Maluka S, Chitama D. 2016. *Primary Care Systems Profiles & Performance (PRIMASYS): Tanzania Case Study*. Geneva, Switzerland: Alliance for Health Policy and Systems Research. http://www.who.int/alliance-hpsr/projects/AHPSR-tanzania-051016.pdf. Accessed February 2, 2018.

20. Magoma M, Ferla C, Armstrong C. 2018. Maternal, newborn, child and adolescent health: Strengthening maternal and perinatal deaths surveillance and response in Tanzania. World Health Organization website. http://www.who.int/maternal_child_adolescent/epidemiology/maternal-death-surveillance/case-studies/tanzania/en/. Accessed February 2.

21. Afnan-Holmes H, Magoma M, John T, et al. 2015. Tanzania's countdown to 2015: an analysis of two decades of progress and gaps for reproductive, maternal, newborn, and child health, to inform priorities for post-2015. *Lancet Glob Health*. 3(7):e396–409. doi: 10.1016/S2214-109X(15)00059-5.

22. Ministry of Health and Social Welfare (MOHSW). 2013. *Midterm Analytical Review of Performance of the Health Sector Strategic Plan III 2009–2015*. Dar es Salaam, Tanzania: MOHSW. http://www.who.int/healthinfo/country_monitoring_evaluation/TZ_AnalyticalReport_2013.pdf. Accessed March 14, 2018.

23. Ministry of Health and Social Welfare. 2014. *Mid Term Review of the National Road Map Strategic Plan to Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania: 2008-2015: One Plan*. Dar es Salaam, Tanzania: Reproductive and Child Health Section, Directorate of Preventive Services, United Republic of Tanzania.

24. Kerber K, Williams A, Aboda A, Masha R, Mado S. 2011. *Review of Kangaroo Mother Care Implementation in PRRINN-MNCH [Partnership for Reviving Routine Immunization in Northern Nigeria; Maternal, Newborn and Child Health Initiative] States*. Kano, Nigeria: PRRINN-MNCH, Save the Children. http://www.prrinn-mnch.org/documents/KMC_states_2011.pdf. Accessed March 14, 2018.

25. Armstrong CE, Lange IL, Magoma M, Ferla C, Filippi V, Ronsmans C. 2014. Strengths and weaknesses in the implementation of maternal and perinatal death reviews in Tanzania: perceptions, processes and practice. *Trop Med Int Health*. 19(9):1087–1095. doi: 10.1111/tmi.12353.

26. Bayley O, Chapota H, Kainja E, et al. 2015. Community-linked maternal death review (CLMDR) to measure and prevent maternal mortality: a pilot study in rural Malawi. *BMJ Open*. 5(4):e007753. doi: 10.1136/bmjopen-2015-007753.

27. World Vision International. 2015. Tanzania's community health workers. https://www.wvi.org/sites/default/files/CHW%20Profile%20Tanzania_0.pdf. Updated December 28. Accessed March 14, 2018.

28. Magoma M. 2016. Tanzania: Scaling up MPDSR implementation with new guidelines. MDSR Action Network website. http://mdsr-action.net/updates/tanzania-scaling-up-mpdsr-implementation-with-new-guidelines/. Published October 6. Accessed March 14, 2018.

29. World Health Organization (WHO). 2016. *The WHO Application of ICD-10 to Deaths during the Perinatal Period: ICD-PM*. Geneva, Switzerland: WHO. http://apps.who.int/iris/bitstream/10665/249515/1/9789241549752-eng.pdf. Accessed March 14, 2018.

Appendix A: Key Informant Questionnaire

Maternal and Perinatal Death Surveillance and Response (MPDSR) Implementation Progress Monitoring Tool (Version 1)

Region: …….. District: ……..

Name of progress monitor / assessor: …… Date: ……..

OBSERVATIONS AND QUESTIONS TO ASK DISTRICT AND NATIONAL LEVEL STAKEHOLDERS

1. Is there a district/national MDSR coordinator? ☐Yes ☐No ☐Unsure
2. Is there a district/national PDSR coordinator? ☐Yes ☐No ☐Same as MDSR coordinator ☐Unsure
3. What is the role of the coordinator(s) related to M/PDSR?

   ……..

4. What are some of the non-M/PDSR responsibilities of the coordinator(s)?……..

   ……..

5. Are there guidelines in place for review of maternal deaths?
   ☐Yes ☐No ☐Unsure
   If yes, at what level are these guidelines (e.g. national, regional, district): ……
6. Are there guidelines for review of perinatal deaths?
   ☐Yes ☐No ☐Unsure
   If yes, at what level are these guidelines (e.g. national, regional, district): ……

   Ask to obtain a copy of the guidelines and check if the guidelines include the following:
   - ☐ Standardized maternal death review form
   - ☐ Standardized perinatal death review form
   - ☐ Training materials and activities
   - ☐ Supervision activities
   - ☐ Reporting requirements (timing, information flow, standard indicators to report on)
   - ☐ Process for notification of every maternal death
   - ☐ Process for selecting deaths for audit
   - ☐ Stratification of guidelines by facility level

☐ Integration with quality improvement approaches

7. Are M/PDSR systems integrated with the following structures:
   HMIS ☐Yes ☐No ☐Unsure
   CRVS ☐Yes ☐No ☐Unsure
   IDSR ☐Yes ☐No ☐Unsure
   Other (describe): ……

8. Is a central M/PDSR report compiled?
   ☐Yes ☐No ☐Unsure **If yes:**

   When was the most recent report compiled? ……

   At what level (e.g. district, regional, national, etc)? ……

   Who (position title) is responsible for compiling the report? ……

   What is the done with the recommendations contained in the report? ……

   ……

Community links

NB: for Rwanda, expand understanding about current community data collection and follow-up

9. Are you aware of linkages at the community level to feedback recommendations from facility-based death reviews?

   ……

   ……

10. What current mechanisms exist to identify deaths in the community and make sure they get reported?

    ……

Technical: ability to generate high-quality data and analyses

11. Can you tell us about a policy or program related decision, or change in service delivery that has been based upon MPDSR findings?

    ……

    ……

12. In your opinion, do the registers and recording forms currently used in health facilities capture necessary data for assessment of cause of death and contributing factors for maternal and perinatal death audits?

    ……

13. Do you have any concerns about the quality of information around maternal deaths, stillbirths, and/or neonatal deaths?

    ……

    If yes, how could this area of concern be improved? ……

    ……

14. Is your team involved in any efforts to improve medical records and registers (e.g. standardization of records with minimum essential indicators)?

    ……

15. I am interested in knowing about local capacity for collecting and using MPDSR information. Does the information that feeds up from facilities (and communities, if relevant) come without a lot of external technical assistance?

    ……

16. In your opinion, what are some factors that are barriers to ensuring *district* or *national* level actions take place following mortality review (e.g. completing the "Response" portion of MPDSR)?
    - ☐ MOH leadership/support
    - ☐ Inter-departmental leadership/support
    - ☐ Disconnect between national and/or district and facilities
    - ☐ Inadequate referral system
    - ☐ Availability of essential commodities
    - ☐ Availability of qualified personnel
    - ☐ Availability of personnel with necessary up to date clinical competencies
    - ☐ Availability of resources/finances
    - ☐ Other (describe) ……

District manager level only

17. Where did the decision to undertake M/PDSR originate? (e.g. district, facility, or national level)

    ……

18. How does your district support health facilities to gather and analyse the necessary data to make decisions?

    ……

19. Does your district provide any support training for facility staff in data collection?

    ……

20. Does your district provide any support training for facility staff in using data for quality improvement?

    ……

21. Can you describe any processes you use to assess the quality and accuracy of birth and death data?

    ……

22. Do you see any risks associated with the M/PDSR process?

23. Is there anything else you would like to discuss today?

    ……

MPDSR PROGRESS MONITORING TOOL (Version 1)
Adapted from MRCSA KMC progress monitoring tool, version 5

Maternal and Perinatal Death Surveillance and Response (MPDSR) Implementation Progress Monitoring Tool (Version 1)

Guidelines for monitors / assessors:

- Please use separate forms for each individual respondent.
- Unless the maternal and perinatal review committees are combined into one process led by the same individual, please use separate forms to capture information relating to the maternal death review process and the perinatal death review process.
- Note that each facility might have a different name for the audit / review / surveillance and response team. Try to use local terminology as much as possible.
- Be sure to probe about what deaths are captured, especially in relation to stillbirth, perinatal, and child deaths as these processes are likely to be less well known than the systems for maternal deaths.
- Request to make photocopies of all written documents related to M/PDSR, especially where noted in the questionnaire below. If photocopies are not available, ask for permission to photograph the documents for record purposes.
- Ask for photocopies of samples of data collection forms, meeting minutes, action items, and relevant material. If copies are not available, ask for permission to photograph the documents for record purposes. Be sensitive to ethical issues and patient privacy. If you need to photograph a document with identifying details, cover the names or details with a piece of paper before taking the picture in order to preserve confidentiality.
- Ask for permission from the hospital or nursing services manager to take pictures of the hospital, staff or records. (Pictures of staff members are only to be taken if they also give their verbal consent.)
- Mark each of the documents you take away with a date and the name of the hospital, where applicable.
- Each monitor/assessor fills in his/her own checklist and the results are compared and consolidated afterwards on one checklist, which is then marked as “FINAL”.

Instructions:

- Tick or cross only applicable boxes.
- Complete the “comments” and “observations” sections if something important or striking is mentioned or observed that may be informative to understanding a particular phenomenon. Use the back of the questionnaire form if necessary.
- Where possible, complete “specify”, “describe”, “explain” and “elaborate” where the associated response is ticked.

Name of progress monitor / assessor: …… Date: ……..……

OBSERVATIONS AND QUESTIONS TO ASK HEALTH WORKER INFORMANTS

HEALTH CARE FACILITY

Region: …….. District: ……..……

Name of facility: ……..

Level of facility (hospital / health centre): ……..……..

Is there a MDSR coordinator or stakeholder at the facility?
☐Yes ☐No ☐Unsure

Job title: ……..…… *(write none if there is no MDSR)*

Is there a PDSR coordinator or stakeholder at the facility?
☐Yes ☐No ☐Same as MDSR coordinator ☐Unsure

Job title: ……..…… *(write none if there is no PDSR)*

Does the coordinator(s) have other responsibilities (e.g. information officer, QI focal point, etc.):

……..……..

Does the facility have a formal system for reviewing maternal deaths, stillbirths, and/or neonatal deaths?

Maternal deaths: ☐Yes ☐No ☐Unsure
Perinatal deaths: ☐Yes ☐No ☐Unsure
Stillbirths: ☐Yes ☐No ☐Unsure
Neonatal death: ☐Yes ☐No ☐Unsure

Comments: ……..……..……

……..……..……

Near-misses? ☐Yes ☐No ☐Unsure

Comments: ……..……..……

……..……..……

Does the facility have a steering committee for MPDSR? ☐Yes ☐No ☐Unsure

If yes, please describe (e.g. maternal, perinatal, both, separate, etc):

……..

……..

……..

HISTORY OF MPDSR IMPLEMENTATION

When was MDSR started at the facility? ……

When was PDSR started at the facility? ……

We would like to know more about the process that was followed. Where did the decision to undertake M/PDSR originate? (e.g. district, facility, or national level)

……

Was there a specific occasion or meeting where the decision to implement MPDSR was taken?

☐Yes ☐No ☐Unsure If yes, approximate date: ……

Was there an implementation or action plan established?

☐Yes ☐No ☐Unsure

Is there written minutes or documentation of the decision?

☐Yes ☐No ☐Unsure *(If Yes, ask if it would be possible to see a copy. Ensure that all personally identifiable information is removed or obscured)*

Documentation seen ☐Yes ☐No
Document received / photographed ☐Yes ☐No

Respondent's recall of the history of implementation:
☐Good recall ☐Some recall ☐No recall

If M/PDSR is not implemented yet: has a formal decision for M/PDSR implementation been made yet?
☐Yes ☐No ☐Unsure

If yes, describe:
……

Before starting MPDSR, did the facility systematically document the following baseline data?

Number of maternal deaths:	☐Yes	☐No	☐Unsure
Cause of maternal deaths:	☐Yes	☐No	☐Unsure
Number of perinatal deaths:	☐Yes	☐No	☐Unsure
Cause of perinatal deaths:	☐Yes	☐No	☐Unsure

MPDSR ROLE-PLAYERS

Has anyone in facility or district leadership sign a commitment or undertake an agreement that s/he would ensure that M/PDSR is implemented in the facility?

☐Yes ☐No ☐Unsure If yes, specify title: ……

What kind of support did you get from the following people? *(specify type of support, or write none, or not applicable if the post does not exist at the facility or district)*

District health manager / CEO / superintendent:	……
District information officer (or equivalent):	……
Facility director:	……
Matron / Nursing service manager:	……
Unit manager (neonatal unit or maternity):	……
Obstetrics:	……
Paediatrics:	……
Facility information officer:	……
Quality assurance officer	……
Other, specify: ……	……

Do you have educational activities in your facility to introduce MPDSR to staff members?

☐Yes ☐No ☐Unsure If yes, describe: ……..

Are activities internal, or led by district or national? ……..

Are activities held on-site or off-site? …….

Approximately how many staff members are currently involved in MPDSR? ……..

Managers (e.g. facility administrators) ……..

Clinicians (doctors or medical officers) ……..

Nurses/midwives ……..

Other (specify) …….. ……..

Have you received support (financial or in-kind) from the hospital or district budget to establish MPDSR?

☐Yes ☐No ☐Unsure If yes, describe: ……..

MPDSR PRACTICE

Are there any *written* policies, guidelines or protocols regarding the practice of MPDSR?

☐Yes ☐No ☐Unsure If yes, describe:
……
(Note whether the document is specific to the facility, district or national level. Obtain a copy or take a photo if possible)

MPDSR CYCLE: IDENTIFYING DEATHS

How are deaths identified? (*Let the respondent answer first, then probe for different areas of facility, especially for maternal deaths as these are more likely to occur in different areas of the facility)*

- ☐ANC register
- ☐Ambulatory emergency care area
- ☐General adult inpatient ward
- ☐Labour and delivery register
- ☐Outpatient department register
- ☐Postnatal register
- ☐Neonatal register
- ☐Other, specify: ……

Are maternal and/or perinatal deaths that occur in the community documented at this facility?
☐Yes ☐No ☐Unsure If yes, what is the process for learning about and documenting these?

……

NB: for Rwanda, expand understanding about current community data collection and follow-up

MPDSR CYCLE: COLLECTING INFORMATION

How is information about maternal and/or perinatal deaths collected and summarised for MPDSR?

……

……

Ask to see a copy of the forms used (obtain a copy or request to take a photograph, specifically capturing the sections where cause of death, modifiable factors, and solutions are recorded)

What documents are used to compile cases for mortality audit meetings?

- ☐ Patient charts / case notes
- ☐ Registers
- ☐ None
- ☐ Other, specify: ……..

In your opinion, do the medical records and registers capture the necessary information for assessment of cause of death and contributing factors for maternal and perinatal deaths?

……

……

Is your facility involved in any efforts to improve the organization of medical records and registers (e.g. standardization of records with minimum essential data points)?

……

……

What system is used to classify cause of death on the mortality audit forms?

- ☐ ICD-10
- ☐ Modified ICD-10
- ☐ None
- ☐ Other, specify: ……..

What system is used to classify modifiable factors or sub-standard care?

- ☐ 3 delays
- ☐ Root cause analysis
- ☐ Patient – Provider – Administrator
- ☐ None
- ☐ Other, specify: ……..

Are there any statistics related to MPDSR displayed somewhere (e.g. on a wall)?

☐ Yes ☐ No ☐ Unsure If yes, describe what indicators are included:

……

Are there official channels through which MPDSR findings are reported to different levels of management on a regular basis?

☐Yes ☐No ☐Unsure If yes, where are the findings sent?

……
(Obtain a copy or request to take a photograph of the reporting template from the health facility to other levels within the system)

MPDSR CYCLE: ANALYSING DATA AND PRESENTING RESULTS

How frequently do mortality audit meetings take place?……..

Who (positions/job titles) are invited to attend?……..

Is attendance mandatory? ☐Yes ☐No ☐Unsure

What is the title of the most senior staff member or administrator normally present?……

What is the title of the staff or administrator who runs the meetings?……

What is presented at the meetings (describe what happens at the meetings)?

……

……

Is every death reviewed or is a sample of deaths selected for discussion? ……..

If a sample of deaths of deaths is selected what criteria are used to decide which deaths get reviewed?

……

What trend data or statistics are routinely presented, if any? ……

Are meeting minutes taken? ☐Yes ☐No ☐Unsure
(If yes, obtain a copy or request to take a photograph of recent meeting minutes. Ensure that all personally identifiable information is removed or obscured)

MPDSR CYCLE: RECOMMENDING SOLUTIONS

How are modifiable factors linked to solutions in your MPDSR process?

……

……

How does the mortality review team identify and prioritize recommendations?

……

……

Is an action plan developed as part of the review process?

☐Yes ☐No ☐Unsure If yes, describe what the action plan entails:

……

MPDSR CYCLE: IMPLEMENTING CHANGES

Does the mortality review process ever result in a change to the cause of death as compared to the cause of death recorded in the facility records (e.g. vital statistics report, maternity register, maternity monthly report, etc.)?

☐Yes ☐No ☐Unsure If yes, how is this reconciled?

……

Are individuals assigned to follow up on specific recommendations?

☐Yes ☐No ☐Unsure If yes, how is this assigned?

……

What is the process for reporting back to the review team on the status of recommendations?

……

Is there a written documentation system for tracking the follow-up on specific recommendations?

☐Yes ☐No ☐Unsure (*If yes, obtain a copy or request to take a photograph*)

In your opinion, what are some barriers to ensuring recommendations are implemented following mortality review (e.g. completing the "Response" portion of MPDSR)?

- ☐ MOH leadership/support
- ☐ Facility leadership/support
- ☐ District leadership/support
- ☐ Lack of communication across levels
- ☐ Inadequate referral system
- ☐ Availability of essential commodities
- ☐ Availability of qualified personnel
- ☐ Availability of personnel with necessary up to date clinical competencies
- ☐ Availability of resources/finances
- ☐ Lack of community engagement
- ☐ Harmful local practices
- ☐ Other (describe) ……

Do you regularly link MPDSR to any other quality improvement activities in your facility?

……

Are success stories communicated? ☐ Yes ☐ No ☐ Unsure

If yes, how: ……

Are the recommendations from facility-based death reviews fed back to the community in any way?

……

AVOIDING BLAME AND ENSURING CONFIDENTIALITY

How do you ensure staff protection during the mortality review process?

……

Are the names of individual staff members included in audit reports?

☐ Yes ☐ No ☐ Unsure If yes, please describe:

……

Is there any connection to professional disciplinary action and the MPDSR system?

☐ Yes ☐ No ☐ Unsure If yes, please describe:

……

Do you see any risks associated with the M/PDSR process?

☐Yes ☐No ☐Unsure If yes, please describe:

…….

CASE STUDY QUESTIONS

What do you think is working well in your facility regarding MPDSR? What were the main factors that facilitated implementation of MPDSR in your facility?

…….

…….

What are / were some of the barriers / obstacles to the implementation of MPDSR?

…….

…….

What changes would be most helpful to improve the utility of MPDSR in your facility?

…….

…….

Can you tell us about a time where the recommendations made during the mortality audit process resulted in a change in how care was provided?

…….

…….

…….

Approximately how much time (hours) does the MPDSR committee spend per month on all activities related to MPDSR in your facility?

…….

Sometimes mortality audit can be a demoralising activity for staff. How do you maintain morale in meetings?

…….

…….

In your view how useful is MPDSR for improving the quality of care and health outcomes for women and newborns in your facility?

…….

…….

ASSESSOR'S GENERAL OBSERVATIONS AND IMPRESSIONS

Impressions regarding the intensity of involvement of facility senior management in conducting MPDSR

- ☐ A lot of involvement and/or support (moral, material, etc)
- ☐ Some involvement and/or support (moral, material, etc)
- ☐ Neutrality / Little support
- ☐ Resistance

Comments: ……

Impressions of the quality of data captured in MPDSR summary forms

- ☐ Excellent
- ☐ Average
- ☐ Poor

Comments: ……

Impressions of the quality of recommendations contained in the review meeting notes

- ☐ Excellent
- ☐ Average
- ☐ Poor

Comments: ……

Impressions of the quality of follow up actions

- ☐ Excellent
- ☐ Average
- ☐ Poor

Comments: ……

Other comments and observations

……

……

……

……

……

……

COMMENTS FOR FACILITY (FOR IMMEDIATE FEEDBACK)

GENERAL IMPRESSIONS OF MONITOR/ASSESSOR

……

……

……

……

RECOMMENDATIONS FOR LOCAL CONSIDERATION

……

……

……

……

……

IDEAS FOR POLICY MAKERS AND OTHER LEVELS OF MANAGEMENT

……

……

……

……

……

……

NAME OF ASSESSOR SIGNATURE DATE

Appendix B: MCSP MPDSR Implementation Scoring Scheme for Facilities

Implementation construct	Progress marker	Instrument items
1. Creating awareness (2 points maximum)	Number and type of (senior) managers involved in implementation process (in relation to size of facility)	Special persons who take specific effort in promoting death reviews including management, professionals, driving forces (contact person, meeting coordinator, other champion) 1 point
		Clear leader(s) involved in establishing and championing death reviews (past or future) 1 point
2. Adopting the concept (2 points maximum)	Decision to implement MPDSR	Knowledge of the original decision to implement death reviews. If death reviews not yet implemented: has a formal decision been taken? 1 point
	Steering committee	Death review leadership team or steering committee established 1 point
3. Taking ownership (6 points maximum)	Tools available	Data collection form available 1 point
		Tools include cause of death 1 point
		Tools include modifiable factors 1 point
		Tools include place to follow up on actions taken 1 point
	Meeting process established	Ability to describe or show documentation of meeting process 0.5 points
		Staff meeting conduct agreement available 0.5 points
	Resources allocated	Allocations from the hospital budget to establish death reviews 0.5 points
		Allocations from other partners to establish death reviews 0.5 points

Implementation construct	Progress marker	Instrument items
4. Evidence of practice *(7 points maximum)*	Evidence of MPDSR meetings	Meeting minutes available 1 point
		Meeting minutes include action items 1 point
		Meeting minutes include follow up from previous meetings 1 point
		Meeting notes respect confidentially or staff and patients 1 point
	Orientation for new staff	Face-to-face of written orientation to death reviews 1 point
	MPDSR data use	Data trends displayed or shared 2 points
5. Evidence or routine integration *(7 points maximum)*	Further evidence of practice	Evidence of change based on recommendation arising from death review findings 3 points
	Evidence of routine MPDSR practice	Death review meeting are held at stated interval (e.g., weekly, monthly) 1 point
	Multi-disciplinary meetings	Death review meetings include staff from different disciplines, management 2 points
	Community linkages	Evidence of reporting findings and progress to community 1 points
	Documented results	Facility records show ongoing death review meetings for at least 1 year 2 points
	Evidence of staff development	Plan in place to ensure all staff receive MPDSR training 1 point
		Evidence that staff have received MPDSR training in the past year 1 point
	Score on the first 5 constructs (divided by 12)	Score on the first 5 constructs will influence sustainability 2 points
Maximize Total Score		30 points

Appendix C: Ethical Approval Certificate

THE UNITED REPUBLIC OF TANZANIA

National Institute for Medical Research
3 Barack Obama Drive
P.O. Box 9653
11101 Dar es Salaam
Tel: 255 22 2121400
Fax: 255 22 2121360
E-mail: headquarters@nimr.or.tz

Ministry of Health, Community Development, Gender, Elderly & Children
6 Samora Machel Avenue
P.O. Box 9083
11478 Dar es Salaam
Tel: 255 22 2120262-7
Fax: 255 22 2110986

NIMR/HQ/R.8a/Vol. IX/2421

20th February 2017

Dr. Kusum Thapa
C/o Dr. Bruno F. Sunguya
Victoria Area, New Bagamoyo Road
Plot No. 72, Block 45B
P.O. Box 9170
Dar Es salaam

CLEARANCE CERTIFICATE FOR CONDUCTING MEDICAL RESEARCH IN TANZANIA

This is to certify that the research entitled: Regional review of facility-level maternal and perinatal death surveillance and response (MPDSR) systems in 4 Sub-Saharan African countries (Thapa K. *et al)* has been granted ethical clearance to be conducted in Tanzania.

The principal investigator of the study must ensure that the following conditions are fulfilled:

1. A progress report is submitted to the Ministry of Health, Community Development, Gender, Elderly & Children and the National Institute for Medical Research, Regional and District Medical Officers after every six months.
2. Permission to publish the results is obtained from the National Institute for Medical Research.
3. Copies of final publications are made available to the Ministry of Health, Community Development, Gender, Elderly & Children and the National Institute for Medical Research.
4. Any researcher, who contravenes or fails to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III Section 10(2).
5. Sites: Kagera and Mara regions.

Approval is for one year: 4th March 2017 to 3rd March 2018.

Name: Prof. Yunus Daud Mgaya

Signature
CHAIRPERSON
MEDICAL RESEARCH
COORDINATING COMMITTEE

Name: Prof. Muhammad Bakari Kambi

Signature
CHIEF MEDICAL OFFICER
MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER, ELDERLY & CHILDREN

CC: RMOs of Kagera and Mara regions.
DMOs/DEDs of selected districts.

Appendix D: Consent Forms, English and Swahili

Consent for Key Informant

Regional Review of Facility-Level Maternal and Perinatal Death Surveillance and Response

Good day. My name is _____. I am representing the Maternal and Child Survival Program (MCSP). We are conducting a study of health facilities which are or previously have implemented maternal and perinatal death reviews with the goal of finding ways to improve services. This facility was selected to participate in this study in consultation with the Ministry of Health, Community Development, Gender, Elderly and Children.

We are conducting interviews with health facility staff and observing the documentation used for maternal and perinatal death review to learn more about how reviews are done at this facility. We would like to ask you to participate in an interview since you participate in these reviews. Your decision to participate is completely voluntary, and even if you agree to participate, you may withdraw at any time. There will not be any penalty if you decide not to participate or withdraw from this interview.
Information from this interview is confidential. We will not record the names of any patients during this assessment. Your name, and your facility's name, will not be included in the final report. There will be no direct benefit to you from participating in this study but we expect the findings will inform activities to improve services and care for women and babies overall. We are asking for your help to ensure that the information we collect is accurate.

Call Dr. **Bruno Sunguya +255 685 217** you have questions or complaints about being in this study. If you have any questions about your rights as a research participant, or if you think you have not been treated fairly, you may call National Health Research Ethics Committee of NIMR IRB at **+ 255-22-2121400**

Do you have any questions about the study? Do we have your agreement to proceed?

☐ ☐

I understand the study aims and objectives, and have decided of my free will to be interviewed.

Name: _____ ☐☐ ☐☐ ☐☐☐☐

Signature/Thumb Print: _____ Day Month Year

Study Investigator/Person Obtaining Consent:

Name: _____ ☐☐ ☐☐ ☐☐☐☐

Signature/Thumb Print: _____ Day Month Year

FOMU YA RIDHAA-

Regional Review of Facility-Level Maternal and Perinatal Death Surveillance and Response

Habari. Jina langu ni_____. Niko hapa kwa niaba ya mradi wa Ustawi wa mama na mtoto (MCSP). Tunafanya utafiti katika vituo vya huduma za afya ambavyo vikitekeleza MPDSR kwa lengo la kutafuta njia za kuboresha huduma za afya. Kituo hiki kimechangilwa kushiriki kwa kushirikiana na Wizara ya Afya, Maendeleo ya Jamii, Jinsia , Wazee na Watoto.

Tunafanya usaili na wahuduma wa afya na kuangalia (observe) Nyaraka zilizotumika katika kufanya ukaguzi wa vifo vya uzazi vya akina mama na perinatal death ili kuweza kujifunza zaidi ni jinsi gani ukaguzi (reviews) huo unafanyika katika kituo hiki. Tunaomba ushiriki katika usaili huu kwa kuwa umekuwa unashiriki katika kufanya ukaguzi huo (reviews)

Uamauzi wako wa kushiriki ni wa hiari, na iwapo utakubali kushiriki unaweza kuamua kusitisha ushiriki wako wakati wowote. Hakuna penalty faini iwapo utaamua kutokushiriki au kuamua kusitisha ushiriki wako katika usaili huu.

Taarifa za usaili huu ni za siri. Katika utafiti huu hatutaandika majina ya wagonjwa. Jina lako au jina la kituo hiki halitaandikwa mahali popote katika repoti ya mwisho ya utafiti huu.

Hakuna faida ya moja kwa moja ya kushiriki kwako katika uafiti huu, lakini tunategemea taarifa tutakazozipata katika utafiti huu kwa ujumla, zitasaidia kuboresha huduma za mama na mtoto. Tunakuomba usaidie kutupatia taarifa ambazo ni sahihi.

Iwapo una maswali au malalamiko yoyote kuhusu ushiriki wako katika utafiti huu, unaweza kumpigia **Dr. Bruno Sunguya** kwa simu namba **+255 685 217.** Iwapo una maswali kuhusu haki zako kama mshiriki wa utafiti huu unaweza kuwasiliana na Sekretariati ya Maadili ya Utafiti ya NIMR kwa simu namba **+ 255-22-2121400**

Je una swali lolote ungependa kuuliza kuhusu utafiti huu.

Je upo tayari kushiriki/naweza kuendelea na usaili. Ndiyo ☐ Hapana ☐

Nimeelewa madhumuni na malengo ya utafiti huu na nimekubali kwa utashi wangu kufanyiwa usaili.

Jina: _____ ☐☐☐

Sahihi: _____ Siku Mwezi Mwaka

Mtafiti/Anayeomba ridhaa:

Jina: _____ ☐☐☐

Sahihi: _____ Siku Mwezi Mwaka