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# Assessment of Maternal and Perinatal Death Surveillance and Response Implementation in Rwanda

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# Abbreviations

| | |
|---|---|
| **CHW** | community health worker |
| **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* |
| **MCSP** | Maternal and Child Survival Program |
| **MDA** | maternal death audit |
| **MDSR** | maternal death surveillance and response |
| **MOH** | Ministry of Health |
| **MPDSR** | maternal and perinatal death surveillance and response |
| **PDSR** | perinatal death surveillance and response |
| **QI** | quality improvement |
| **SISCOM** | système d'information sanitaire communautaire |
| **SDG** | sustainable development goal |
| **WHO** | World Health Organization |

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# Executive Summary

## Background

In 2015, of the nearly 362,600 babies born in Rwanda, 5,900 were stillborn and 6,300 died in their first month of life.[1,2] In the same period, 1,100 women died during pregnancy or from childbirth-related causes.[3]

With all eyes focused on achieving the Sustainable Development Goals (SDGs), Rwanda 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 Rwandan Ministry of Health (MOH) and the United States Agency for International Development's Maternal and Child Survival Program (MCSP) aimed to document experiences in implementing maternal death review, perinatal death review, and/or integrated maternal and perinatal death surveillance and response (MPDSR) processes in Rwanda. Rwanda was one of four countries selected as part of a multicountry assessment of MPDSR processes at the district level. The assessment 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.

## Methodology

The assessment gathered data through document reviews with facility staff and facility visits to capture the current implementation status of mortality audit in a sample of sites. Data collection took place in December 2016. The assessment team purposefully selected 13 facilities across four provinces and the City of Kigali: 10 hospitals and three health centres. Trained data collectors conducted semi-structured, in-person interviews with maternal death surveillance and response (MDSR) focal persons. A score of 0–30 was assigned for each facility surveyed, using an adapted tool, to determine the stage of MPDSR implementation.[4,5]

## Findings

All of the facilities assessed demonstrated evidence of MPDSR practice and a high level of awareness of the national guidelines for maternal mortality audit. The facilities scored between 11.75 and 24.21 of the possible 30 points using the MPDSR implementation status scoring methodology.

All of the facilities and stakeholders were aware of the importance of collecting mortality data and notifying authorities regarding maternal and perinatal deaths, and most had a systematic practice of reviewing the causes and avoidable factors related to maternal deaths and assigning recommendations. Most facilities were identifying deaths well, especially maternal deaths. Hospital respondents used a variety of sources for identifying maternal and perinatal deaths, primarily labour and delivery registers, postnatal registers, and neonatal registers. However, most facility-level respondents noted that their facility does not document maternal and/or perinatal deaths in the community.

All MPDSR committees use standardised notification and audit forms. Many data sources are used to compile cases for mortality meetings with the most commonly used documents being the patient charts, case notes, and registers. Five facilities noted that medical records and registers are sometimes incomplete, making it difficult to assess cause of death and contributing factors.

The assessment also revealed variations in analysis of data and presentation of trends. Although most facilities complete action plans as part of the audit process, the implementation of the action plans and recommendations varied in level of completeness and specificity. Document reviews revealed that the set action plans were not always clearly linked to contributing factors and cause of death. Implementation of recommendations from audit meetings is a critical step in the audit cycle. Nine facilities noted that individuals are typically assigned to follow up on recommendations developed during the audit meetings. The MDSR committee chair typically assigns the person responsible for follow-up, and three facility respondents stated that expertise or specialty determines assignment. Most of the respondents were unable to describe a formal

process for follow-up of recommendations apart from reviewing minutes at the next mortality audit meeting. Although the facilities noted some barriers to implementation of recommendations, including staff motivation and heavy workload, the facility-level stakeholders were able to provide some examples of changes that have resulted from recommendations.

In addition, though facility respondents cited examples of the connection of recommendations to changes resulting from MPDSR, the systematic review of recommendations was not as widespread. There was no process for formally documenting and reporting success stories, even though these stories of change resulting from audit findings could motivate staff. Five respondents noted success stories are shared during staff meetings.

## Discussion and Recommendations

This assessment aimed to measure and document the implementation and practice of MPDSR in Rwanda. As supported by the assessment findings, the nationwide initiative to conduct death audits, the national MDSR guideline, and nationwide use of MDSR and perinatal death surveillance and response (PDSR) tools for all cases of maternal and perinatal deaths in health facilities demonstrate strong political will to improve maternal and newborn health. Facility-level MDSR committees are responsible for auditing both maternal and perinatal deaths, though national guidelines for only maternal deaths exist. To strengthen the MDSR and PDSR systems, the MOH should develop national guidelines and tools that integrate the two. Guidelines should include clear direction on standards for classifying maternal and perinatal deaths, such as The WHO Application of ICD-10 [International Classification of Diseases, 10th revision] to Deaths during Pregnancy, Childbirth and the Puerperium (ICD-MM) and The WHO Application of ICD-10 to Deaths during the Perinatal Period (ICD-PM). The guidelines should also include clear guidance on the timeline for reporting perinatal deaths as well as how to purposefully select perinatal death cases to ensure that facilities can learn from the causes of perinatal deaths.

In order to ensure identification of all community deaths, national-, district-, and facility-level managers should reinforce processes for reviewing community deaths as well as for sharing and tracking recommendations with community health workers (CHWs) and at health centres and hospitals.

Accurate assignment of cause of death is important to identifying avoidable factors that contribute to maternal and perinatal deaths and developing appropriate responses. It requires complete patient charts to ensure that audit committees have the information they need to analyse and determine the cause of death as well as contributing factors. Despite wide use of the checklist cause-of-death classification system, the assessment revealed that facility staff may need support in accurately completing patient charts and records. National- and district-level managers should also provide audit committees with additional training and supervision focused on strengthening the quality of reviews. The findings from the facilities assessed in Rwanda showed that audit committees and health facilities should be encouraged to begin with simple recommendations within their immediate control before moving to complex recommendations and to develop formal processes for tracking and following up on the status of implementation. Greater effort should be made to integrate the work of quality improvement (QI) and MPDSR committees to help facilitate implementation of recommendations aimed at improving the quality of care provided to mothers and newborns.

## Conclusion

MPDSR in Rwanda can be implemented routinely and countrywide with high coverage of the maternal and perinatal deaths audited. However, the MOH should harmonise MDSR and PDSR within the Rwandan health system, with close follow-up of its implementation. The implementation of recommendations has the potential to reduce maternal and perinatal mortality, but requires completion and follow-up of action plans. This review found limited skills and knowledge among health providers to conduct maternal and perinatal death audits, including correct assignment and classification of deaths. Facility-level MPDSR committees need supportive supervision as well as intensive and repeated training to demonstrate the possible role of the health provider and of service delivery at the health facility level in reducing maternal and perinatal deaths

# Introduction

## Background

In 2015, of the nearly 362,600 babies born in Rwanda, 5,900 were stillborn and 6,300 died in their first month of life.[1,2] In the same period, 1,100 women died during pregnancy or from childbirth-related causes.[3] Although for many years Rwanda has been committed to improving outcomes for women and babies, the nation now aims to accelerate efforts and achieve the targets set out in the SDGs for ending preventable maternal and newborn deaths.

The maternal mortality ratio in Rwanda declined from 476/100,000 in 2010 to 210/100,000 in 2015.[6] The latest national estimates found that 72% of maternal deaths occurred in district hospitals, 7% at health centres, and 21% at referral hospitals.[7] In 45% of these cases, maternal death occurred in the postpartum period. Seventy percent of facility-based maternal deaths that were audited were due to direct causes. Postpartum haemorrhage was the leading direct cause (23%), followed by obstructed labour (12%). Indirect causes accounted for 26% of maternal deaths, with malaria as the leading cause (8%).[7] The remaining 4% were due to unknown causes. The neonatal mortality rate in Rwanda has also decreased, from 27/1,000 in 2010 to 20/1,000 in 2015.[8] According to United Nations estimates in 2015, the main causes of neonatal death in Rwanda were preterm birth complications (28%), intrapartum-related complications (33%), and neonatal infections, including sepsis and pneumonia (25%).[9] The time of labour and day of birth is when 40% of all stillbirths and neonatal deaths occur; an estimated 73% of all neonatal deaths occur in the first week of life.[10]

Accurate information about causes of death is needed to inform efforts to end preventable deaths. In 2004, the World Health Organization (WHO) published *Beyond the Numbers*,[11] which recommended that all countries that had not established maternal death audit (MDA) systems should do so without further delay to help reduce maternal deaths. In 2012, the United Nations Commission on the Status of Women passed a resolution calling for the elimination of preventable maternal mortality.[12] 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 MDSR systems.[13] In 2016, WHO released guidance on conducting mortality audits for stillbirths and neonatal deaths alongside tools for adaptation at national, subnational, or facility level.[14] With the adoption of the SDGs in September 2015,[15] and in line with the *Global Strategy for Women's, Children's and Adolescents' Health 2016–2030*,[16] global leaders committed to achieving an ambitious set of wide-ranging targets. MPDSR systems will be an important component of strategies to achieve the SDGs, which include targets to significantly decrease maternal mortality and preventable newborn and child deaths by 2030.

A vital component of any elimination strategy is a surveillance system that can track the number of deaths and provide information about cause of death, underlying contributing factors, and actions to address contributing factors to prevent future preventable deaths. One of the key actions recommended in the WHO and UNICEF's 2014 *Every Newborn: An Action Plan*[17] and WHO's 2015 *Strategies toward Ending Preventable Maternal Mortality*[18] is the institutionalisation of MPDSR 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—particularly for maternal death notification—in many countries.[19] In some countries, MPDSR systems have been designed and/or are being implemented as standalone 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 MDSR status through its MDSR technical working group, and has recently completed a global survey of national-level MDSR policy and high-level implementation status. Additionally, the MDSR Action Network supports sharing knowledge and understanding of MDSR.[20] In line with this vision, the Rwandan MOH, in collaboration with the United States Agency for International Development's MCSP, aimed to document experiences in implementing

maternal death review, perinatal death review, and/or integrated MPDSR processes and identify factors that have affected the uptake and sustainability of counting and reviewing maternal and perinatal deaths to improve the quality of care and prevent future deaths.

## Maternal and Perinatal Death Surveillance and Response Terminology

A mortality audit is the process of capturing information on the number and causes of maternal deaths and neonatal deaths and stillbirths and then identifying specific cases for 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. It is an established mechanism to examine the circumstances surrounding each death, including any breakdowns in care from the household to the health facility that may have been preventable. MPDSR is an important continuous action cycle for QI that can link data from the local to the national level through a six-step audit cycle (Figure 1). The definition and classification of maternal deaths, stillbirths, and neonatal deaths is the starting point for any MPDSR system (Table 1).

**Figure 1. Six-step audit cycle for maternal and perinatal death surveillance and response**

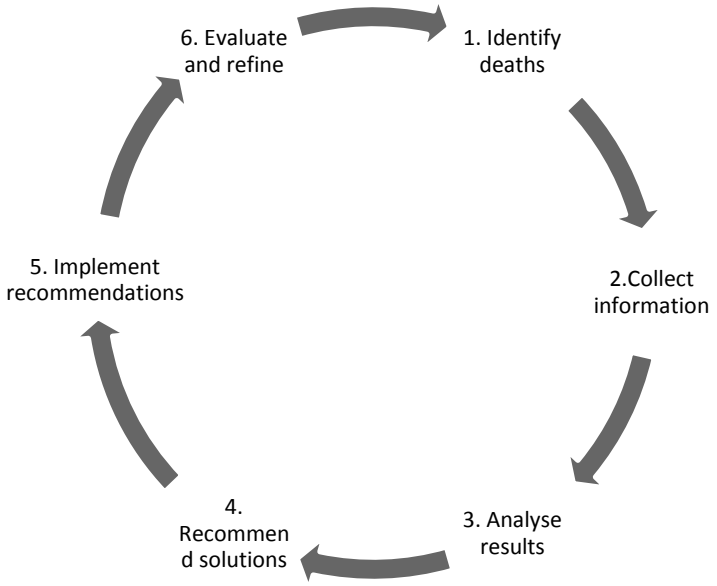


**Table 1. Terminology related to maternal and perinatal death**

| Indicator | Numerator | Denominator |
|---|---|---|
| **Maternal mortality ratio** (expressed as maternal deaths per 100,000 live births) | The 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**[a] (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**[b] (expressed as perinatal deaths per 1,000 total births) | Number of foetal deaths per year 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 per year (live and stillborn) |

*Source:* World Health Organization (WHO).[14]
a. Rwanda's health management information system considers early foetal death to be a foetus born after 22 weeks completed gestation or weighing > 500 g.
b. Early neonatal deaths are also included in perinatal deaths.

## Aims 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 Rwanda. Specific objectives included to:

- Systematically measure the scope and institutionalisation of MPDSR implementation and describe barriers and facilitators to sustainable practice
- Describe outstanding implementation research questions and gaps within and across countries
- Compile and review MPDSR materials

## MPDSR in Rwanda

### The National Health Care System

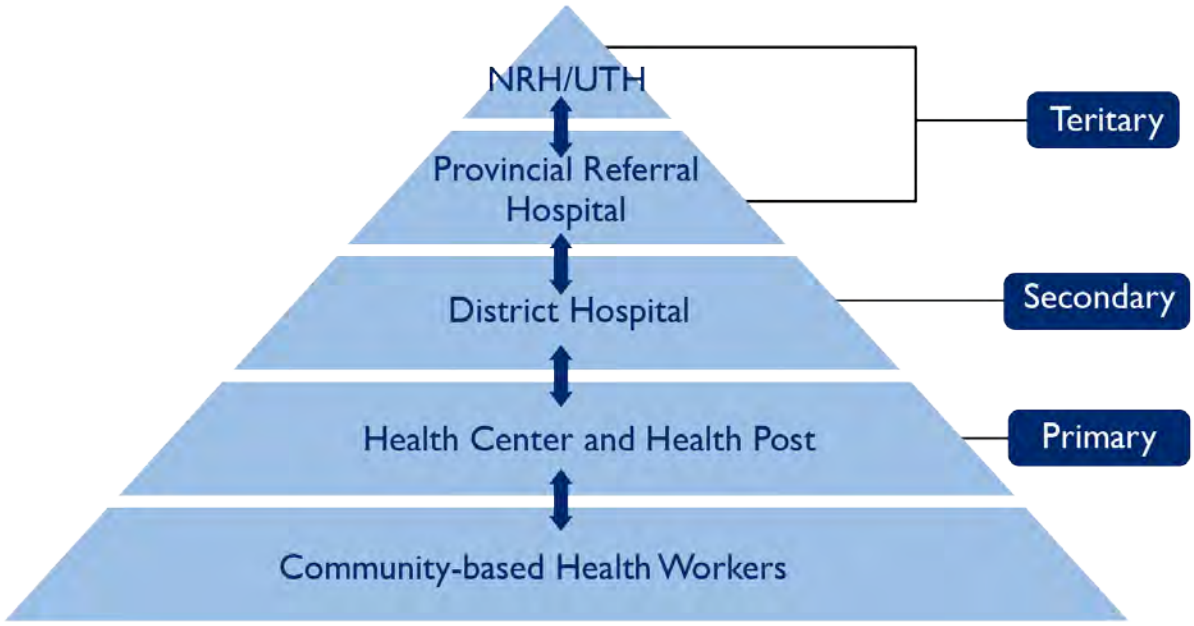
Rwanda's health system is decentralised and includes multiple levels from the community to national hospitals (Figure 2). The public sector, which was the focus of this assessment, is structured along three levels: central, provincial, and district. The health system includes health posts, health centres, and teaching, provincial, and national referral hospitals.

The central level or MOH develops health policy and manages the national referral facilities. The current Health Sector Strategic Plan 2012–2018 has prioritised reduction of maternal and perinatal deaths.[21] The national referral and teaching hospitals offer the highest level of care in Rwanda, providing specialised care,

conducting research, training medical staff, and serving as referral hospitals for the provincial and district hospitals. Provincial hospitals provide tertiary care and serve as referral hospitals for district hospitals.

At the district level, there are administrative offices, district hospitals, and health centres. The district officers plan and manage district-level health activities. District hospitals focus on preventive care, family planning, curative care, and management, and health centres oversee the health posts, offer promotional activities, and provide preventive and curative services. Each health centre also manages its own personnel, supplies, and financial resources and trains its staff. Health posts, located far from health centres, offer a reduced package of services. CHWs provide a vital link between community members and the health centres and hospitals. These health workers help identify the health care needs within the community and extend the reach of the health centre by supporting disease prevention, treatment, and case finding.

**Figure 2. Levels of services provided within the public health care system**




*Source:* Republic of Rwanda Ministry of Health.[22]
*Abbreviations:* NRH, national referral hospital; UTH, university teaching hospital.

## History of MPDSR in Rwanda

MDA committees were established in Rwanda in 2008, and hospitals began conducting facility-based MDA in 2009.[7] MDA approaches included audits of facility-based deaths, verbal autopsy,[23] and confidential inquiry into maternal deaths. Standard tools for these three approaches were adapted to the local context and health providers from all hospitals received training.[24] Neonatal death and stillbirth audits began in 2010 and 2015, respectively. At the time of the assessment, MDA had standard audit forms with tools available depending on the approach used, whereas stillbirth and neonatal audits only had standard forms.

In 2014, after the release of the WHO MDSR technical guidance,[13] Rwanda transitioned to MDSR, formed a national MDSR committee, published the National Technical Guideline for MDSR, distributed notification and review forms, and organised trainings for health providers (2015) including physicians, obstetricians, paediatricians, and midwives from teaching, referral, provincial, and district hospitals. District hospital providers trained staff from health centres. Rwanda is currently in the process of revising the national MDSR technical guidelines to incorporate neonatal deaths and stillbirths.

# Methodology

The assessment employed qualitative data collection methods including a desktop review of policy, guidelines, and tools. Semi-structured interviews with members of facility-level MDSR committees were undertaken. The assessment consisted of facility visits to capture the current implementation status of mortality audit in a sample of sites. Using an adapted standardised tool (Appendix A), a systematic score based on observation, record review, and key informant interviews provided a comparable metric on MPDSR implementation scoring status across facilities, with feedback on the operation of the system as a whole.

## Country Selection

Rwanda was one of four countries selected as part of a multicountry assessment of MPDSR processes. The selection criteria included existing national MPDSR policy (or any form of maternal/perinatal audit policy), a recent or planned health facility assessment, and MCSP project support of MPDSR.

## Site Selection

The assessment team purposively sampled facilities and the inclusion criteria included facilities that currently or previously had experience conducting maternal and/or perinatal death reviews and/or implementing formal MPDSR processes or policies. The aim was to identify facilities operating throughout the country at various levels. In all, the team assessed 13 health facilities across four provinces and the City of Kigali: 10 hospitals and three health centres.

## Data Collection

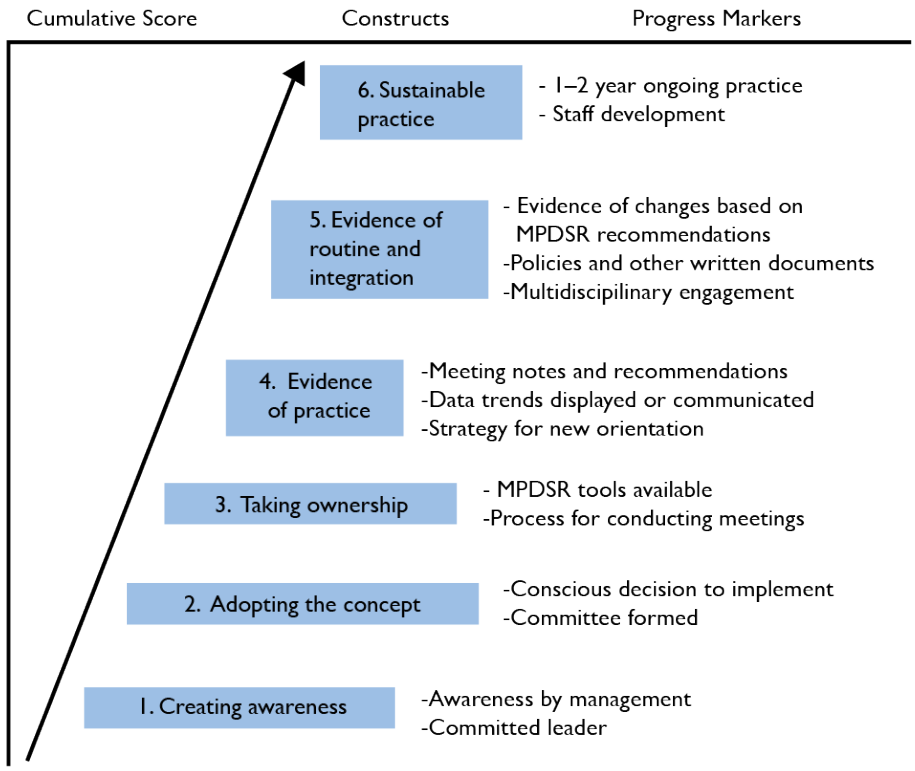
Data collection took place in December 2016. A team of local experts served as data collectors (see Acknowledgements for full list of assessors), training on the assessment methodology and use of the monitoring tools. Facility assessment visits consisted of a semi-structured in-person interview of 64 questions and document review with a facility-based staff member currently involved in the mortality audit process (Appendix B).

## Scoring and Analysis

Facilities received a score of up to 30 based on the key informant interviews and facility observations. The scoring scale represents three phases (Figure 3): pre-implementation, implementation, and institutionalisation. Results were interpreted by means of a model with six stages of change, and facilities received a score out of 30 (Table 2). A facility score of less than 10 demonstrated that a facility was in the 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 institutionalisation of MPDSR through evidence of routine practice and integration; scores higher than 24 showed sustainable MPDSR practice. These tools and scoring methodology were adapted from a study of kangaroo mother care implementation progress developed and tested by the South African Medical Research Council's Unit for Maternal and Infant Health Care Strategies.[4,5]

This scoring method provides a systematic "snapshot" of the MPDSR implementation status or stage of implementation at the facility. This progress-monitoring model allows for the quantification of progress that leads to a cumulative implementation progress score for a health facility. However, the model works under the notion that progress is not merely linear, but also allows for moving forwards and backwards; in other words, one step does not need to be fully completed before continuing with the next step, and hospitals can also regress in their implementation practices (additional details in Appendix A). Scoring does not assess the quality of MPDSR on its own but is, rather, a tool to complement the qualitative assessment analysis in relation to the stage of implementation progress and practice.

**Figure 3. Implementation progress scoring schematic**




Adapted with permission[4,5]

**Table 2. Maternal and perinatal death surveillance and response (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 |
| 24–30 | Towards sustainable practice |

Adapted with permission[4,5]

## Ethical Considerations

The Rwanda National Ethics Committee (No. 874/RNEC/2016) approved the study protocol and tools (Appendix C). The study also was determined to be non–human subjects research by the Johns Hopkins Bloomberg School of Public Health institutional review board.

The data collected in this assessment did not include any personal identifiers 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 assessors anticipate any risks associated with participation. Forms, registers, and meeting minutes collected did not include any identifying information of cases discussed through the MPDSR process.

Before key informant interviews, interviewers obtained oral consent by reading an oral consent script and asking the participant for a response (Appendix D).

# Findings

## Stage of MPDSR Implementation

All of the facilities demonstrated evidence of MPDSR practice and a high level of awareness of the national guidelines for maternal and perinatal mortality audit. All of the facilities and stakeholders were aware of the importance of collecting mortality data and notifying authorities regarding maternal and perinatal deaths, and most had a systematic practice of reviewing the causes—using the checklist provided on the form[24]—and avoidable factors related to maternal deaths and developing recommendations. Each of the 13 facilities assessed scored between 11.75 and 24.21 out of the possible 30 points using the MPDSR implementation status scoring methodology (Table 3). Though the scores do not indicate the quality of the audit process, they do indicate evidence of practice and, in most cases, an institutionalised system from which to strengthen the quality of practice. The number of deliveries by facility did not seem to affect the institutionalisation of MPDSR.

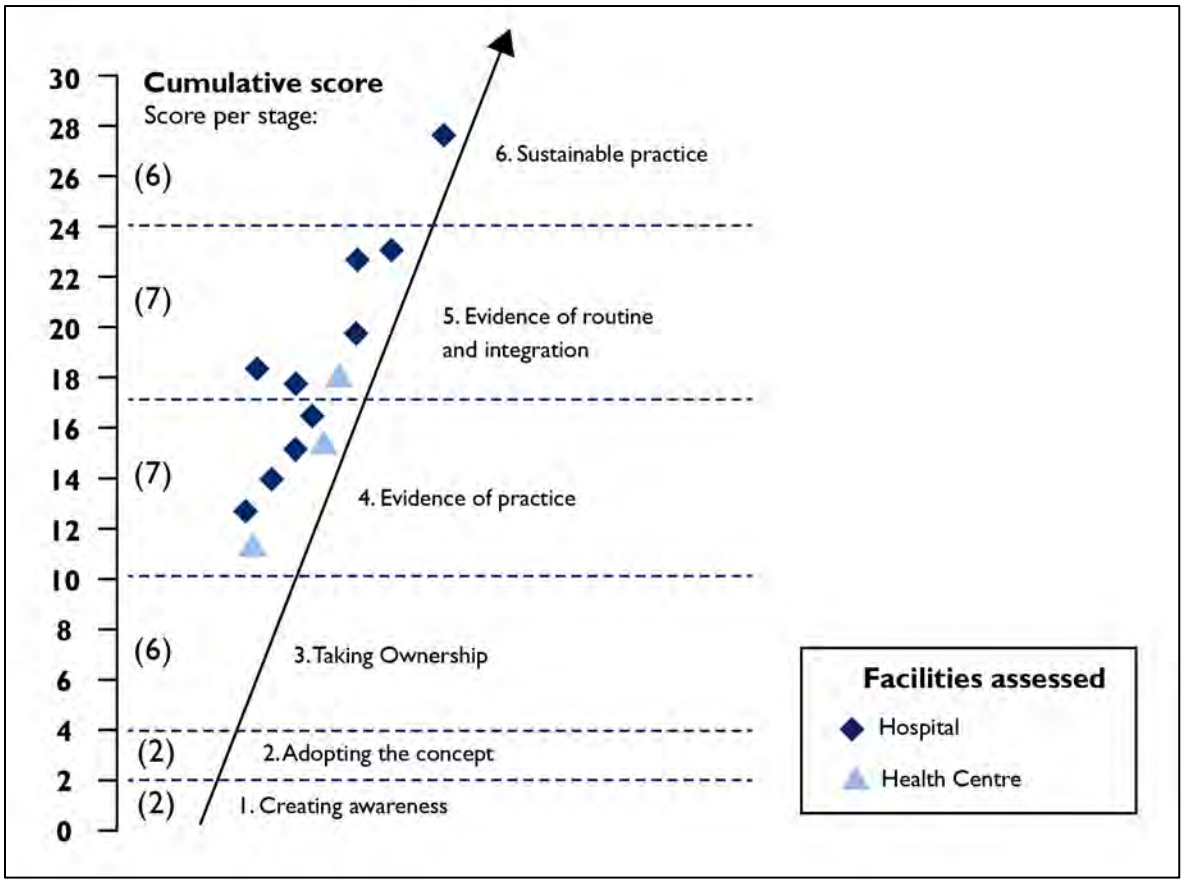
**Table 3. Facility score and stage of implementation**

| Code | Type | Births per month[a] | Level of implementation | Score (/30) |
|---|---|---|---|---|
| **A** | Hospital | 100–399 | Sustainable practice | 24.21 |
| **B** | Hospital | < 100 | Evidence of routine and integration | 22.54 |
| **C** | Hospital | 100–399 | Evidence of routine and integration | 22.00 |
| **D** | Hospital | 100–399 | Evidence of routine and integration | 19.33 |
| **E** | Health centre | < 100 | Evidence of routine and integration | 18.21 |
| **F** | Hospital | 100–399 | Evidence of routine and integration | 17.71 |
| **G** | Hospital | 100–399 | Evidence of routine and integration | 17.13 |
| **H** | Hospital | ≥ 400 | Evidence of practice | 16.63 |
| **I** | Hospital | 100–399 | Evidence of practice | 15.54 |
| **J** | Hospital | 100–399 | Evidence of practice | 13.54 |
| **K** | Health centre | < 100 | Evidence of practice | 13.54 |
| **L** | Hospital | 100–399 | Evidence of practice | 12.83 |
| **M** | Health centre | < 100 | Evidence of practice | 11.75 |

Average in 2016. Categories: < 100, 100–399, ≥ 400.

Figure 4 depicts the position of each health facility on the progress-monitoring scale. The mean facility score was 17.30. At the time of assessment, six facilities showed evidence of practice, six facilities demonstrated evidence of routine and integration, and one facility demonstrated sustainable practice. The results demonstrated that MPDSR is embedded in facilities across all levels of the health system in Rwanda; however, the scores do not provide specific information about the quality of MPDSR implementation. Though all facilities used standard forms and processes to conduct the reviews, reviewers noted that documentation and analysis of cause of death were often incomplete and/or inaccurate. Furthermore, document reviews reveal that the responses (action plans) were not clearly linked to contributing factors and cause of death. Interviews also showed weak evidence of follow-up and documentation of responses.

**Figure 4. Health facilities plotted by score**

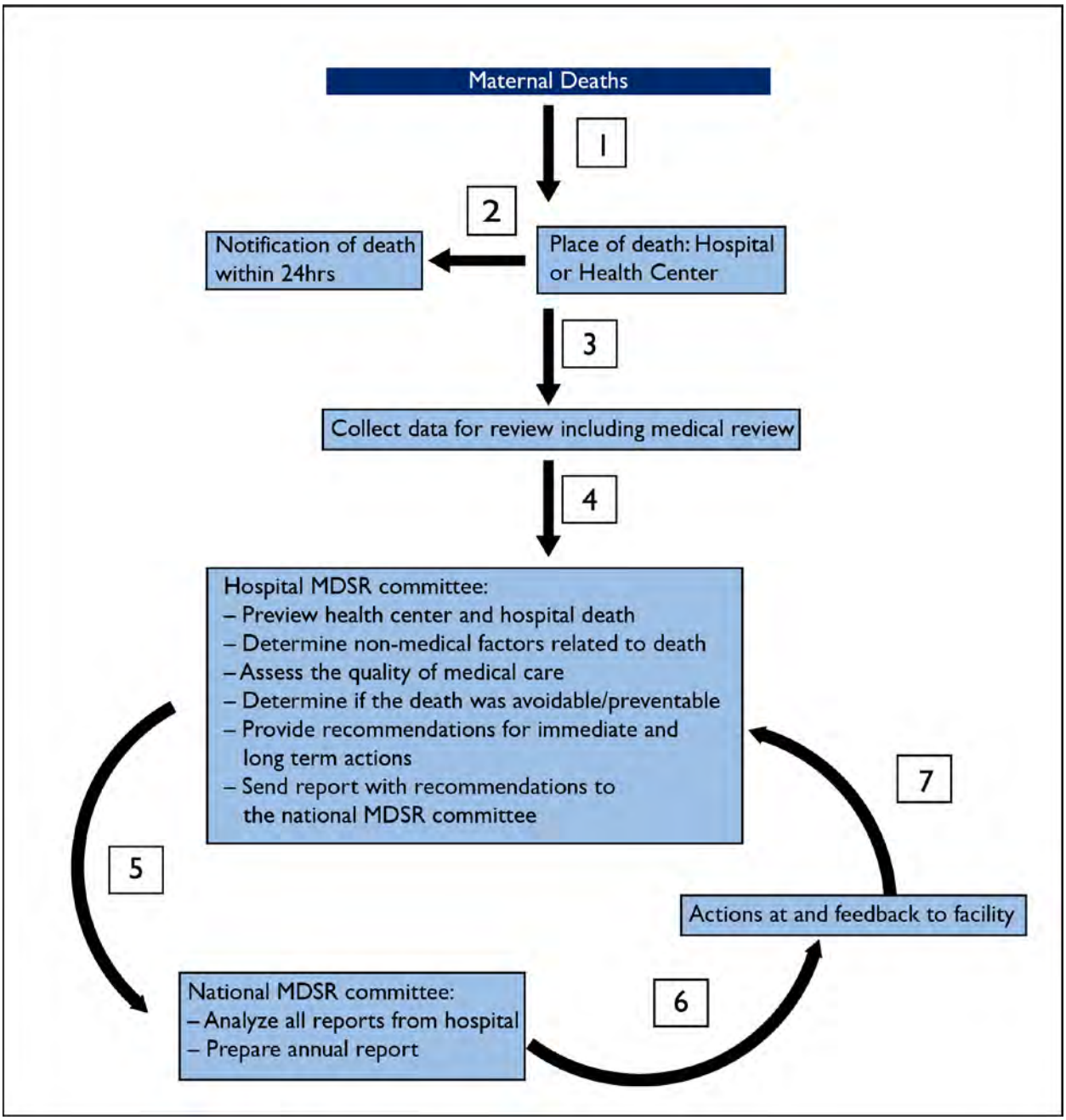



## MPDSR Practice

This section, which is structured according to the audit cycle (Figure 1), provides a summary of the results from the facility questionnaires including information on the history of implementation, resources provided for implementation, frequency of meetings, differences in approaches, information flow, community involvement, staff involved, the response to recommendations, and some of the benefits and challenges of conducting death reviews.

The national guideline currently in use is for MDSR only. Standardised notification and audit forms are available for maternal deaths,[24] as well as for stillbirths and neonatal and child deaths. All maternal deaths must be reported to the central level and investigated within 24 hours (Figure 5). In contrast, perinatal deaths do not have a reporting deadline and perinatal death audit meetings happen only when the audit committee is available.

**Figure 5. Current reporting and feedback mechanism of maternal death surveillance and response (MDSR) in Rwanda**




Adapted from: Republic of Rwanda Ministry of Health. 2015. Maternal Death Surveillance and Response: Technical Guidance.

## Step 1: Identify Deaths

The minimum aim of the MPDSR system is to identify all births, maternal deaths, stillbirths, and neonatal deaths that occur, whether in the labour ward, in other departments within a health facility, or in the community. The assessment found that procedures for identifying and notifying deaths is similar across all health facilities, with 92% of facilities reporting a formal system for reviewing maternal deaths. All facilities reported a formal system in place for reviewing perinatal deaths, yet when asked specifically about stillbirths, three facilities did not provide a response and two facilities reported no formal system, indicating that there may be misunderstanding on the definition of perinatal death or that not all perinatal deaths are identified. Table 4 shows the different ways that the audit committee identifies deaths. As shown in the table, the labour and delivery register is the most commonly used source for identifying deaths.

**Table 4. Sources for identifying facility deaths**

| Source | Percentage reporting |
|---|---|
| Labour and delivery register | 92 |
| Postnatal register | 54 |
| General adult inpatient ward register | 38 |
| Neonatal register | 38 |
| Ambulatory emergency care area register | 31 |
| Antenatal care register | 15 |
| Outpatient department register | 8 |

Though national guidelines indicate that the health centre MDSR committee is responsible for reviewing community deaths, providing recommendations, and sharing reports of recommendations to the hospital-level MDSR committee, only one of the three health centres indicated it documented community deaths. The health centre reported that when a death occurs in the community, the CHW in the village informs the CHW-in-charge at the health centre, who then communicates with the health centre manager. Members of the health centre MDSR committee and the CHW-in-charge travel to the community to perform a verbal autopsy. A data manager enters information into a database for the MOH, and the CHW-in-charge ensures the engagement of the community in taking appropriate measures to address avoidable factors identified from the verbal autopsy.

Two hospitals also described processes for documenting community deaths. One facility noted that hospital-level staff accompanied the health centre MDSR committee to review community-level deaths, and another facility reported that staff from the health centre level conduct a verbal autopsy and share their findings with district hospital administration.

## Step 2: Collect Information

When a maternal or perinatal death occurs in a health facility, the nurse on duty informs the health facility manager and the case is presented in the morning clinical meeting. The MDSR committee immediately convenes the meeting to fill out a standardised notification form provided by the MOH. For stillbirths and neonatal deaths at the health centres, the MDSR committee sends a notification form to the district hospital and the district hospital MDSR team completes another review form for national consolidation. The data manager enters the report in the electronic database for MOH (where applicable). At all levels, facilities used standardised review forms to capture information on cause of death and avoidable factors.

The process of collecting information for the maternal and perinatal mortality audit review meetings involves the review of the patient's charts/case notes, registers, transfer files, and ambulance records. Five facilities reported that medical records and registers are sometimes incomplete, making it difficult to assess cause of death and contributing factors. Seven of the 13 facilities were involved more generally in efforts to improve the organisation of medical records and registers, as recommended by the MOH. Efforts included using an electronic recording system, training staff on clinical documentation, and developing policies and procedures for patient assessments.

## Step 3: Analyse Results

> Effective communication is essential for ensuring accountability and the complete identification of maternal deaths. Now health care providers are more accountable and more prepared to deal with emergency and to work as a team in order to save the child and mother's lives.
>
> —Facility interview

Membership on MDSR committees ranged from four to 14 providers. Nearly all MDSR committees were interdisciplinary in their composition, including managers, paediatricians, obstetricians, and nurses or midwives. In addition, the committee invites the attending doctor or nurse at the time of death to the audit meeting. Across the health facilities assessed, the frequency of mortality audit meetings differed. Thirty-one percent of the facilities reported that they met weekly, though one of these facilities stated that, due to schedule conflicts, sometimes meetings only occurred twice a month. Three committees only met when a death occurred, while the remaining facilities either met once a month or within a given time frame after a death occurred. Attendance at the audit meeting was mandatory for committee members; however, members faced challenges in meeting this obligation because of their workload.

Facility respondents reported that every MPDSR review meeting started with a review of the last meeting's recommendations. All facilities reported reviewing every death during the meeting. The process of auditing a new case involved reading aloud the questions on the audit form and looking through the patient chart to find the information needed to complete the audit form.

After completing the background data and obstetric characteristics, the committee discussed the cause of death and whether the death was preventable. Assessors observed that some notification forms were not completed accurately, with some preventable deaths classified as unpreventable, signifying insufficient capacity of health workers to complete the forms. Based on these inaccurately completed forms, committees did not complete action plans for preventable cases when they should have. The facility MDSR committees did not use the ICD-10 to code deaths, and interviewed staff demonstrated limited knowledge of what the ICD-10 is and how to use it. Facility informants reported using the checklist system provided on the reporting form, which includes a space for distinguishing between direct and indirect obstetric causes of death. Audit committees can choose between one of seven direct obstetric causes: postpartum haemorrhage, obstructed labour, uterine rupture, pre-eclampsia/eclampsia, sepsis/peritonitis, abortion, or other. The chairperson of each MDSR committee at all levels of the review process verifies completeness and accuracy of the maternal death report and requests additional information, if necessary. Eleven facilities reported using the three-delays model* to classify modifiable factors; six facilities reported using root cause analysis.[25,26]

Nine facilities indicated that the review process could result in a change to the cause of death as compared to the cause of death recorded in the facility records. Facilities described different processes for reconciling any discrepancies: one facility reported that the head nurse makes a change in the register and the data manager changes the report; another stated that they contact the MOH by phone after making a change to the register.

> Not all the time the member of the death auditing committee will be available for an auditing meeting due to daily workload
>
> —Facility interview

WHO's MDSR technical guidance states that as data and trends are examined, patterns of problems will become evident.[13] Only three of the facilities reported sharing data and trends during the review meetings. Nine of the 13 facilities reported that they took minutes of the meetings, and five were able to show documentation upon request.

## Step 4: Recommend Solutions

In Rwanda, all stakeholders in the health system, including the MOH, should be able to access death audit findings and recommendations. In circumstances where a maternal death is determined to be unavoidable, report findings are shared with central level at the MOH. No recommendations are made in such a case.

*The three-delays model posits that maternal deaths result from delays in: 1) seeking care, 2) reaching care, and 3) receiving quality care.

In 10 of the facilities assessed, action plans to address modifiable factors were developed by the MDSR committee. Facility staff could provide examples of these action plans upon request; however, the action plans varied in level of completeness and detail. Facility staff members could provide examples of linking modifiable factors to solutions. For example, one facility reported that, in most cases, the women referred from hospitals and health centres are already in critical condition. As a result, the facility decided to pair less-experienced providers with more-experienced providers so that the less-experienced ones can build up their skills to manage such cases in the future. Another example was where a woman died at the hospital because of complications/tears that the health centre could not manage. In response, the hospital decided to assign midwives to accompany the ambulance traveling to the health centre. The midwife helped manage and stabilise the woman and also accompanied her to the hospital. Another facility reported an occasion when four women arrived at a labour and delivery ward where there were only three nurses and midwives working the night shift. The birth outcomes of the deliveries included one case of birth asphyxia, a death, and a case of foetal distress. Based on the audit review, the facility added more staff to the night shift and staff were required to complete rounds before each shift.

A respondent at another facility noted that the MPDSR process was an opportunity for health providers to learn and improve their skills and knowledge. The respondent also indicated that the number of neonatal deaths was decreasing. Citing the figures available at the health facility before implementation of MPDSR, the respondent stated that the facility used to record 13 to 15 neonatal deaths per month, but records after MPDSR implementation have shown 8 to 10 neonatal deaths per month.

## Step 5: Implement Recommendations

In approximately 38% of the hospitals, recommendations are prioritised based on those which can be achieved at that facility as well as which seem rapid and feasible to achieve. One hospital, which indicated that it did not prioritise recommendations, reported that the medical director wrote a letter to the MOH requesting support for implementing its recommendations.

> One of the most challenging parts of the review process is the formulation of appriorate recommendations, but this step is critical to successful MPDSR.
>
> —Facility interview

In nine of the 13 facilities, an individual is assigned to follow up on recommendations from the audit committee. Three facilities reported that the chair of the MDSR committee assigned the person responsible for follow-up, with assignment made based on expertise or specialty. Most of the facilities assessed (77%) were unable to describe a formal process for reporting back to the committee on the status of recommendations apart from reviewing minutes at the next mortality audit meeting.
Heavy workload resulting in low motivation emerged as a barrier to implementing MPDSR. Table 5 shows some reported barriers to ensuring implementation of recommendations; the most common barriers identified were lack of community engagement, availability of personnel with necessary up-to-date clinical competencies, and availability of qualified personnel. To improve MPDSR processes, facilities suggested the following changes: providing motivation and incentives for staff involved in MPDSR, increasing hiring and retention of qualified staff, and providing additional training for staff.

**Table 5. Barriers to implementing maternal and perinatal death surveillance and response**

| Barrier | Percentage reporting |
|---|---|
| Lack of community engagement | 54 |
| Availability of personnel with necessary up-to-date clinical competencies | 38 |
| Availability of qualified personnel | 31 |
| Facility leadership/support | 23 |
| District leadership/support | 23 |
| Lack of communication across levels | 23 |
| Inadequate referral system | 15 |
| Availability of resources/finances | 15 |
| Availability of essential commodities | 8 |
| Harmful local practices | 8 |

More than half of the facilities (62%) reported that they linked MPDSR to QI activities within the facilities. One facility noted that the MDSR committee attempted to work with the QI committee on quality-related recommendations. Another stated that most of the audit committee's recommendations involve the QI team in the implementation process.

In Rwanda, all stakeholders in the health system, including the MOH, should have access to findings from the death audit and recommendations. Although eight facilities noted they communicated success stories, none had a process for formally documenting and reporting success stories. Five facilities reported sharing success stories during staff meetings but not through a formal or uniform system. In terms of feeding back recommendations from the facility-based death reviews to the community, only four of the facilities assessed reported doing this. Instead, recommendations to the community were typically shared with the CHW to disseminate to the community.

## Step 6: Evaluate and Refine

> The effectiveness of the death auditing committee and implementation of the recommendations depends on the close follow-up of the clinical director who is in charge of the program.
>
> —Facility interview

The objective of MPDSR is not to punish or take legal action against staff who attend to the patient; rather, it is a process to find the cause of the death and identify modifiable causes, that can be addressed in the future. Of the 13 facilities assessed, one reported that the names of individual staff members were included in audit reports. Three respondents mentioned specifically that the committee strives to ensure confidentiality. However, the assessment also revealed that the attending provider when the death occurred was often present at the review meeting and that committees sometimes discussed staff identity during the meetings. One facility also noted that staff might be subject to disciplinary action based on the findings from the death review. Only two facilities reported any potential risks associated with the MPDSR process; one person noted that it is possible that committee members discuss review meetings with non–committee members.

The process of reporting back to the review committee on the status of recommendations and implementation was not the same across the visited facilities. At all facilities, clinical meetings included discussion of the recommendations related to the maternal and perinatal death audit, while monthly coordination meetings included the recommendations related to the health centre and community. Despite verbal reports that recommendations were being implemented, only two among 13 visited facilities showed written feedback.

> Providing information about preventable factors that contribute to maternal death and using information to guide actions is key for preventing similar death in the future.
>
> —Facility interview

Although eight facilities noted that they communicated success stories, they did not

describe a process for formally documenting and reporting success stories. Five facilities reported sharing success stories during staff meetings but not through a formal or uniform system.

# Discussion

This assessment aimed to measure and document the implementation and practice of MPDSR in Rwanda. As supported by the assessment findings, the nationwide initiative to conduct death audits, the national MDSR guideline, and nationwide use of MPDSR tools for all cases of maternal and perinatal deaths in health facilities demonstrate strong political will to improve maternal and newborn health. Rwanda began implementing MDAs before perinatal death audits; however, the assessment found that MDSR committees at the facility and health centre level are now routinely conducting both types of audits. Audit committees are also interdisciplinary in nature. MPDSR as a nationwide strategy is a part of broader package of interventions aimed at improving maternal and child health care and strengthening the national health system as a whole.

This assessment revealed the need to strengthen several aspects of MPDSR implementation. The success of mortality reviews depends on the quality of data available for analysis. With more than a third of facilities reporting that patient charts and records were often incomplete, charts and records may need to be revised so that providers are not burdened with entering unnecessary information. Furthermore, facility staff may need support in completing patient charts and records. Accurate charts will ensure that audit committees have the information they need to analyse and determine the cause of death as well as contributing factors. Similarly, audit committees should be encouraged to display and analyse data and trends during their audit meetings to understand better the quality of service delivery at their facilities.

Assessors noted that committees did not always classify causes of deaths accurately on reporting forms. As such, the MOH and district-level managers should consider providing additional training on cause-of-death classification, aligned with the ICD-MM and ICD-PM, because accurate classification informs the type and quality of responses developed by audit committees. In addition, committees can audit all maternal deaths because such deaths do not occur frequently; however, MDSR committees may need to select a sample of perinatal cases for review. The MOH should provide guidance for purposeful selection of perinatal deaths to ensure that facility staff review representative cases. As they do for maternal deaths, national guidelines should also provide a timeline for reporting perinatal deaths.

The response function—implementation of the action plan—is a key component of implementing MPDSR. Though facilities were able to give examples of changes resulting from MPDSR, action plans reviewed during the assessment varied in quality. Furthermore, there were no systematic processes for tracking implementation of action plans. Facilities should build capacity of staff to develop complete action plans and should institute processes for following up on recommendations outside of the audit meetings.

MDSR committees reported significant barriers to the implementation of recommendations, including lack of motivation and heavy workloads. Supporting committees to identify and prioritise easily achievable recommendations may motivate committee members, as could recognising staff efforts. Documenting success stories from audits and disseminating within facilities and communities may also be another motivational tool for audit committee members.

One of the goals of MPDSR is to improve the quality of care provided to mother and newborn. The assessment found that QI committees, tasked with developing strategies to improve the quality of health care, exist within many health facilities. Facilities should integrate the work of QI and MPDSR committees to help facilitate implementation of recommendations.

Although facility-based deaths were easily identified, the findings showed that only a third of the health centres assessed tracked deaths within the community. According to the guidelines, maternal and neonatal deaths should be documented in SISCOM, Rwanda's CHW information system, and should be followed by a verbal autopsy.[24] Processes for reviewing community deaths as well as sharing and tracking recommendations should be reinforced at health centres and hospitals.

The national guideline states that the goal of the audit meetings is not to blame individuals, but instead to learn how to avoid preventable deaths. However, the assessment shows that more could be done to promote the no name, no blame principle. Adopting clear codes of conduct differentiating between the mortality audit and disciplinary processes and emphasising confidentiality may create a better atmosphere for staff to share information without fear of blame or punishment.

## Alignment with Global MPDSR Guidance

Rwanda is among the few sub-Saharan countries to initiate MDSR and, later, PDSR as strategies to reduce maternal and perinatal mortality and morbidity. All health facilities have established both systems. The MDSR guidelines are in alignment with the global guidelines. However, with the introduction of guidelines on stillbirth and neonatal audits, national guidelines may need to be revised to integrate guidance on perinatal deaths to ensure continued alignment. Though MDSR is widely implemented, substantial variation in implementation status exists between facilities. Additional training is needed to promote global best practices, ensure lasting improvements, and move facilities towards sustainable practice.

## Limitations of this Assessment

This study aimed to provide information on what was happening in terms of the mortality audit at the facilities visited on the day of the visit. Therefore, there are no claims regarding the generalisability of the findings, especially because assessors visited a small subsample of facilities. Although information on national-, district-, and community-level activities was solicited, the interviews focused mainly on the process of conducting mortality audit at the facility level. The assessment team did not conduct national- and district-level stakeholder interviews because of limited availability of potential interviewees.

Most of the information collected was based on self-reporting by the informants interviewed at each health facility, and the feedback they provided depended on who was available to interview on the particular day of the visit. Some of the views expressed may not necessarily reflect those of other health care staff, particularly more junior staff who may feel that they receive more blame or scrutiny during mortality audit meetings.

# Conclusion

MPDSR in Rwanda can be implemented routinely and countrywide with high coverage of the maternal and perinatal deaths audited. However, MDSR and PDSR should be harmonised within the Rwandan health system. Implementing recommendations has the potential to reduce maternal and perinatal mortality, but requires completion and follow-up of action plans. This review found limited skills and knowledge among health providers to identify and classify deaths, develop and follow up on action plans, and follow up implementation of recommendations made. Supportive supervision as well as intensive and repeated training on MPDSR at the facility level is needed to demonstrate the possible role of the health provider and of service delivery at the health facility level in reducing maternal and perinatal deaths.

# Recommendations

## Overall

- Revise the death audit systems (MDSR and PDSR) so that they are guided by one national guideline (MPDSR)

## National and District Level

- Expand the current maternal death review guidelines and tools to include perinatal deaths
- Support linkages between MPDSR committees and facility-based QI units to ensure effective implementation of committee recommendations
- Provide training and supportive supervision packages focused on strengthening the quality of facility-level reviews, particularly the correct assignment of cause of death using ICD-MM and ICD-PM as well as development and implementation of action plans
- Ensure appropriate capacity and resources for holding national-level technical review meetings
- Prioritise perinatal death reviews as much as MDAs
- Develop clear guidance on the timeline for notification of perinatal deaths
- Develop guidance on selecting a sample of perinatal and neonatal deaths as well as stillbirths for review
- Form a maternal and perinatal death audit committee to advise and inform policy-makers on the progress of and barriers to MPDSR activities
- Revise audit forms to capture the information needed to assess cause of death and contributing factors for maternal and perinatal deaths
- Reinforce processes for identifying and reviewing community deaths as well as for sharing and tracking recommendations with CHWs and at health centres and hospitals

## Facility Level

- Provide written policies, guidelines, or protocols—and, if possible, job aids—regarding the practice of MPDSR at all facilities
- Strengthen documentation from mortality reviews including minutes, findings, and recommendations
- Institute process for routine follow-up and status reporting on implementation of recommendations
- Integrate/strengthen linkages between MPDSR committees and facility-based QI units to ensure effective implementation of committee recommendations
- Reinforce processes for reviewing community deaths as well as for sharing and tracking recommendations with CHWs and at health centres and hospitals
- Establish schedule for maternal and perinatal death review meetings at all facility levels
- Encourage reporting even if no deaths have occurred
- Adopt clear code of conduct to create "no blame" and encourage confidence in participating in review meetings
- Provide incentives, such as staff recognition, to motivate staff participation in implementation of MPDSR

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# Appendix A: 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 confidentiality of staff and patients |
| | | *1 point* |
| | Orientation for new staff | Face-to-face or written orientation to death reviews |
| | | *1 point* |
| | MPDSR data use | Data trends displayed or shared |
| | | *2 points* |
| **5. Evidence of 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 meetings 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 point* |
| **6. Evidence of sustainable practice** *(6 points maximum)* | 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* |

# Appendix B: Facility Questionnaire

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 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**

A. HEALTH CARE FACILITY

1. District:

_____

2. Name of facility:

_____

3. Level of facility (teaching/ referral/ provincial/ district / health centre):

_____

4. Is there a MDSR coordinator or stakeholder at the facility?

Yes ___ No ___ Unsure___

Job title: _____(write none if MDSR is not done at this facility)

5. Is there a PDSR coordinator or stakeholder at the facility?

Yes ___ No ___ Unsure___

Job title: _____(write none if PDSR is not done at this facility)

6. Does the coordinator(s) have other responsibilities (e.g. information officer, QI focal point, nurse, etc.): If yes, please specify the other responsibilities) Yes ___ No ___

_____

7. 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 deaths: Yes ___ No ___ Unsure___

Comments:

_____

_____

Near-misses? Yes ___ No ___ Unsure___

Comments:

_____

_____

Does the facility have a steering committee for MPDSR?

Yes ___ No ___ Unsure___

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

_____

_____

_____

B. HISTORY OF MPDSR IMPLEMENTATION

9. When was MDSR started at the facility?

_____

10. When was PDSR started at the facility?

_____

11. 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)

_____

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

Yes ___ No ___ Unsure___ If yes, approximate date

13. Was there an implementation or action plan established?

Yes ___ No ___ Unsure___

14. 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 ___

15. *If M/PDSR is not implemented yet:* has a formal decision for M/PDSR implementation been made yet?

Yes ___ No ___ Unsure___

If yes, describe:

_____

16. 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___

C. MPDSR ROLE-PLAYERS

17. Has anyone in facility or district leadership signed a commitment or undertaken an agreement that s/he would ensure that M/PDSR is implemented in the facility?

Yes ___ No ___ Unsure___ If yes, specify title:

_____

18. 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 Director of Health/Health Officer:

_____

District M&E Officer:

_____

Facility Director or In-Charge:

_____

Matron / Nursing service manager:

_____

Unit manager (neonatal unit or maternity):

_____

Obstetrics:

_____

Paediatrics:

_____

Data Manager:

_____

Head of Quality Management Committee

_____

Other, specify:

_____

_____

19. 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?

_____

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

_____

Managers (e.g. facility administrators) _____

Clinicians (doctors or medical officers) _____

Nurses/midwives _____

Other (specify) _____

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

Yes ___ No ___ Unsure___ If yes, describe:

_____

D. MPDSR PRACTICE

22. 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**

23. 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:

    _____

24. 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**

25. 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)*

26. What documents are used to compile cases for mortality audit meetings?
    - ☐ Patient charts / case notes
    - ☐ Registers
    - ☐ None
    - ☐ Other, specify:

    _____

27. 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?

_____

_____

28. 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)?

_____

_____

29. What system is used to classify cause of death on the mortality audit forms?
    - ☐ ICD-10
    - ☐ Modified ICD-10
    - ☐ None
    - ☐ Other, specify:

    _____

30. What system is used to classify modifiable factors or sub-standard care?
    - ☐ 3 delays
    - ☐ Root cause analysis
    - ☐ Patient – Provider – Administrator
    - ☐ None
    - ☐ Other, specify:

    _____

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

    Yes ___ No ___ Unsure___ If yes, describe what indicators are included:

    _____

32. 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**

33. How frequently do mortality audit meetings take place?

_____

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

_____

35. Is attendance mandatory? Yes ___ No ___ Unsure___

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

_____

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

_____

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

_____

_____

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

_____

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

_____

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

_____

42. 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**

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

_____

_____

44. How does the mortality review team identify and prioritize recommendations?

_____

_____

45. 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**

46. 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?

_____

47. Are individuals assigned to follow up on specific recommendations?

Yes ___ No ___ Unsure___ If yes, how is this assigned?

_____

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

_____

49. 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)*

50. 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)

_____

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

_____

52. Are success stories communicated?

Yes ___ No ___ Unsure___ If yes, how:

_____

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

_____

**AVOIDING BLAME AND ENSURING CONFIDENTIALITY**

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

_____

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

Yes ___ No ___ Unsure___ If yes, please describe:

_____

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

Yes ___ No ___ Unsure___ If yes, please describe:

_____

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

Yes ___ No ___ Unsure___ If yes, please describe:

_____

**E. CASE STUDY QUESTIONS**

58. 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?

_____

_____

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

_____

_____

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

_____

_____

61. 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?

_____

_____

_____

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

_____

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

_____

_____

64. 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 respondent's recall of the history of implementation:

Good Recall _____ Some Recall_____ No recall_____

Comments:

_____

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

_____ A lot of involvement and/or support (moral, material, etc)

_____ Some involvement and/or support (moral, material, etc.)

_____ Neutrality/Little support

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

_____

_____

_____

_____

_____

Assessor's Recommendations for Facility Level Consideration

_____

_____

_____

_____

_____

Ideas for Policymakers and Others Level of Management

_____

_____

_____

_____

_____

_____

NAME OF ASSESSOR SIGNATURE DATE

# Appendix C: Ethical Approval Letter

Republic of Rwanda

MINISTRY OF HEALTH

National Health Research Committee
Ref: NHRC/2016/PROT/024

To: **Felix Sayinzoga**
**Kusum Thapa**
**Kate Kerber**
**Principle Investigators**

## Scientific Review Approval Notice

With reference to your request for approval of the Research Protocol entitled; "**A regional review of facility – level Maternal and Perinatal Death surveillance and Responsive (MPDSR) System in four sub-Saharan African Countries**"; We are pleased to inform you that, following a thorough review and critical analysis of your proposal (**NHRC/2016/PROT/024**), your Research Protocol has been approved by National Health Research Committee.
However,

1) Changes amendments on approach and methodology must be submitted to the NHRC for review and approval to validate the changes.
2) A submission of quarterly progress report is mandatory
3) Submission to NHRC of final results before publication is mandatory
4) Failure to fulfill the above requirements will result in termination of study

Once again National Health Research Committee appreciates your interest in research and requests you to submit this proposal to the National Ethics Committee or IRB and then share a copy of the approval letter from them.

Your final approval reference number is **NHRC/2016/PROT/024.**

Sincerely,

Dr. Parfait UWALIRAYE
Chairperson of NHRC

Date: 26/07/16

# REPUBLIC OF RWANDA/REPUBLIQUE DU RWANDA


**NATIONAL ETHICS COMMITTEE / COMITE NATIONAL D'ETHIQUE**
**Telephone: (250) 2 55 10 78 84**
**E-mail: info@rnecrwanda.org**
**Web site: www.rnecrwanda.org**
**Ministry of Health**
**P.O. Box. 84**
**Kigali, Rwanda.**
**FWA Assurance No. 00001973**
**IRB 00001497 of IORG0001100**


November 11, 2016
No.897/RNEC/2016

**Co-Principal Investigators:**
**Felix Sayinzoga, Kusum Thapa and Kate Kerber**

Your Project title: **"A regional review of facility-level Maternal and Perinatal Death Surveillance and Response (MPDSR) Systems in four Sub-Saharan African Countries** has been evaluated by the Rwanda National Ethics committee.

| Name | Institute | Involved in the decision | | |
|---|---|---|---|---|
| | | Yes | No ( Reason) | |
| | | | Absent | Withdrawn from the proceeding |
| Dr.Jean-Baptiste MAZARATI | Biomedical Services (BIOS) | | X | |
| Prof. Eugène RUTEMBESA | University of Rwanda | X | | |
| Dr.Laetitia NYIRAZINYOYE | | X | | |
| Mrs. Françoise UWINGABIYE | Lawyer at RUSIZI | X | | |
| Dr. Egide KAYITARE | University of Rwanda | X | | |
| Sr.Domitilla MUKANTABANA | Kabgayi Nursing and Midwife school | X | | |
| Dr. David K. TUMUSIIME | University of Rwanda | | X | |
| Dr. Lisine TUYISENGE | Kigali Teaching Hospital | X | | |
| Dr. Claude MUVUNYI | Biomedical Services (BIOS) | X | | |

After reviewing your protocol during the RNEC meeting of October 08th, 2016 where quorum was met and after revisions made on the advice of the RNEC submitted on 08th November 2016, **Approval letter has been granted to the above mentioned study.**

Please note that approval of the protocol and consent form is valid for **12 months**.
You are responsible for fulfilling the following requirements:

1. Changes, amendments, and addenda to the protocol or consent form must be submitted to the committee for review and approval, prior to activation of the changes.
2. Only approved consent forms are to be used in the enrollment of participants
3. All consent forms signed by subjects should be retained on file. The RNEC may conduct audits of all study records, and consent documentation may be part of such audits.
4. A continuing review application must be submitted to the RNEC in a timely fashion and before expiry of this approval.
5. Failure to submit a continuing review application will result in termination of the study.
6. Notify the Rwanda National Ethics committee once the study is finished.

Date of Approval: November 11, 2016
Expiration date: November 10, 2017

Sincerely,

RWANDA NATIONAL ETHICS COMMITTEE
R.N.E.C
P.O BOX:89 RIGALI

P.o. Vice-Chair
Prof Eugène RUTEMBESA

**Dr. Jean- Baptiste MAZARATI**
**Chairperson, Rwanda National Ethics Committee.**

C.C.
- Hon. Minister of Health
- The Permanent Secretary, Ministry of Health

# Appendix D: Consent Form

**ORAL CONSENT FOR KEY INFORMANT**

**ASSESSMENT OF MATERNAL AND PERINATAL DEATH REVIEW ACTIVITIES**

Date: _____ 2017

Good day. My name is _____. I am representing the Maternal and Child Survival Project (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.

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 your help to ensure that the information we collect is accurate.

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